MURRAY-DARLING BASIN COMMISSION

Annual Report 2003–2004

To the parliaments of the Australian Government, New South Wales, Victoria, South Australia and Queensland; the Legislative Assembly of the Australian Capital Territory; and the Australian community

This report includes the annual report of the Murray-Darling Basin Ministerial Council's Community Advisory Committee

MURRAY-DARLING BASIN COMMISSION VALUES STATEMENT

We will manage and conduct our business in a highly professional and ethical manner, and according to the values jointly agreed with the Community Advisory Committee. These values require particular behaviours that will cement our relationships with our stakeholders and the wider community, and will underlie all decisions, actions and relationships we enter into. We will promote the values so that all people and organizations that have dealings with the MDBC know what to expect from us and what we expect from them.

Courage
We will take a visionary approach, provide leadership and be prepared to make difficult decisions.

Inclusiveness
We will build relationships based on trust and sharing, considering the needs of future generations, and working together in a true partnership. We will engage all partners, ensuring that partners have the capacity to be fully engaged.

Commitment
We will act with passion and decisiveness, taking the long-term view and aiming for stability in our decisions. We will take a Basin perspective and a non-partisan approach to managing the Basin.

Respect
We will tolerate different views; act with integrity, openness and honesty; be fair and credible; use resources equitably; respect the environment; share knowledge and information; respect each other and acknowledge the reality of each other's situation.

Flexibility
We will accept reform where it is needed, and be willing to change and continuously improve our actions.

Practicability
We will choose practical, long-term outcomes, select viable solutions to achieve these outcomes and ensure that all partners have the capacity to play their agreed part.

Mutual obligation
We will share responsibility and accountability. We will act responsibly, with fairness and justice. We will support each other through necessary change.

Murray-Darling Basin Commission

ANNUAL REPORT 2003 – 2004

MURRAY-
DARLING
BASIN
COMMISSION

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Office of the President

MURRAY-DARLING BASIN COMMISSION

23 September 2004

The Hon Warren Truss MP
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister

In accordance with clause 84(1) of the *Murray-Darling Basin Agreement 1992,* I submit our annual report and financial statements covering the year ended 30 June 2004 for tabling before the parliaments of Australia, New South Wales, Victoria, South Australia and Queensland, and the Legislative Assembly of the Australian Capital Territory.

Drier than average conditions continued over much of the Murray-Darling Basin, prolonging hardship for many communities and river systems. A strong commitment of cooperation exists between governments and communities in responding to these prolonged dry conditions.

The decision of the Ministerial Council to invest in The Living Murray represents a landmark in the pursuit of a new balance between consumptive use of water and environmental needs. This initiative also provides a basis for extension to other systems of the Basin in the years ahead.

I commend the 2003–04 Annual Report to the five parliaments and the Legislative Assembly, and I look forward to the partner governments' continuing support of the Murray-Darling Basin Initiative.

Yours sincerely

Ian Sinclair
President

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Abbreviations and acronyms

Agreement	1992 Murray-Darling Basin Agreement
ANAO	Australian National Audit Office
ANZLIC	Australia New Zealand Land Information Council
ASDI	Australian Spatial Data Infrastructure
ATHENA	MDBC Library Database
BIGMOD	MDBC daily forecasting model
BSMS	Basin Salinity Management Strategy
BSMSIWG	Basin Salinity Management Strategy Implementation Working Group
CAC	Community Advisory Committee
Cap	Cap on water diversions
CLPoM	Cultural Landscape Plan of Management (for Lake Victoria)
COAG	Council of Australian Governments
CRP	current recommended practices
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DIPNR	Department of Infrastructure, Planning and Natural Resources (NSW)
DSE	Department of Sustainability and Environment (Vic.)
EC	electrical conductivity
EWMP	Environmental Works and Measures Program
FPRG	Fish Passage Reference Group
GL	gigalitre
IAG	Independent Audit Group
IAP	Indigenous Action Plan
ICM	integrated catchment management
IGA	inter-governmental agreement
Initiative	Murray-Darling Basin Initiative
IQQM	Integrated Quantity and Quality Modelling package
IT	information technology
IWP	irrigation water provider
KPA	key performance area
LVAC	Lake Victoria Advisory Committee
AHD	Australian Height Datum

MDB	Murray-Darling Basin
MDBC	Murray-Darling Basin Commission
ME&R	monitoring, evaluation and reporting
MIL	Murray Irrigation Limited
Ministerial Council	Murray-Darling Basin Ministerial Council
ML	megalitre
MLDRIN	Murray Lower Darling Rivers Indigenous Nations
MSM	Murray Simulation Model
NAP	National Action Plan for Salinity and Water Quality
NFS	Native Fish Strategy
NHT	Natural Heritage Trust
NRM	natural resource management
NWI	National Water Initiative
OH&S	occupational health and safety
PM	performance measure
PMDS	Performance Management and Development System
R&D	research and development
REALM	resource allocation models
REF	Review of Environmental Factors
REP	Regional Environmental Plan
RMW	River Murray Water
S&D	Salinity and Drainage Strategy
SI&E	Strategic Investigations and Education Program
SIMRAT	Salinity IMpacts Rapid Assessment Tool
SPD	Statutory Policy Development
sq km	square kilometre
SRA	Sustainable Rivers Audit
WCC	Workplace Consultative Committee
WUE	water use efficiency

About this report

The Murray-Darling Basin Commission (MDBC) is a unique organisation, involving the Australian, New South Wales, Victorian, South Australian, Queensland and Australian Capital Territory governments. The MDBC was created because the six governments wanted an organisation that transcended the political boundaries between these jurisdictions to manage the far-reaching Murray-Darling river catchments as effectively as possible.

This report describes the objectives and significant achievements of the MDBC during the 2003–04 financial year. It is tabled before the parliaments of each jurisdiction through the Murray-Darling Basin Ministerial Council (Ministerial Council). This tabling process has been developed to meet the requirements of the 1992 Murray-Darling Basin Agreement, which has been incorporated into legislation and passed by the Australian Government and state parliaments that have jurisdiction in the Murray-Darling Basin (the Basin). The Australian Capital Territory's involvement is through a memorandum of understanding.

The MDBC undertakes works and measures at the direction of the Ministerial Council, and coordinates the efforts of the government partners to the Murray-Darling Basin Initiative (the Initiative). This annual report focuses mainly on those activities that the MDBC has carried out on behalf of the Ministerial Council in 2003–04. Information on the 2003–04 activities of the partners to the Initiative will be available through the states' annual departmental reports, which should be available by early 2005.

This annual report also incorporates the annual report of the Ministerial Council's Community Advisory Committee, the primary community body advising the Ministerial Council on natural resources management issues in the Basin.

Part 1

Photographs by (clockwise from bottom left); Peter Solness; Arthur Mostead; Gunther Schmida; Phil Pfeiffer

Figure 1. Catchments within the Murray-Darling Basin

Chief Executive's overview

The Murray-Darling Basin remained gripped by drought with significant economic and social impacts on both dryland and irrigation communities. Irrigation allocations commenced at low levels and were gradually increased during the season, particularly for many NSW Murray irrigators. This was the second year of critically low allocations in New South Wales.

The Darling system failed to produce significant inflows into Menindee Lakes for both the winter–spring period and also for the late summer monsoonal period. The salinities on the Darling below Menindee Lakes reached critical levels with significant impacts on production.

The River Murray remained fully regulated during summer and autumn, except for a period of six weeks when approximately 280 GL was released from Lake Alexandrina to the sea. This release had little impact on the Murray Mouth, with dredging of the Mouth continuing. A total of more than $9 million has been expended since dredging commenced in October 2002 to keep the Mouth open and the Coorong connected to the southern ocean.

Salinity levels along the Murray, except for Lake Alexandrina, remained at low levels for the year as a result of the dry conditions and the water being sourced from the upper Murray. Salinities in the lower lakes (lakes Alexandrina and Albert) were high throughout the year, reflecting the lack of river flushing flows passing through the lakes and the Murray Mouth. In these circumstances, lakes act as terminal lakes with consequential increases in the concentration of salts. The salt interception schemes all operated effectively during the year with new ones approved for Bookpurnong and Loxton in South Australia. The salt spike that entered the Murray from the Darling was effectively diluted through Lake Victoria operations.

The Living Murray entered a new stage of development after the Council of Australian Governments (COAG) agreed on 29 August 2003 to develop at COAG a National Water Initiative. The Basin states agreed at the August meeting to contribute $500 million to recover water to address over-allocated systems to assist the long-term sustainability of Basin water resources.

At the June meeting COAG settled an intergovernmental agreement for the National Water Initiative, which clears the way for enhanced interstate water trade. In addition, the Australian Government, together with New South Wales, Victoria and South Australia, signed an intergovernmental agreement for water recovery and environmental management under The Living Murray to be overseen by the Murray-Darling Basin Ministerial Council.

The review of the Community Advisory Committee (CAC) initiated in 2002–03 was completed and a new CAC appointed on 1 May 2004. The CAC, while slightly smaller in size, has new terms of reference that include a stronger role in communicating with Basin communities, enabling it to more effectively assist the Ministerial Council in dealing with the emerging policy agenda in the Basin.

(Photo: Terry Hope)

Celebrating the completion of Hume Dam remedial works in March 2004.

Work continued in implementing onground measures to ensure that any water currently available for environmental purposes is effectively managed. These works included the construction of fishways at Locks 7 and 8 and at the Barrages and replacement of a fishway at Euston Weir. Initial indications are that the fishways are working extremely well and will make a significant contribution to the future sustainability of fish populations.

A trial watering of River red gums was conducted at Chowilla to assess whether a highly stressed component of the floodplain could be effectively rehabilitated. The initial response from this River red gum community has been positive but there is a long way to go to determine overall effectiveness.

Implementation of the Basin Salinity Management Strategy continued, with the first independent audit being undertaken. The requirements of Schedule C to the Murray-Darling Basin Agreement that baseline conditions, salinity modelling and end-of-valley targets be finalised by March 2004 have been largely met. While the strategy is still in its early days, it continues to be best practice and sets a framework in which both dryland and irrigation salinity can be managed effectively within the Basin.

On 14 November 2003 the Murray-Darling Basin Ministerial Council took the historic decision to implement a 'first step' for The Living Murray, focused on ecological outcomes at six significant ecological assets and requiring on average up to 500 GL per annum of additional environmental water to be recovered over five years.

The Cap on water diversions continues to be an effective method of managing water supply. Ninety-six per cent of the water consumed within the Basin was within cap limits. The remaining 4 per cent, which is over the Cap, is being addressed in the states in which it occurred. The Cap requires that these valleys be brought back into balance. The Independent Audit Group for the Cap made a submission to the Queensland Government that will assist in finalising the Cap in that state.

On 24 March 2004 the Hon. Warren Truss, MP, on behalf of the Prime Minister and also representing the MDBC Ministerial Council, launched the Hume Dam upgrade works. This celebration represented the formal handover of the dam as a fully functioning community asset, in which the MDBC governments have invested more than $80 million over the past decade to ensure the dam meets modern standards.

The legacy of the January 2003 bushfires on the health of the catchments of the Murray still lingers. Preliminary studies have indicated that, as the vegetation regrows, this could have a significant impact on the water yields from these catchments with the 'memory' of fires possibly still being felt in thirty years. Work has been commissioned by the Victorian Government to better understand these impacts, supported by the MDBC.

2003–04 saw a significant turnover in the senior management of the MDBC. The President of the MDBC, Dr Roy Green, completed his term on 30 November 2003. The Rt. Hon. Ian Sinclair was appointed as his replacement from 1 December 2003. The MDBC's Chief Executive, Don Blackmore, retired after fourteen years in the role, as did the General Manager River Murray Water, David Dole. The General Manager Natural Resources, Kevin Goss, resigned to take up the post of Chief Executive Officer of the CRC for Plant Based Management of Dryland Salinity. The Director Corporate Services, Graham Petty, also resigned from the MDBC to take up a new post. David Dole temporarily returned to the MDBC as Acting Chief Executive in the leadup to Dr Craik's commencement as Chief Executive. Dr Wendy Craik was appointed as the incoming Chief Executive of the MDBC, to commence duties in August 2004.

MDBC would like to record its warm appreciation for all their contributions and wishes them well in their future endeavours.

The staff of the MDBC continued to work tirelessly under trying conditions throughout the ongoing development of The Living Murray, the impact of the drought on water supply and the transition of the senior management team.

David Dole

Acting Chief Executive

1. The Initiative

The Murray-Darling Basin Initiative (the Initiative) is the partnership between governments and the community that has been established to give effect to the 1992 Murray-Darling Basin Agreement (the Agreement). The purpose of the Agreement is:

> *...to promote and coordinate effective planning and management for the equitable, efficient and sustainable use of the water, land and other environmental resources of the Murray-Darling Basin.*

The Murray-Darling Basin is Australia's most important agricultural region and home to more than two million people. It covers some of the most diverse landscapes in Australia and is home to a wide array of unique flora and fauna.

Governments and communities throughout the Basin are working together with the common goal of maintaining this precious environment whilst at the same time continuing to grow and develop Basin communities. The Initiative is about how we achieve this balance.

In its early years the Initiative focused on promoting the principles of integrated catchment management (ICM) and the development of joint community and government structures. These have remained key mechanisms for achieving sustainable use of the Basin's natural resources.

A major focus within this framework has been to obtain a long-term sustainable future for rivers in the Basin and in particular the River Murray. The Living Murray has developed to be one of the biggest areas of investment ever made by communities and Australian Governments in how to safeguard the future of a single river system.

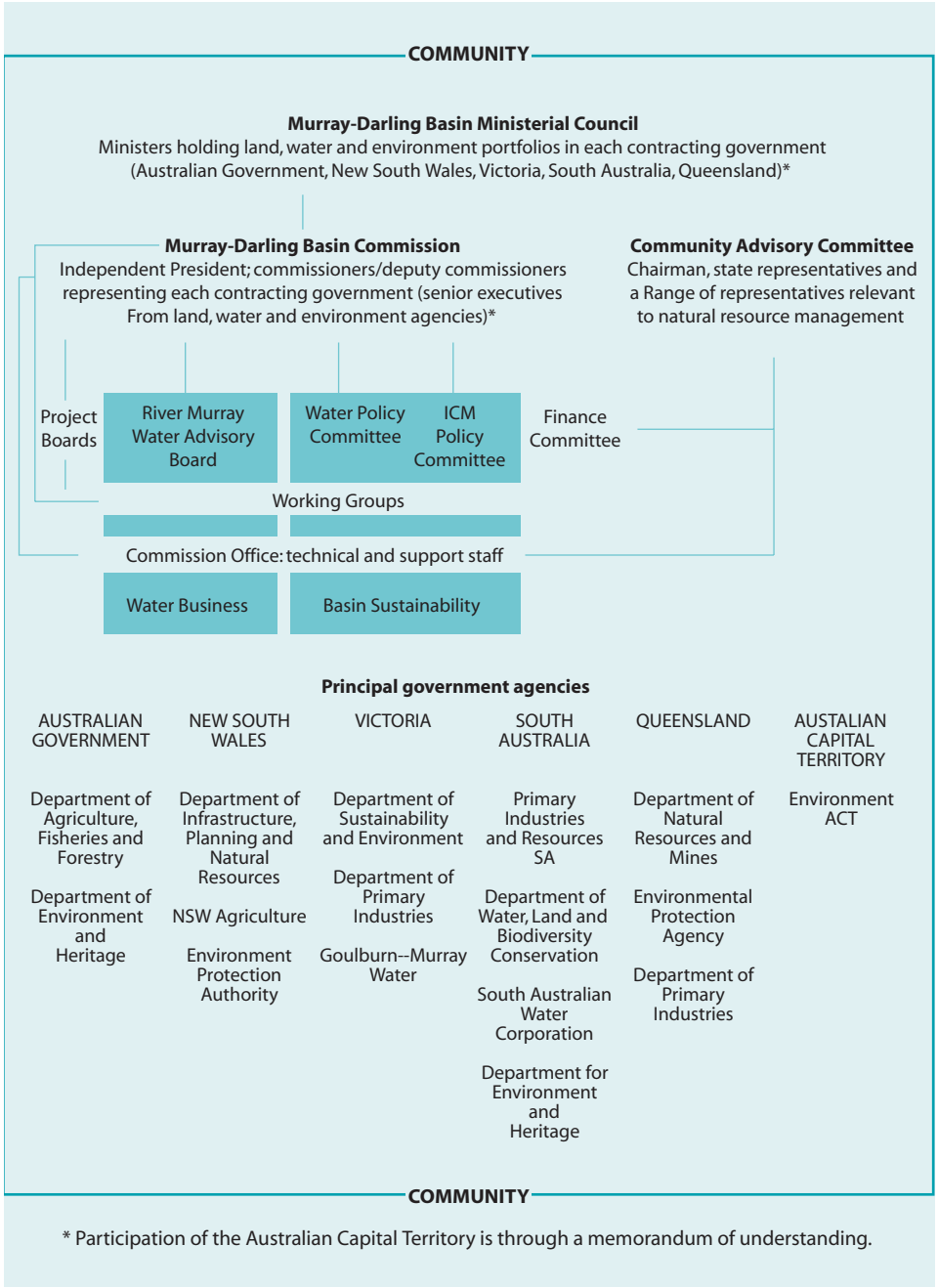
The Initiative brings together communities, and the Australian, New South Wales, Victorian, South Australian, Queensland and Australian Capital Territory governments. The overall governance of the Initiative is shown in Figure 2 and described in the following sections.

Murray-Darling Basin Ministerial Council

The Murray-Darling Basin Ministerial Council (Ministerial Council) is the primary body responsible for providing the policy and direction needed to implement the Initiative. The council's main functions are to consider and determine major policy issues concerning the use of the Basin's land, water and other environmental resources; and to develop, consider and authorise (as appropriate) measures to achieve the purpose of the Agreement.

The Ministerial Council is made up of the ministers holding land, water and environment portfolios within the Australian, New South Wales, Victorian, South Australian and Queensland governments (see Figure 2). As many as three ministers from each government may sit on the council.

Figure 2. Governance of the Murray-Darling Basin Initiative



* Participation of the Australian Capital Territory is through a memorandum of understanding.

The Australian Capital Territory participates in the Initiative through a memorandum of understanding. The memorandum allows the Australian Capital Territory to take part in the planning and management of Basin environmental resources, but not to be involved in water management of the River Murray

system. The memorandum provides for an ACT Government minister to be a non-voting member of the Ministerial Council. The names of members of the Ministerial Council are at Appendix A.

Community Advisory Committee

The Ministerial Council's Community Advisory Committee (CAC) is an integral part of the Initiative and reflects the importance of the community–government partnership. At its first meeting in 1986, the Ministerial Council established the CAC to advise it on natural resources management issues identified by the Basin community.

This decision was based on the ministers' earlier recognition of the need for effective community participation in the resolution of the water, land and environmental problems in the Basin.

During 2003–04 the Ministerial Council implemented the finding of a review of the CAC to establish the fourth Community Advisory Committee (CAC IV). Accordingly, CAC III members served on the CAC until 30 April 2004 and new members were appointed from 1 May 2004 (see Figure 3).

The Ministerial Council agreed new terms of reference for the CAC from 14 November 2003:

1 *To advise Council on:*
   - *the natural resources management issues that have been referred to the Committee by the Ministerial Council or MDBC; and*
   - *the full range of views of Basin communities on natural resource management issues of significance within the Basin.*

2 *To assist the Murray-Darling Basin Initiative by disseminating, within Basin communities, Council's decisions in a way that promotes clear understanding of their context and rationale, and enhances ownership and adoption.*

3 *To participate, as directed by Council, in Basin communities' engagement programs and provide Council with advice on the effectiveness of that engagement.*

4 *To participate, as directed by Council, in policy development processes of the MDBC and Council.*

The new CAC has an independent Chairman and twenty members. Thirteen members are state representatives—three each from New South Wales, Victoria, South Australia and Queensland, and one from the Australian Capital Territory. Additionally, there are seven representatives covering a range of interests including the irrigation industry, dryland farming, local government, environment and Indigenous peoples. All members are appointed through an open call for applications.

The CAC works closely with the Ministerial Council and the MDBC, and actively participates in a wide range of MDBC committees and working groups.

The names of members of who served on both CAC III and CAC IV during the year are at Appendix B.

The CAC's contribution is discussed in detail in Chapter 2.

Figure 3. CAC member locations as at 30 June 2004

The Murray-Darling Basin Commission

The MDBC is the executive arm of the Ministerial Council and is responsible for managing the Menindee Lakes system of the lower Darling River and the River Murray, and for advising the Ministerial Council on matters relating to the use of the water, land and other environmental resources of the Basin.

The MDBC is responsible for:

- advising the Ministerial Council in relation to the planning, development and management of the Basin's natural resources
- assisting the Ministerial Council in developing measures for the equitable, efficient and sustainable use of the Basin's natural resources
- coordinating implementation of these measures or, where directed by Ministerial Council, implementing them
- giving effect to any policy or decision of the Ministerial Council.

In meeting its responsibilities, the MDBC is:

- developing a Basin-wide framework for the sustainable management of its water, land and other environmental resources
- actively participating in the Initiative through operating the River Murray system and managing and/or coordinating Basin-wide policy, planning and knowledge generation activities.

The MDBC is made up of an independent President, two commissioners from each contracting government and a representative of the ACT Government. Each partner government also appoints two Deputy Commissioners. Apart from the President, commissioners are normally chief executives and senior executives of the government agencies responsible for stewardship of land, water and the environment. The memorandum of understanding for the participation of the ACT Government provides for a non-voting 'representative' from the Australian Capital Territory to participate in meetings of the MDBC.

Names of members of the MDBC (including the names of deputy commissioners) are at Appendix C.

Achieving an outcome of equitable, efficient and sustainable use of the Basin's environmental resources requires coordinated effort by the six partner governments and close cooperation with the Basin community. The MDBC actively supports a government–community partnership and relies on it to implement effective natural resources planning and management in the Basin. This cooperative approach brings to participants and end-users the benefit of shared concerns and expertise and jointly developed and integrated solutions; as well as avoiding duplication of effort.

In August 2000, the MDBC approved its corporate plan for the period 2000–01 to 2002–03. This annual report addresses the performance indicators agreed in the corporate plan against four output areas:

- water business—Chapter 3
- natural resources business—Chapter 4
- partner relations—Chapter 5
- business administration—Chapter 6.

Through its corporate plan, the MDBC also agreed to adopt the values it developed with the CAC to guide the way it operates (see inside front cover). Although the current corporate plan was nominated for the three-year period ending 2002–03, this annual report also uses the plan's framework. A new corporate strategy and plan is proposed for development in late 2004 and will form the basis of reporting for the 2004–05 MDBC annual report.

The Murray-Darling Basin Commission Office (MDBC Office) provides the technical, policy formulation, secretariat and administrative services required to administer the Agreement and help deliver MDBC outputs (see Figure 4). It is responsible for coordinating the implementation of the range of strategies and activities that operate within the agreed policy framework. The MDBC Office includes River Murray Water (RMW), the management unit responsible for the business of managing water (see Chapter 3).

Policy and program implementation to achieve outcomes

Policies and programs of the Ministerial Council and MDBC are implemented by the MDBC Chief Executive and by Commissioners representing the partner governments. In 2003–04 the MDBC's programs were supported by funds from the contracting governments in proportions approved by the Ministerial Council, as shown in Tables 11, 12 and 13 (see Chapter 6, pages 106–7). Funds are allocated to states for agreed Initiative programs in accordance with estimates approved by the Ministerial Council.

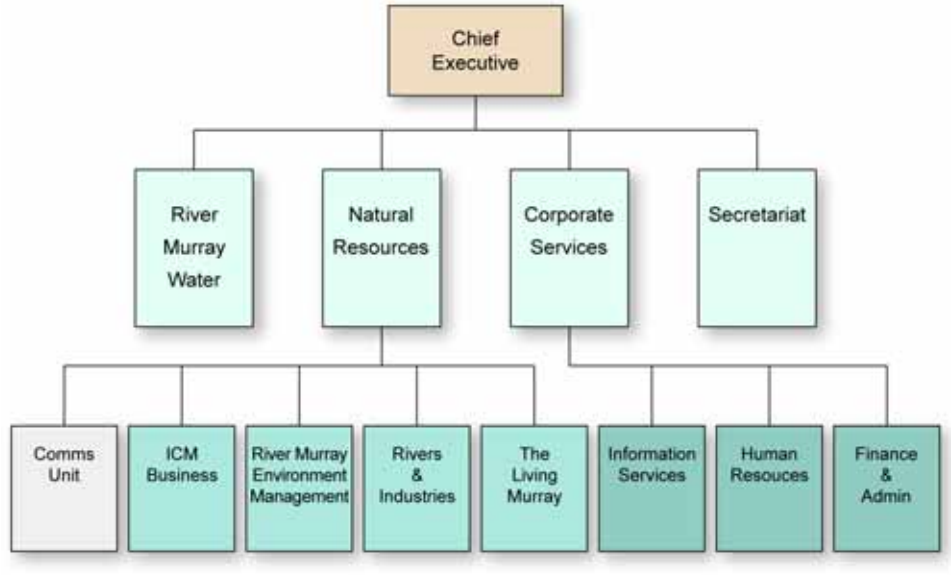
River Murray Water

Under its operating authority, the MDBC has delegated appropriate powers for water and asset management functions to the General Manager of River Murray Water. In exercising the delegated powers, the General Manager must consult with the RMW Advisory Board, particularly in relation to policy matters.

Natural resources business, partner relations and corporate services

The MDBC has delegated to the Chief Executive those expenditure, employment and contracting powers necessary to operate the MDBC Office. Commissioners representing the partner governments have delegated powers from the MDBC to approve expenditure of designated funds consistent with the Agreement.

Figure 4. MDBC Office organisation chart as at 30 June 2004



2. Report of the Community Advisory Committee 2003–2004

CAC III provided advice on natural resource management in the Murray-Darling Basin to the Ministerial Council and participated actively in MDBC processes. Despite undergoing significant change and restructure, CAC III was able to provide key advice to Council on The Living Murray First Step Decision through this period.

Following a major review of the CAC in 2002–03, the Ministerial Council agreed on new membership, terms of reference and operating arrangements to further enhance the CAC's performance, appointing the fourth CAC (CAC IV) from 1 May 2004.

Strategic issues

The CAC III Work Plan for 2003–04 was endorsed by Ministerial Council on 9 May 2003 (see box, page 12) . The plan provided focus for the development of CAC's advice to Council. Strategic issues for the year included continuing the development and adoption of the ICM approach, the further development of The Living Murray and the launch of the inaugural Murray-Darling Basin Leadership Program. CAC identified the need to provide specific advice on natural resource management issues faced by Indigenous peoples in the Basin.

CAC IV commenced the development of a new Business Plan, which replaces the work plan under the new operational arrangements. This plan is expected to be completed early in 2004–05.

Integrated Catchment Management

The launch of the policy document *Integrated Catchment Management in the Murray-Darling Basin 2001–2010* (ICM Policy) in 2001 established a long-term partnership between the CAC and the Ministerial Council. The CAC has adopted the values and principles in the ICM Policy to guide the way it operates and supports the ICM approach as the basis for all natural resource management activities across the Basin.

In order to continually improve the approach, the ICM Policy states that the CAC and Ministerial Council will jointly review the progress of the ICM approach against an agreed set of performance measures. The CAC invested considerable effort in the development of a set of draft performance measures. These performance measures were approved by Council in November 2003 to establish the basis for the first joint review of the ICM approach in March 2004.

The performance measures examine seven key areas to determine whether or not processes to implement the ICM approach have been set up and how effectively they have worked. These areas are: knowledge, governance, institutional arrangements, investment, engagement, capacity-building and target-setting.

CAC III Work Plan 2003–04

Priority issues for 2003–04 on which the CAC provided advice to the Council included the following.

1. **Implementation of the ICM Policy:**
   - (a) Implementation of the ICM Performance Measures review
   - (b) Participation in the review of the commitments and obligations under the Policy
   - (c) Identification of opportunities for CAC and CAC member involvement in the implementation of ICM
   - (d) Active involvement of CAC members in the implementation of ICM.
2. **Advice to Council on key MDB initiatives:**

The Living Murray:

A key task for the CAC is to provide advice on The Living Murray to the October 2003 Ministerial Council meeting.

- (a) Principles for water recovery
- (b) Water recovery options
- (c) Adjustment mechanisms
- (d) Community engagement processes.

Terrestrial Biodiversity:

- (a) Review and input to the development of a Project Plan.

Sustainable Rivers Audit:

- (a) Review and input to the development of the Project Plan.

Basin Salinity Management:

- (a) Review and input to the implementation of the Strategy.

3. **Participation in MDBC activities:**
   - (a) Program Knowledge Committees
   - (b) MDBC Project Boards and Working Groups
   - (c) Other committees or activities.
4. **Emerging Issues:**
   - (a) Provide advice to Council on strategic issues associated with future land use and social change.
5. **Operation of the CAC and Secretariat:**
   - (a) Implementation of the CAC Review
   - (b) Review and Assessment of the CAC's operations / performance
   - (c) Sub-committees to facilitate the development of the CAC's advice
   - (d) Support for the Murray-Darling Basin Leadership Program network
   - (e) Communication activities under the Communications Strategy
   - (f) Development of CAC members' knowledge, skills and networks, including relationships with MDBC staff
   - (g) Development of CAC procedures
   - (h) Administration and financial management.

During 2003–04, the CAC worked with the MDBC Office to develop and implement a survey conducted through Colmar Brunton Social Research. The survey aims to provide data on the key performance measures relating to community perceptions on key aspects of implementing the ICM approach including knowledge, engagement and governance. CAC IV will use the results of the survey to inform its first joint discussion with Ministerial Council to be held in 2004–05.

The Living Murray

The Living Murray has been the major focus for the development of CAC policy advice to Council throughout 2003–04, with particular emphasis on addressing issues in the community engagement process, the development of principles and criteria to guide planning and implementation, and the development of system-wide ecological objectives for a healthy, working river system.

CAC III was instrumental in the development of the interim ecological objectives agreed by Ministerial Council on 14 November 2003 through the development of the 'significant ecological asset' approach. The CAC identified five key assets—Barmah–Millewa Forest, Koondrook–Perricoota and Gunbower forests, the Murray Mouth, Chowilla Floodplain, and the River Murray Channel—and proposed that interim ecological health objectives for these sites be proposed as the First Step Decision.

(Photo: Paul O'Connor)

A bird colony takes flight in the Barmah Forest, one of the significant ecological assets identified as part of the First Step Decision.

The CAC further recommended that the First Step Decision be based on water recovery of 500 GL per annum, market-based approaches be used to acquire water and that further decisions beyond the First Step should be taken in October 2004.

Following this historic decision and agreement of a new role for the CAC in disseminating Council's decisions, the CAC hosted a community forum in Melbourne on 10 December 2003. The forum was attended by some 150 people from across the Basin including irrigators, Indigenous people, environmental organisation representatives, partner government staff and ministerial advisers. The forum:

- welcomed the First Step proposal and commended the Murray-Darling Basin Ministerial Council on its initiative
- affirmed the importance of community engagement and recognised that the integrity of the engagement process is central to engendering trust, confidence and respectful relationships between government and stakeholders
- called on the governments to deliver meaningful community engagement that gives communities the confidence that they are part of the process
- recommended that key principles must underpin the establishment of The Living Murray First Step proposal's community engagement process, including:
    - linkages with COAG's National Water and MDB Water Overallocation initiatives
    - answering the key questions that communities are asking
    - mechanisms for informing communities
    - the need to involve all communities in the implementation of the First Step—particularly those with special interest in the areas from which water is sourced and those with a special interest in the targeted ecological assets.

In March 2004, some CAC members attended a workshop on developing knowledge partnerships for The Living Murray. The outcome of the workshop was that the CAC took forward a recommendation to Ministerial Council on the need for a coordinated and fully integrated approach to knowledge acquisition, knowledge management and communication across regional communities, governments, industry, non-government organisations and R&D organisations, which could be achieved through a Living Murray knowledge strategy. The development of the strategy has been referred to The Living Murray Board.

The CAC continued to have input into the community engagement process, including the development of a revised Community Consultation and Communication Plan. The CAC has advised Council on key questions from the community and how they are seeking to be involved in future consultation processes. The CAC has made a concerted effort to capture as wide a range of

views as possible in all of the advice on The Living Murray provided to the Ministerial Council.

Indigenous involvement in natural resources management

The CAC continued to provide advice on the implementation of the Indigenous Scoping Study (completed in 2002–03) and the development of the memorandum of understanding with Murray Lower Darling Rivers Indigenous nations.

The MDBC also commenced consultations with traditional owners across the Basin as part of the process of preparing an Indigenous Action Plan, which will be finalised in 2004–05. The CAC Chairman attended and provided a response to the recommendations prepared at a Basin-wide gathering for representatives for each of the nations in the Murray-Darling Basin.

Through the appointment of two CAC members to the Indigenous Action Plan Project Board, the CAC will continue to have input into this process in 2004–05.

CAC review and establishment of CAC IV

During much of 2003–04 CAC activities were suspended awaiting the appointment process for CAC IV to be finalised. CAC III continued to provide critical advice through out-of-session consultation with the retiring members through this period.

Following the submission of the independent evaluation and report on the CAC to Ministerial Council in May 2003, the Council determined a new membership, terms of reference and operational arrangements for CAC IV at its meeting on 14 November 2003.

Part of the new arrangements included a public call for applications, for the first time, resulting in 81 applicants being attracted for the 20 positions available on the CAC. The selection process ran from late November until the appointment of the new committee on 1 May 2004.

An intensive induction program was held from 7 to 10 June 2004 followed by the first meeting of the CAC on 11 June 2004.

Communication

Forums

The CAC held a community forum on The Living Murray First Step Decision in Melbourne in December 2003. This followed on from a very successful forum held in April 2003. As described above, the forum was well attended with around 150 participants from industry groups, environment groups, traditional owners and government.

Under the terms of reference of CAC IV, the CAC has a responsibility to disseminate the Ministerial Council's decisions to the wider community as well as a continuing responsibility to bring community views forward to Council to inform their deliberations. Community forums, which will now become an on-going

component of CAC's communication activities, provide a vehicle to communicate information on key policy initiatives such as The Living Murray to the wider community and to seek community views and feedback on natural resource management (NRM) issues.

Website

The CAC continues to have its own page on the MDBC website with information about the CAC's membership, terms of reference and key areas of work. The website is located at www.mdbc.gov.au

The CAC commenced development of a separate website to service the needs of members and, in the longer term, provide a public interface tool. The website is expected to be launched early in 2004–05.

Performance report

CAC participation

The CAC held three meetings in 2003–04 (two of CAC III and one of CAC IV), and five meetings across three active sub-committees—Water, ICM and Indigenous Involvement in NRM—as well as one executive team meeting. CAC III held its final meeting on 4 November 2003, after which formal meeting activities and the operations of the sub-committees were suspended for the CAC IV selection process. CAC III members continued to provide advice developed through an out-of-session process until the appointment of the new members.

Following the appointment of the new members on 1 May 2004, CAC IV held its first meeting on 11 June 2004.

The CAC Chairman attended Ministerial Council meetings in November 2003 and March 2004, as well as all MDBC meetings throughout the year.

CAC members continued to be very active in MDBC committees throughout the year, with CAC III members continuing in these roles until 30 April 2004 (see Table 1). CAC members participated in:

- the Water Policy, ICM Policy and Finance committees
- project boards including The Living Murray, Interstate Water Trade, Terrestrial Biodiversity, Indigenous Action Plan and Sustainable Rivers Audit
- working groups including the Community Reference Panel for The Living Murray, Basin Salinity Management Strategy Implementation Working Group, Sustainable Rivers Audit Taskforce, Groundwater Technical Reference Panel, The Living Murray Implementation Working Group and the ICM Implementation Working Group
- Program Knowledge Committees for ICM, Landscapes & Industries and Rivers.

In addition, CAC members participated in the Australian Landcare Council and Murray Lower Darling Rivers Indigenous Nations (MLDRIN).

(Photo: K. Ward)

River red gum respond to an experimental watering trial at Chowilla Floodplain, one of the significant ecological assets under the First Step Decision.

Table 1: CAC performance measures

Performance Measure	Measure	Performance	
PM 1–*CAC Advice to Council* The percentage of CAC advice that is adopted by Ministerial Council	CAC advice register	Thirty-eight recommendations were made to Council from CAC III. Recommendations from CAC IV are yet to be received by Council.	100% noted
PM 2–*CAC member contributions* The percentage of members active on CAC sub-committees and MDBC working groups and the number of reports received	Membership lists Reports	Of 28 CAC III members, 16 sat on CAC sub-committees and 15 on MDBC committees and working groups. Overall 22 members served on working groups. From 49 committee and working group meetings 41 were attended by CAC members, 9 reports were submitted.	78.5% participation 22% reports received
Member participation on the Australian Landcare Council and MLDRIN		Two members and two alternates were appointed by the CAC to attend ALC and MLDRIN. Eight meetings were held, 7 attended by CAC members in 2003–04; no reports were submitted.	No reports received
PM 3–*Capacity-building and engagement* Participation in capacity-building activities provided for CAC members	Attendance records	A CAC induction program was run from 7 to 10 June 2004, in which 18 of the new CAC members and the Chairman participated in whole or part.	One activity (4 days) 90% members attended
PM 4–*CAC events* Community forums	Attendance records	One community forum held in December 2003	One forum 150 attendees
PM 5–*Secretariat performance* The adequacy and timeliness of agenda paper preparation for CAC meetings	CAC member questionnaire	Due to the change in CAC membership from 1 May 2004, no survey was conducted for 2003–04.	No measures

Part 2

Photographs by (clockwise from bottom left): Michael Bell; Peter Solness; Gunther Schmida; Peter Solness

3. Water Business: The River Murray system

Strategic directions

In 1996, in response to the 1994 water reform principles of the Council of Australian Governments (COAG), the Ministerial Council established a water business entitled River Murray Water (RMW). The distinct nature of RMW clearly delineates the service delivery functions of the MDBC from its resources management and policy functions.

The establishment of RMW was achieved within the terms of the existing Agreement, thus retaining the essential Basin-wide integration of values that are at the heart of the Initiative. Achieving this appropriate distinction between service delivery and resource management functions in order to clarify roles and responsibilities, while preserving the commitment to joint action within the context of Basin-wide values, continues to be a critical objective.

The major strategic directions followed by RMW during 2003–04 were planned to take account of changing community standards in the management of water conservation and salinity mitigation works, and to ensure the sustainable management of assets.

Within the terms of the existing MDB Agreement, RMW has established its corporate identity and achieved:

- a revised cost-sharing arrangement based on the principles of a two-part, service-based tariff that is a reasonable surrogate for full cost-recovery pricing
- recognition by the National Competition Council that the achievements have, in the circumstances, satisfied the relevant COAG principles.

In 2002–03 the Ministerial Council approved, in principle, amendments to the Agreement to enable:

- establishment and management of renewals annuities for replacing of assets and also for major cyclic maintenance
- cost-sharing arrangements between governments to be varied from time to time based on price-for-service principles
- re-allocation of responsibility for River Murray structures from one constructing authority to another, subject to agreement by the Ministerial Council
- amendment by the Ministerial Council, from time to time, of expenditure approval thresholds.

These proposed amendments have been referred to governments for consideration and implementation. As a package of amendments they will, if adopted, effectively complete the asset management and financial reforms recommended by COAG in 1994. During 2003–04 the necessary legislation to give

effect to these amendments was drafted for each of the partner governments. It is likely that parliaments of the partner governments intend to consider legislation to give effect to these amendments in 2004–05.

While managing the River Murray system in accordance with the principles of the Agreement, RMW continues to focus on opportunities to identify and implement measures to improve environmental outcomes. Staff from River Murray Water and state constructing authorities have made significant contributions to the design and construction of environmental works and measures. These will ensure that the best possible use can be made of the water available in the River Murray system to deliver environmental outcomes.

With severe drought conditions prevailing in the River Murray system in 2003–04, there were only a few opportunities to operate the river for environmental outcomes. These included:

- managing a small (about 280 GL) release at the Murray Mouth to try to trigger a fish spawning event as well as managing salinity
- supporting a trial watering of River red gums on the Chowilla Floodplain
- constructing an upgraded fishway at Euston Weir and new fishways at Locks 7 and 8 and at Tauwitchere Barrage.

Water resources management

The water resources of the River Murray system (see Figure 5) are used for a wide range of beneficial purposes. In addition to its inherent natural value to riverine, floodplain and estuarine ecosystems, it is used for irrigation, industrial and domestic water supplies, navigation, recreation, and generation of hydro-electricity. RMW manages the river system to ensure that the available water is documented in the water accounts and distributed to South Australia, Victoria and New South Wales in accordance with the Agreement.

RMW undertakes the tasks of sharing and supplying water through:

- assessing future availability of water
- accounting for actual use of water
- regulating river flows to meet environmental and user needs.

Low water reserves and below average inflows in 2003–04 (after the severe 2002–03 drought) resulted in low irrigation allocations in the River Murray system. The evaporation and transmission loss of water from the river system was less, however, than the record loss experienced last season. A more uniform pattern of Snowy–Murray releases this season aided the operation of Hume and Dartmouth Reservoirs and thus avoided a repeat of the difficulties faced last season, when a larger proportion of Snowy releases was made very late in the irrigation season.

Management of the River Murray system is based on a system of continuous water accounts. Assessments of the future availability of water are based on the status of these accounts and estimates of future system inflows, including inflows to the

River Murray resulting from the operation of the Snowy Mountains Scheme. RMW uses these assessments to advise the states of the shares of water available for the remainder of the irrigation season and the following season. The states then announce water allocations based on these shares and their own plans for water management.

Figure 5. The River Murray System

Water availability

The volume of water held in MDBC storages was very low at the start of the 2003–04 season at 24 per cent of active storage capacity—the lowest since 1979. Fortunately, inflows to headwater areas of the Murray improved over the winter and spring, increasing the volume of water stored.

Menindee Lakes remained under NSW control throughout 2003–04, despite the arrival of a small rise in inflows to the Lakes from floodwaters from upstream tributaries. These inflows relieved critical water shortages in the lower Darling area, brought about by a record low inflow sequence and extremely low storage levels in the Lakes.

The storage position at the end of the 2003–04 season was slightly higher than at the start of the season.

State shares of water held in MDBC storages at the beginning and end of 2003–04 are shown in Table 2.

Table 2: Water accounts for New South Wales and Victoria 2003–04 (GL)

Storage location	Storage at 30 June 2003				Storage at 30 June 2004			
	NSW	Vic	Total	Out of balance	NSW	Vic	Total	Out of balance
Dartmouth Reservoir	314	863	1177	550	612	1277	1889	664
Hume Reservoir	287	248	535	-39	148	160	307	12
Menindee Lakes	-32	102	70	134	66	266	332	199
Lake Victoria	118	169	287	51	132	122	256	-12
Total	686	1382	2069	696	960	1824	2785	864

Notes: Accounts are based on the best available data, which may contain some unverified operational data. Figures are rounded to nearest GL.
Data relate to gross storage.
The "out-of-balance" figure reflects the volume of stored water accounted to Victoria, minus the volume of stored water accounted to New South Wales.
Figures may differ from those in the 2002–03 annual report due to the substitution of verified data, including revised data following resurvey of the Menindee Lakes storage volume.

State irrigation allocations

The outlook for water availability for the three states would have been very poor at the start of the season due to the low storage position unless inflows had increased markedly. Fortunately, good winter and spring inflows to upper Murray areas brought significant improvements. Each state's position in relation to irrigation allocations for 2003–04 is summarised below.

Victoria

Victoria's initial irrigation allocation announcement for the Murray was only 16 per cent of Water Right and Licensed Volume. However, the chance of improving to an allocation of 100 per cent by mid-February was eight in ten. By mid-August the allocation had risen to 58 per cent of Water Right and Licensed Volume. In addition, local rainfall provided an opportunity to delay the start to water deliveries to reduce channel losses and increase the water available for allocation for the season.

The announced allocation reached 100 per cent by early September, but the likelihood of further improvements permitting sales allocations was low. The allocation did not rise any higher over the rest of the season.

The Victorian irrigation allocation for 2003–04 was lower than for the previous year, and the lowest on record since the River Murray system storage was augmented by the commissioning of Dartmouth Reservoir in 1979. Before that time and the completion of the Snowy Mountains Scheme, Victoria's lowest Murray allocation occurred in 1967–68, with 100 per cent Water Right plus 10 per cent Sales (augmented by releases from the Goulburn system to the Murray).

New South Wales

The opening NSW Murray irrigation allocation for 2003–04 was zero for general security irrigation and 100 per cent for high-security entitlements. Water shortages in both the Murray and Murrumbidgee valleys temporarily halted trading in water between these valleys; trade with the lower Darling was also prevented.

Following good rains some supplementary water (previously termed off-allocation water) was made available periodically during August, September and October, and the general security allocation increased to 17 per cent in August and further to 30 per cent in September. General security increased still further to 37 per cent in late October, whilst high security remained at 100 per cent.

Further improvements and borrowing of water from the Barmah–Millewa Forest environmental allocation brought the general security allocation to 50 per cent by mid-November. Subsequent rain saw a further rise to 55 per cent by early December. This allocation level was higher than the record low final allocation of 10 per cent experienced the previous season.

Following the worst-on-record two-year inflow sequence to Menindee Lakes, and very low storage levels in these lakes, New South Wales ceased releases to the Lower Darling River in December 2003. This temporary cessation of flows reduced water availability along the Lower Darling. Further details of this operation are under the 'Operation of storages' section of this report (see page 27).

South Australia

The low opening storage position and application of the water-sharing rules of the Murray-Darling Basin Agreement resulted in the MDBC providing advice to South Australia that it could not guarantee South Australia its full annual entitlement in 2003–04. As a consequence, South Australia elected to take a reduction in its entitlement flow during some winter and spring months. Correspondingly, authorised levels of water use from the river for irrigation, recreation, environmental and industrial purposes within South Australia were restricted to 65 per cent of licensed allocations as of 1 July 2003. Improvements in water availability in late winter and early spring provided the opportunity for authorised levels of water use to be increased to 95 per cent of licensed allocations. Water for metropolitan Adelaide and Country Towns was also restricted to 122 GL and 40 GL respectively.

State irrigation diversions

Wet conditions in winter and spring delayed the start of irrigation diversions from the river, and reduced river transmission losses.

In 2002–03 Murray Irrigation Limited (MIL) negotiated an advance of 2003–04 minimum required release water from the Snowy Mountains Scheme. The MDBC agreed to this arrangement on the basis that the water would be accounted as fully New South Wales with no impact on Victoria and South Australia's water availability, and that it would be paid back in 2003–04, with an option to carry the

debt forward to 2004–05 should NSW allocations in 2003–04 be less than 30 per cent on 1 September 2003.

In total, 134 GL (in addition to the 2002–03 minimum required release) was released by the Snowy Mountains Scheme to individual irrigators in MIL, with a further 4 GL released late in the season for non-MIL irrigators in New South Wales. All but 49.5 GL of this advance was paid back during 2003–04; the remaining 49.5 GL is to be paid back in 2004–05.

State diversions from the River Murray and lower Darling River are summarised in Table 3.

Table 3: Summary of state diversions (GL)

	River Murray				Darling**
Year	**NSW**	**VIC**	**SA**	**Total**	**NSW**
1982–83	1638	1637	707	3981	27
1983–84	1765	1318	508	3590	*373
1984–85	2163	1749	547	4460	280
1985–86	1939	1580	568	4087	73
1986–87	1780	1472	454	3706	72
1987–88	2104	1845	521	4469	180
1988–89	1411	1337	548	3296	322
1989–90	2068	1651	580	4299	216
1990–91	2277	1856	627	4760	140
1991–92	*2600	1827	589	*5016	98
1992–93	1589	1147	482	3218	77
1993–94	1972	1407	587	3967	156
1994–95	2123	*1990	663	4776	52
1995–96	1904	1742	568	4215	169
1996–97	2223	1745	600	4569	234
1997–98	1863	1696	664	4223	71
1998–99	1978	1766	690	4434	140
1999–00	1212	1540	642	3395	85
2000–01	2048	1712	662	4422	246
2001–02	2113	1916	621	4650	126
2002–03	879	1745	*737	3361	107
2003–04#	**1284**	**1488**	**610**	**3382**	**23**

\+ Data are based upon the official MDBC record for the reporting requirements of implementation of the 'Cap' on diversions.

* Record high diversion.

** Includes releases from Cawndilla Outlet to the Great Darling Anabranch.

\# Data presented for 2003–04 is estimated based on hydrographic and operational data.

Water trade

Large volumes of water were traded temporarily across the River Murray system this year. The low allocation level in South Australia early in the season saw a net total of more than 20 GL traded into South Australia before the end of summer. Trade for the remainder of the season saw water being sold back upstream (mostly to New South Wales), so that by the end of the year the net trade into South Australia was about 6 GL. Low allocation levels in New South Wales resulted in about 2 GL of net trade from Victoria to New South Wales.

Large volumes were permanently and temporarily traded out of the Goulburn Valley resulting in about 60 GL of water being available. RMW called on 25 GL of this to supplement low storage levels in Lake Victoria. Given the very low probability of spill from Eildon, and the prospects for River Murray channel capacity constraints next season, the balance of 35 GL remains in storage in the Goulburn system.

About 50 GL was available from the Murrumbidgee Valley account this year. About 24 GL was transferred to the River Murray via the Snowy Mountains Scheme and a similar volume was delivered past Balranald to clear the account and supplement low levels in Lake Victoria.

RMW adjusted state water shares and deliveries to take account of permanent trade (cumulative from the start of the Pilot Interstate Water Trading Project in 1998 to June 2003) and temporary trade during 2003–04. Total net adjustments made to water accounts were 3.5 GL from Victoria to New South Wales, 18 GL from New South Wales to South Australia and 12 GL from Victoria to South Australia. The adjustments of flow to South Australia for trade ceased after the end of April in accordance with Schedule E to the MDB Agreement. Therefore, the large volumes of water temporarily traded out of South Australia late in the reporting period have not yet been accounted for and will be carried over to next year.

Flow to South Australia

Low opening storage levels and the water-sharing rules under the Murray-Darling Basin Agreement resulted in South Australia electing to take a reduction in its entitlement flow of 80 per cent in June and July, 70 per cent in August and 85 per cent in September. However, improved inflows to the upper storages and from Victorian tributaries helped to relieve this position and bring above entitlement flows to South Australia during August, September and October totalling some 268 GL. Total flow to South Australia for the year was 2023 GL, 173 GL above its entitlement of 1850 GL.

This flow was significantly lower than the median annual flow of 4900 GL, but was higher than the full entitlement (1850 GL) received during the previous season.

By the end of July 2003, South Australia had experienced the longest period on record of regulated flows (a total of twenty-seven months, commencing in May 2001). The Barrages remained closed until September 2003, creating the longest period on record that they have remained closed (twenty-one months from the

end of November 2001 to September 2003, compared with a period of seventeen months in the 1967–68 drought).

The pattern of flow to South Australia during 2003–04 contributed to water quality problems in the lower reaches of the River Murray. Fortunately, the above entitlement flows, combined with local inflows from the Mt Lofty Ranges in spring, filled lakes Alexandrina and Albert and permitted a small release of water through the Barrages in September 2003. This release significantly reduced the salinity of water in the Goolwa channel and brought some ecological benefits to the Coorong and Mouth area.

Operation of storages

The opening storage for 2003–04 was very low (2070 GL or 24 per cent active storage capacity—the lowest since 1979. This was more than 2500 GL lower than the storage at the start of the previous season.

Most of the opening storage was held in Dartmouth Reservoir, as in 2002–03. Fortunately good spring rains boosted inflows to both Hume and Dartmouth Reservoirs. The rise in level in Hume delayed the start of water transfers from Dartmouth to Hume until summer and substantially reduced the volume of these water transfers. The volume transferred was only 204 GL, which was much lower than the large volume transferred the previous season (2436 GL). Dartmouth storage increased by 712 GL to 1889 GL, or 48 per cent capacity over the season.

Transfers of water from Hume to Lake Victoria commenced much later this season compared to last season (which experienced the earliest start ever). These transfers were carefully managed over the season with the aim of drawing down to a low-level storage in Lake Victoria whilst ensuring the continued supply of South Australia's entitlement flow—this operation conserved water in the upper Murray storages so as to maximise water availability to the three states in future years. Similarly, storage in Hume Reservoir was drawn down to a low level by the end of the season to conserve water in Dartmouth Reservoir. Storage in Hume was reduced to 224 GL (7 per cent capacity) on 17 May 2004.

Lake Victoria storage reached capacity (680 GL) on 11 October 2003 and was drawn down to 194 GL (29 per cent capacity) by 15 May 2004. This pattern of lake operation did not require any release of additional water to satisfy cultural heritage requirements at Lake Victoria.

Storage in Lake Victoria began to rise slowly from a low of about 280 GL during July 2003, assisted in part by the reduction in South Australia's entitlement at this time. Storage in Lake Victoria began to rise more rapidly by mid-August as unregulated flows originating from tributaries downstream of Hume arrived. These flows were insufficient to warrant delaying the refilling of Lake Victoria until later in spring (as may be required by the Lake Victoria Operating Strategy), hence they were harvested at the maximum rated inflow capacity via the Lake Victoria Inlet Regulator during late August to late September. The storage reached full supply

level of 27 m AHD (metres above mean sea level) on 11 October, and remained at capacity until the end of October.

This represented the first time that Lake Victoria was able to be refilled to capacity since the 2000–01 season.

As a result of low tributary inflows during summer and autumn, combined with the lack of water available to MDBC in Menindee Lakes, Lake Victoria was drawn down to just 29 per cent capacity, or a level of 22.25 metres, by the end of the 2003–04 irrigation season. Other than the deliberate drawdown of Lake Victoria to a level of 21.5 metres (19 per cent capacity) for the cultural heritage survey in 1999, this represented the lowest level that Lake Victoria had been drawn down to for operational purposes since May 1986. This drawdown of Lake Victoria for water supply purposes exceeded the drawdown targets for vegetation outcomes under the Lake Victoria Operating Strategy (part of the Cultural Landscape Plan of Management). Hence, there was no requirement to release additional water from Lake Victoria.

Storage in Menindee Lakes at the beginning of July 2003 was extremely low at 70 GL (4 per cent capacity), the lowest volume held in Menindee Lakes since construction in the early 1960s. The lakes remained in NSW control as required by the Agreement—this provision allows New South Wales to manage a 'drought reserve' to meet the needs for irrigation, stock and domestic and town water supply (including Broken Hill) in the lower Darling River and Darling Anabranch.

(Photo: L. Palmer)

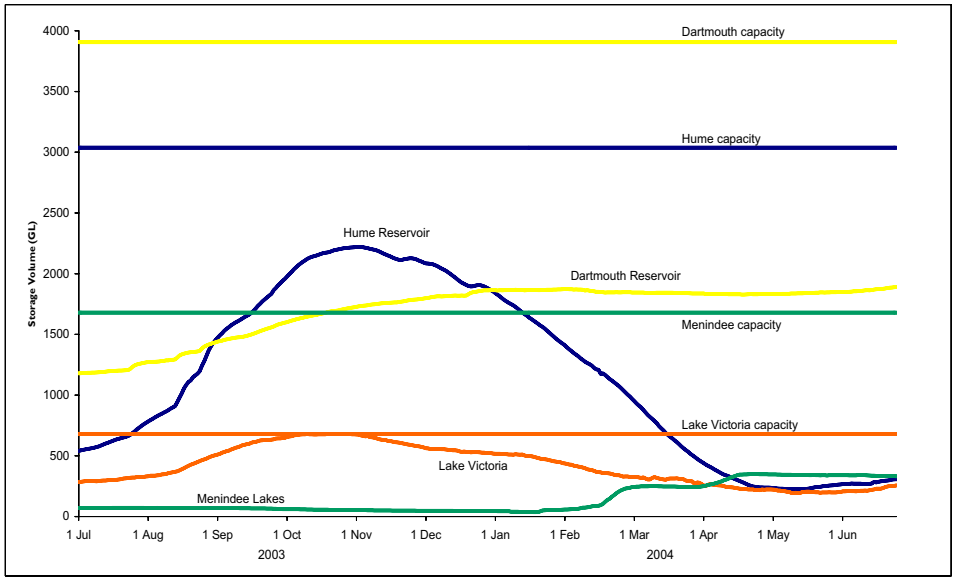
Menindee Lakes—inlet to Lake Cawndilla during drought.

Inflows to Menindee Lakes remained extremely low during the first half of 2003–04. Floodwaters from Queensland and northern New South Wales brought some relief to the Lakes and its environs from January 2004. The volume of water reaching the lake was, however, relatively small, sufficient only to fill Lake Wetherell and partly fill Lake Pamamaroo. New South Wales made a small environmental release to the lower Darling River to reinstate flows that had been reduced to zero in December 2003 (to conserve water supplies for Broken Hill and other water users). Unfortunately, very high water temperatures and low dissolved oxygen levels resulted in a significant fish kill along parts of the lower Darling River.

By the end of June 2004, the MDBC's active reserve storage was higher than at the start of the season—it had reached approximately 2785 GL (30 per cent active storage capacity), mainly in Dartmouth Reservoir. This slightly improved the water resource outlook for the following season, compared with the start of this season.

Storage behaviour resulting from the operation of the MDBC's four major storages is shown in Figure 6.

Figure 6. Storage behaviour resulting from RMW's operation of the MDBC's four major storages



The Snowy Mountains Scheme

Total active storage in the Snowy Mountains Scheme decreased over 2003–04 from about 44 per cent of active capacity at 1 May 2003 to 40 per cent at 1 May 2004. The decrease in total storage comprised a slight increase in storage in the Snowy–Murray Development and a large reduction in storage in the Snowy–Tumut Development. Inflows to the Snowy–Murray Development were close to median for the year.

The approved release for 2003–04 was up to 1468 GL from Murray 1 Power Station (for the 12-month period 1 May 2003 to 30 April 2004), made up of:

- 1062 GL required annual release (previously referred to as the minimum notification release)
- less 138 GL advanced from this water year for use in the previous year 2002–03
- 544 GL of above-target water (accumulated underdraw) available at 1 May 2003.

The actual (accounted) release from Murray 1 Power Station for the twelve months to 30 April 2004 was 998 GL, made up of:

- 1062 GL of required annual release
- repayment of 89 GL of the 138 GL advanced in 2002–03
- an additional release of 25 GL of above-target water in 2003–04 associated with special arrangements put in place for the construction of outlet works at Jindabyne Dam.

The remainder (49.5 GL) of the water advanced in 2002–03 (138 GL) and not repaid in 2003–04, is to be paid back in 2004–05. Also, a notional release of 24 GL of Snowy–Tumut water was made through the Snowy–Murray Development in 2003–04.

A special arrangement was entered into in January 2004, with MDBC agreement, to permit additional pumping from Lake Jindabyne to facilitate the construction of Jindabyne Dam outlet works (to provide for the release of environmental flows to the Snowy River in the future).

A range of special water release arrangements were also entered into on the Snowy–Tumut Development, to increase irrigation supplies along the Murrumbidgee River system.

The pattern of releases from Murray 1 Power Station during 2003–04 was very different from that of the previous year. In 2003–04 more than half of the year's total release from Murray 1 Power Station occurred in the first four months of the year. This pattern was above the guaranteed minimum projected release in Snowy Hydro's operating plan for 2003–04, unlike the release pattern experienced the previous season, which created concerns for RMW regarding the operation of Hume and Dartmouth Reservoirs.

Environmental report

River flows

Following the extremely dry conditions experienced in 2002–03, it took some time before the rains experienced in parts of the upper Murray catchments raised flows in the River Murray system. There were no spills of water from major River Murray system water storages during 2003–04 apart from a controlled release from Lake Victoria and the Barrages.

As a result of the lack of any sufficiently large and long spring 'freshes' in the river, the Barmah–Millewa Forest Environmental Allocation was not used in 2003–04, and the annual allocation was loaned to irrigators, credited and carried over for use in a future season. However, several small flushes from the Kiewa and Ovens Rivers did result in some limited watering of parts of these forests during spring.

Inflows to the River Murray from both the Goulburn and Murrumbidgee Rivers remained very low over 2003–04 and were generally confined to low regulated flow rates. This limited opportunities for improving environmental flow conditions in the River Murray system.

Darling River flow upstream of Menindee Lakes was extremely low from October 2001 until January 2004. Most of the water reserves remaining in Menindee Lakes were contained in Lake Wetherell. The salinity of water in Lake Wetherell had risen by December 2003 to about 8000 EC in the deeper parts of the lake. New South Wales ceased releases from the lake for a short period in December 2003 to conserve water. An environmental release of water from Lake Wetherell was made in January 2004 to reinstate flow in the lower Darling River.

Extended drought conditions caused continued stress to River red gum communities downstream of Barmah–Millewa. Concerns over the widespread decline of River red gum communities downstream of Euston increased over 2003–04.

Water quality

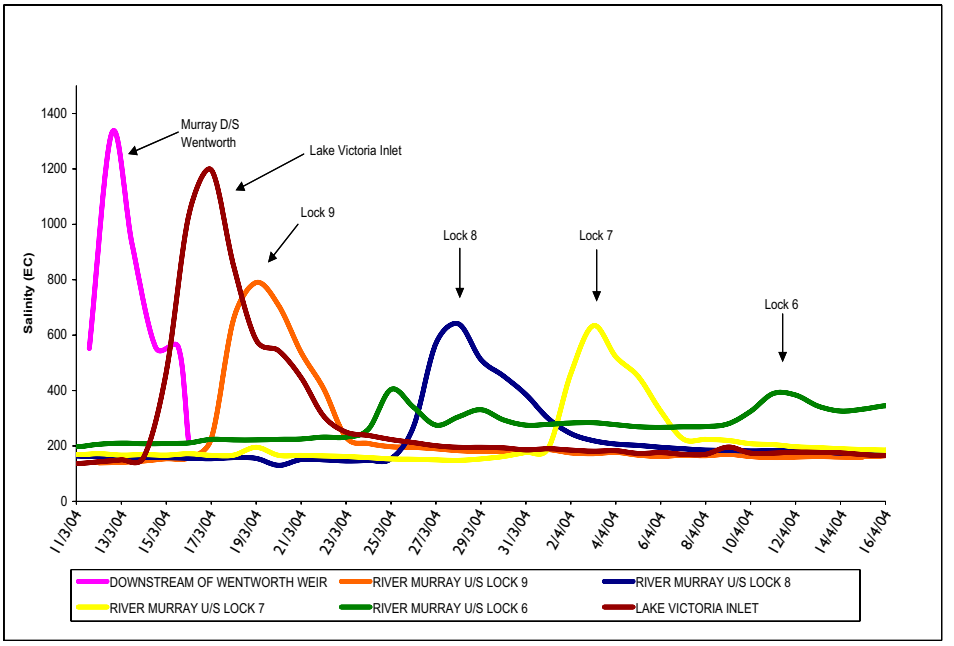
The severe bushfires of early 2003 burnt large areas of the upper Murray catchment, creating a potential for significant impacts on in-stream and reservoir water quality should heavy rainfall result in large quantities of ash and sediment being washed from unprotected soils. As experienced last season, rainfall in 2003–04 was generally neither extensive nor persistently heavy, and consequently there were only short-term and relatively minor declines in water quality in some rivers.

Hume Reservoir again experienced persistent algae alerts. However, algae persisted in the lake unusually late into the season. Algal alerts occurred across most of the river system occasionally reaching high levels. High alert levels of blue-green algae were recorded in the lower Darling River during the low flow period prior to the releases from Menindee Lakes in January 2004. Algal levels in South Australia were consistently low except for some medium and high alert readings in the lower lakes and Coorong.

Salinity levels in the River Murray were generally very low for much of the year. The transfer of high-quality water from Hume Reservoir, coupled with low inflows and drainage returns due to the extremely dry conditions, resulted in some of the lowest salinity and turbidity readings observed. The river salinity at Morgan averaged 360 EC in February, which is approximately 260 EC below the average of about 620 EC observed over the last twenty years. Salinity levels in parts of the lower lakes, however, were high early in the season (4000 to 5000 EC) and fell to about 1000 EC in October 2003. Salinity levels steadily increased over the remainder of the season to about 2000 EC, with some higher readings caused by intrusions of seawater.

An unprecedented salt slug entered the Murray from the Darling River early in 2004. The peak salinity of more than 4000 EC from the Darling was reduced to about 1300 EC through mixing with fresh Murray water below Wentworth Weir (see Figure 7). A range of operational actions including mixing in Lake Victoria succeeded in reducing the size of the salinity peak to less than about 100 EC above the background river salinity. State agencies and RMW conducted extensive communication activities to advise water pumpers of the situation so that pumping schedules could be suitably re-arranged.

Figure 7. Salinity slug in the Murray and its mitigation, March–April 2004



Murray Mouth

In September and October 2003 a small release of water was made from Lake Alexandrina to the sea totalling approximately 280 GL. This was the first release since December 2001. Whilst there was some temporary widening of the channel

at the Mouth (between the tips of Younghusband and Sir Richard Peninsulas) the peak discharge and duration of release were insufficient to scour any significant volumes of sand from inside the Mouth.

The release of 280 GL between December 2001 and June 2004 can be compared to median flows to the sea of 11 400 GL per annum under natural (pre-development) conditions and 3090 GL per annum under current levels of development. Without the sand pumping project, which commenced in October 2002, it is most likely that the Mouth would have closed.

In July 2003 a second dredge was deployed to double the sand pumping capacity, with the aim of having improved connectivity between the Coorong and the sea over summer of 2003–04.

By the end of June 2004, 1.9 million cubic metres of sand had been pumped from inside the Mouth to the beaches of Younghusband and Sir Richard Peninsulas.

At the commencement of the project there had been elevated water levels in the Coorong with very little daily tidal response. By the late summer of 2004, tidal responses were consistently in the order of 200 mm per day, which was the target recommended by the project's scientific advisers.

Significant monitoring activities have been undertaken as part of, or associated with, the sand pumping project including:

- study of aerial photographs
- bathymetric surveys—inside the Mouth; surf zone; offshore
- surveys of Mouth position and size
- measuring salinity in Coorong and Lower Lakes
- measuring tide and lake levels
- observation of birds, fish and aquatic plants.

The monitoring assists short-term adaptive management of dredging and flow release and also provides valuable data for the identification of medium-and long-term trends.

The morphological models developed by consultants WBM Oceanics and Lawson and Treloar have been used to good effect to assist with our understanding of sediment transport processes at the Murray Mouth. The models have been used to optimise the size of dredged channels and will be used to develop improved operating rules for releases at the Barrages.

The Living Murray

RMW staff continued to assist The Living Murray by:

- providing modelling assistance for the further development of options aimed at improving environmental outcomes for the River Murray system
- providing operational and strategic advice on water management and likely associated effects

- assisting with the development of proposals for structural and operational opportunities for improving environmental values
- assisting with the development of the River Murray Environmental Manager function.

RMW will continue to be closely involved with these developments over the coming years.

River management activities

Hume–Yarrawonga Waterway Management Plan

During 2003–04 works continued under the 2002 river management plan for the Hume to Yarrawonga reach of the River Murray. The river management plan aims to balance water conveyance, economic production and environmental objectives for the reach. The plan has been developed in consultation with the Advisory Group for Hume to Yarrawonga Waterway Management, representing agencies from each state together with local landholder interests, local government and wider community representatives.

Implementation of the plan through the business plan of RMW is conducted in consultation with the advisory group.

Programs under the Waterway Management Plan include physical works under the Priority Reach Program and the Whole of Reach Program. In addition, the Land Management Review considered flood easements for regulated flows.

Physical works

After three years, condition assessments have been completed on six of the fourteen river reaches. A Review of Environmental Factors (REF) and physical works have been undertaken on three reaches, with two almost fully finished in relation to construction of erosion control structures: that is, Dights Creek (formerly incorrectly referred to as Travellers Creek) and Wodonga Creek. No further works were undertaken on the Boiling Downs reach due to access problems. Condition assessments were completed last year for the Hume, Ryans and Parlour reaches.

On-ground works completed last year are (across all programs):

Erosion control

- One anabranch bed control structure—pile field (Dights Creek)
- Four anabranch bank erosion control works—groynes (Dights, Carrolls Creeks)
- Four River Murray bank erosion control works—groynes
- Altogether, more than 4000 timber piles were driven. No rock armouring was undertaken during 2003–04.

Snags

- No snags removed
- Ten red gum snags realigned for navigation or erosion control reasons
- One red gum snag installed.

Willow management

- Lopping at five sites
- Poisoning at four sites
- Willow regrowth or new growth poisoned between Hume Dam and Lake Mulwala.

Revegetation

- Revegetation undertaken at 28 sites on River Murray main stem and anabranches.

Land management review

Significant progress was made during 2003–04 towards obtaining flood easements to confirm the MDBC's rights to pass regulated flows within existing channel capacity in the Hume–Yarrawonga reach. A model to provide equitable valuations for more than eighty affected properties was developed by a specialist sub-committee comprising RMW, local landholders, an independent landholder, an agricultural economist and an independent land valuer. The broad form of the easement was negotiated and agreed between legal advisors to MDBC, NSW Department of Infrastructure, Planning and Natural Resources and Goulburn–Murray Water. Consultants Hassall & Associates were engaged and commenced detailed assessments of each affected property in consultation with landholders. This process was well advanced and the first offers were close to being forwarded to landholders as the 2003–04 financial year closed.

This process is expected to continue over the next twelve to twenty-four months. Easements catering for existing operations up to and including the channel capacity for regulated flows of 25 000 ML/day will be concluded prior to an assessment of the requirement for easements at higher levels arising from possible future delivery of environmental flows.

Asset management

The assets controlled and managed under the Agreement are investigated, designed, constructed, operated and maintained, for and on behalf of the MDBC, by three constructing authorities from New South Wales, Victoria and South Australia:

- Department of Infrastructure, Planning and Natural Resources (including the operating agent for New South Wales, State Water)
- Goulburn–Murray Water
- the Minister for the River Murray (including the operating agent for South Australia, South Australian Water Corporation).

RMW exercises the MDBC's responsibilities in relation to management of the assets (see Appendix G). Daily operation and maintenance of the structures is by a collective team from the authorities of the three states totalling 120 staff. RMW values the dedicated service of this team and appreciates the commitment and pride that is evident in the stewardship of the assets.

The Senator Collings Trophy has been awarded annually for more than fifty years to the team looking after the asset judged to be the best maintained lock and weir. In 2003 the River Murray Water Advisory Board agreed that eligibility for award of the Collings Trophy should be extended to include all water storage assets of the River Murray System. The judging criteria were extended to include not only maintenance and care of the works and their surrounds but also the application of contemporary asset management practice. In 2003 the Senator Collings Trophy was awarded to Norm Boyd, Jeff Finch and Danny Burke at Lock and Weir 10 (Wentworth).

Since 1995, the investigation program was dominated by Hume Reservoir. During late 2003 the physical construction works there were completed. This has allowed remedial works to proceed at other assets including:

- Mildura Weir (trestle replacement)
- Tauwitchere and Ewe Island barrages (OH&S upgrade)
- Locks and Weirs 1 to 10 (replacement of navigable passes)
- Dartmouth Reservoir (scour protection works and safe access).

Hume Dam

Since April 1995, following a structural review of Hume Dam, the MDBC has been pursuing a program of upgrading the dam to contemporary standards. This program addressed:

- the stability of the dam itself
- the reliability of outlet works and spillway
- the capacity of the spillway under extreme floods.

Excluding considerations of spillway capacity, total cost is now expected to be approximately $81 million.

A risk assessment approach has been used to ensure that work proceeds in a priority order of most effective risk reduction. The ultimate goal is the achievement of risks that are as low as is reasonably practicable in line with Australian national guidelines and international best practice.

Expenditure on the works for 2003–04 was $1.2 million, bringing total expenditure to date to $79.1 million. Construction work was completed on Embankment 4 (the bank on the New South Wales abutment). A detailed review in 2001–02 had recommended that it should be modified to provide a filter zone on the downstream side and thus further reduce the risks to the dam were completed during the year.

Works included enhanced drainage of the downstream face and toe. Other works related to tidying the site after nearly seven years of remedial works and completing construction of a retaining wall between power station and switchyard to stabilise the slope downstream of the embankment. A new lookout was also constructed.

The Department of Infrastructure, Planning and Natural Resources has been investigating the determination of extreme flood estimates for the Hume Dam and the consequence of these estimates on spillway capacity. In Australian terms, the catchment area of more than 15 000 sq km is large and this has necessitated development of improved ways of estimating extreme floods for large catchments.

This leading-edge research has progressed slowly but steadily and good progress has continued to be made over the last year. RMW's Technical Review Committee has provided valuable advice throughout this process. During the year significant progress was made on identification, testing and calibration of both event based and continuous rainfall/runoff models. In addition, a hydraulic model has been developed for the reservoir and upstream flood plains on both the Murray and Mitta Mitta arms. Extensive aerial and on-ground surveys were required for this modelling.

A comprehensive cycle of surveillance readings continues to monitor the performance of the modified embankments. Continuing deformations have been consistent with design predictions. Inflows in 2003–04 only resulted in the lake level reaching 73 per cent of capacity (2222 GL and maximum level elevation above sea level 187.58 m on 3 November 2003). Accordingly, the detailed program agreed for the first two fill cycles will be continued until after the lake next fills.

A number of additional design studies were commenced addressing the lower priority risks, which remained outstanding, including:

- earthquake capacity of spillway hoist deck piers
- structural adequacy of spillway gates
- water proofing of joints in spillway dissipater
- earthquake capacity of lower section of northern training wall
- adequacy of parapet wall on Embankment 1.

Dartmouth Dam

At Dartmouth Dam, further progress was made with the installation of access walkways across the downstream face. The walkways allow safer access for deformation surveys and reading of surveillance instrumentation. An innovative design, which takes account of the requirement for manual construction on a steep rockfill slope and readjustment to account for ongoing deformation of the main embankment, has been developed.

Work also continued on protection of areas of the spillway cascade, which had eroded during previous flood events.

Mildura Weir

In June 2003, work had commenced on a major overhaul of the lock chamber including:

- replacing four filling valves
- replacing one lock gate
- installing improved walkways on lock gates
- repainting three existing lock gates.

Work was completed by September.

Other locks and weirs

A program to improve safety for operators of locks was continued with a system of concrete barriers being installed at Lock 4 to provide safer transit for boats when the lock remains in use on rising or falling floods. In addition, handrails were installed at Locks 11 and 26 to provide enhanced safety for operating staff.

A comprehensive performance review of custom-built, track-mounted mobile cranes at locks and Weirs 1 to 10 and 15 had been undertaken in 2002–03. During 2003–04 major overhauls of the cranes at Locks 1 to 9 were undertaken to ensure that these cranes remain fully serviceable as they move closer to their design lives.

Barrages

Continuing good progress on occupational health and safety and operational flexibility improvements at the Tauwitchere and Ewe Island Barrages was made through the year. Upstream handrails were complete on both structures and downstream handrails were nearly complete on Tauwitchere Barrage. When finished over 4000m of handrail will have been installed. Lift and latch mechanisms are being installed on the 253 tainter gates to improve ease and safety of operation. A modified means of handling stoplogs in the remaining 180 bays is also being installed.

Ten gates at Tauwitchere Barrage have been fitted with hydraulic operating mechanisms, which can be remotely operated from the Goolwa Barrage. These gates will be programmed to close automatically when downstream levels rise and are nearly as high as upstream lake levels. This arrangement will help prevent reverse flow of saline water into the fresh water of Lake Alexandrina and provide additional flexibility for environmental management of the Lower lakes and Coorong. A further 20 gates will be similarly modified in the coming year.

The manually operated lock at Tauwitchere Barrage has been overhauled to make operation safer and easier. Upstream and downstream landings have also been added to make it easier for boat operators to gain access for lock operation.

At Mundoo Barrage a prototype vertical axis spindle gate has been fabricated and installed, ready for testing to confirm the adequacy of design prior to fabrication of further gates. These gates will replace concrete stoplogs, which can only be accessed by removing deck units to gain access, which is a slow and awkward process.

Navigable Pass and Fishway Project

The implementation phase of the Navigable Pass and Fishway Project commenced in mid-2001. The project is being managed by SA Water under the direction of a project steering committee, chaired by RMW, with representatives of SA Water; Department of Water, Land and Biodiversity Conservation (South Australia) and State Water (New South Wales).

The project involves:

- replacing the navigable pass section of the weir
- replacing piers constructed in the 1960s when the navigable pass sections were narrowed
- constructing a vertical slot fishway.

The first two locks and weirs to be modified were Locks 7 and 8 as these are the two that most frequently require removal and reinstatement of navigable pass sections during floods.

Concept designs for the navigable pass section were finalised in early 2001 following testing of a prototype of the proposed removable bridge section, which

will sit on top of reduced height concrete piers. The stoplogs and bridge sections will be removed during floods, and vessels will pass over the half height piers that will be submerged by at least 1.9 metres of water.

To oversee the fishway program and to provide advice to the MDBC on fish passage issues throughout the Basin, the MDBC has established the Fish Passage Reference Group (FPRG). The FPRG is comprised of fish passage specialists from New South Wales, Victoria, South Australia and Queensland; an independent fish scientist; and engineers and river operators with an interest in fish passage. It is chaired by an officer of the MDBC.

During the year activities on the Navigable Pass and Fishway Project have included:

- completing design of fishways at Locks 9 and 10
- calling and assessing tenders for construction works at Locks 9 and 10
- completing construction of works at Locks 7 and 8
- commencing re-design of works for Lock 10
- continuing the fish monitoring program.

Initial testing in late summer and autumn of the fishway at Lock 8 was very encouraging, exceeding the design specifications, with passage being achieved by species and size ranges of fish not previously known to be migratory. Target species and sizes were also achieving passage.

The program of construction will continue until 2008–09, with works being undertaken on up to two locks and weirs at any one time.

Occupational health and safety

The safety of staff, their families and the general public is a high priority at all River Murray assets. A number of initiatives with a safety focus were continued in 2003–04, including:

- further progress towards replacement of navigable passes
- installing safety barriers and handrails on locks
- removing trip hazards at Locks 10 and 15
- further progress towards the OH&S upgrade of Tauwitchere and Ewe Island barrages
- progress on design of gate to replace stoplogs at Mundoo Barrage
- improving documentation of OH&S risk assessment processes and safe working procedures
- improving access onto the downstream face of Dartmouth Reservoir
- replacing locking valves on lock cranes
- provision of landings at locks and weirs and at Tauwitchere lock
- tree management
- new or enhanced fencing.

Performance report

KPA 1: Water storage and supply

Sub-output

> *Water storage and water delivery systems that are efficient and cost-effective, and measures which account for off-site impacts*

Performance assessment:

- water delivered according to the Agreement and to states' requests (to supply irrigation, towns and other uses, and for water quality and environmental purposes)
- cost effectiveness of operating existing water control infrastructure
- agreed assistance to land holders affected by the MDBC's water operations provided.

Water delivery

River Murray Water accounts and water availability for the states were regularly prepared by River Murray Water and agreed to by its Water Liaison Committee. River operations plans were prepared to ensure water was delivered to the states according to water available and within river system constraints and budget.

Cost effectiveness of operations

The operation of the water control infrastructure was cost effective. (For additional information about activities undertaken during the year, see Asset Management, page 36.)

Assistance to landholders

In March 2000 the MDBC had announced a program involving ex gratia payments to landowners in the Mitta Mitta Valley, in relation to the impacts of the operation of Dartmouth Dam on pasture productivity. Work has continued through the year on finalising arrangements with the small number of landowners for whom payments are still to be finalised.

Good progress has been made on a program to obtain flood easements in the Hume to Yarrawonga reach of the River Murray to confirm the MDBC's rights to pass regulated flows within existing channel capacity (see page 35).

At Lake Victoria the MDBC has also purchased two properties (see page 89) as a means of addressing unacceptable grazing pressure on the Lake Victoria foreshore. Negotiations were also progressed with a number of other landowners whose land is affected by river operations.

KPA 2: River salinity mitigation

River salinity targets

For the protection of key assets and values across the Basin, and for maintenance of water quality of the shared rivers, a basin salinity target (Morgan Target) to maintain the river salinity at Morgan at less than 800 EC for 95 per cent of the time during the benchmark period has been established.

Table 4: Historical salinity data at Morgan

Time interval	Average (EC)	50 percentile (EC)	95 percentile (EC)
1 year July 2003 to June 2004	422	390	573
5 years July 1999 to June 2004	495	507	670
10 years July 1994 to June 2004	544	537	798
25 years July 1979 to June 2004	605	581	1020

Jointly funded salinity mitigation schemes

RMW operates seven jointly funded salinity mitigation schemes along the banks of the River Murray. These schemes intercept saline water flows that would otherwise enter the river, thereby increasing its salinity to unacceptable levels.

The efficiency and capacity of existing schemes is being progressively increased, and further schemes are being investigated and constructed. The salt is captured in evaporation basins and investigations are continuing into commercial use of the resulting products. Successful disposal will place salinity mitigation on a more sustainable basis.

Major state schemes

Barr Creek Drainage Diversion Scheme (Victoria)

This scheme was effective in reducing the salt load reaching the River Murray. With the exception of a number of short duration pump outages due to either power failure or repairs, pumping from Barr Creek was in accord with the current operating rules. Even so, a malfunction in the operation of the gates on the new Barr Creek weir in March 2004 saw approximately 60 ML of saline water being discharged to the River Murray. As this discharge was of short duration, mixing in the main stem of the River mitigated downstream impacts. Remedial action has been taken to correct the logic in the gate controller so that such an incident is not repeated.

Mildura–Merbein Scheme (Victoria)

This scheme operated in accordance with the operating criteria, although pumping rates on some of the wellpoints were slightly below design capacity. Due to a number of re-occurring operational problems, four of the pumping sites have been out of service for most of the year. Remedial investigations are continuing in conjunction with the investigations to optimise salt interception within the Sunraysia region.

Due to high flows in the River Murray during September 2003 saline water was released from Lake Hawthorn to the River in accordance with the agreed operating rules. During this period a total of 240 ML of saline water was released. As a result of these releases together with the impact of improved irrigation practice resulted in a reduction of irrigation drainage water requiring disposal, pumping to the Wargan Basins during the year was minimal. This has resulted in maintenance of low storage volumes in these basins.

Mallee Cliffs Interception Scheme (New South Wales)

Scheme performance during the year has ensured that the scheme continues to significantly reduce impacts of saline groundwater on downstream salinity. Efforts are continuing to optimise the performance of the scheme to provide the best possible outcome for the River Murray. Investigations have commenced on developing an alternative enhanced leakage pit to ensure continual operation whilst the main enhanced leakage pit is out of service for maintenance.

A detailed performance review commenced during 2003–04 as part of the 5-year rolling review requirements under Schedule C to the Agreement.

Buronga Salt Interception Scheme (New South Wales)

The Buronga Interception Scheme was originally built in 1979 with upgrade work carried out in 1988. In June 2004 approval was granted to rehabilitate and augment this scheme to replace the deteriorating infrastructure and provide additional interception capacity as part of the integration of salt interception in the Sunraysia Region.

Woolpunda Salt Interception Scheme (South Australia)

In general, the Woolpunda Salt Interception Scheme has achieved its design targets. Consequently the pumping rates were reviewed resulting in a general reduction of flow and opportunity to maximise off-peak power use.

Waikerie Salt Interception Scheme (South Australia)

A performance review of the Waikerie Salt Interception Scheme in 2002–03 indicated that at a number of locations the pumps are achieving their design targets, but there is an indication that some of the extraction bores are overpumping and will require adjustment. This has resulted in the pumping rates of individual bores being reviewed to minimise pumping whilst maintaining scheme effectiveness.

An extensive review has been carried out to identify further interception opportunities to the west of these works as well as possible enhancements of the original works. It is anticipated that the identified opportunities will be presented to the MDBC for consideration during 2004–05.

Rufus River Salt Interception Scheme (South Australia)

All 4 wellpoint lines have been successfully operating in accordance with the operating criteria and have drawn the groundwater levels down to just below target. A detailed performance review of this scheme commenced in 2002–03 to assist in optimising scheme operation and to determine if there is opportunity to expand this scheme to further reduce salt inflow to the River Murray.

KPA 3: Navigation services

Sub-output

Navigation services which are cost-effective

Performance assessment:

- quality of navigation services at weirs
- cost effectiveness of navigation services.

Performance report:

Quality navigation services at weirs

There were no sustained unplanned outages of locks. On occasions minor breakdown of hydraulic systems delayed lockages by up to a few hours.

A planned outage was undertaken at Mildura Weir to allow for refurbishment of lock gates and valves and replacement of a damaged lock gate. This provided an opportunity to paint the other three gates.

Planned outages are normally notified in advance to key river users.

Minor planned disruptions were also incurred at Locks 4 and 7 to allow the installation of concrete barriers on top of the lock chamber and at Locks 7 and 8 when access was required for construction equipment associated with construction of new navigable passes and fishways. In such circumstances lock staff endeavour to keep boat operators as informed as possible.

During major events, such as the celebration of 150 years of navigation on the Murray from August to October 2003, lock staff work with event organisers to facilitate safe passage of large numbers of vessels in as short a time as possible. The efforts of staff are much appreciated by participants in these events.

KPA 4: Other services

Sub-output

> *Incidental services from River Murray assets which are provided in a business-like manner*

Performance assessment:

- Additional revenue achieved from River Murray Water infrastructure.

Additional revenue

This performance area relates to services provided by River Murray Water in conjunction with, but in addition to, its core business activities. The major components are the provision of water to generate hydro-power, the renting of land surrounding River infrastructure and accommodation provided to workers.

Operation of power stations at Hume Dam and Yarrawonga Weir continued throughout the 2003–04 year according to downstream flow requirements and generation capacity. At Dartmouth Dam, Southern Hydro utilised some of its water entitlement to generate additional electricity during periods of high electricity demand.

Seasonal factors can have an impact on performance in these areas, particularly hydro-generation, and a satisfactory return from these sources in one year is not a guarantee of a similar level of return in a subsequent year. With only 204 GL released at Dartmouth in 2003–04, revenue was well down on the previous year, when 2517 GL were released.

River Murray Water: Triple bottom line (sustainability) report

Introduction

River Murray Water has adopted sustainability as one of its guiding principles, and is moving to integrate this philosophy into its culture, its operations, and its management systems. The organisation believes that this approach is consistent with the intent of the COAG water reforms that led to its formation, and with the objectives of its stakeholders and community expectations. It is also in harmony with the 2001 independent pricing review that proposed the introduction of an 'environmental dividend'.

As part of this emphasis, River Murray Water will account for its performance in promoting sustainability by producing an annual 'triple bottom line' report. The report will cover key environmental, social and economic issues.

Sustainability strategy

The RMW strategy is founded on the *Vision for River Murray Water*, which has been formally endorsed by the RMW Board and the Murray-Darling Basin Ministerial Council:

> *Within agreed financial, social and environmental objectives, to sustain the supply of water in the River Murray System.*

This vision is carried forward in the *Strategic Plan 2002–2007*, which contains environmental consciousness as one of its core values and principles:

> *We will respect and care for the natural environment, promote sustainability, and assess the social, environmental and economic effects of our actions.*

This approach is reflected in the 53 specific strategies that are documented in the *Strategic Plan 2002–2007*, together with performance indicators and target times for accomplishment.

Social bottom line: social objectives

Staff

RMW is a small, strategically focused management unit. In fulfilling its operational responsibilities, it also utilises the services of:

- constructing authorities (state government organisations that carry out investigation, design, construction, operations and maintenance of works)
- long-term contractors, who are engaged by constructing authorities to undertake ongoing tasks such as stream gauging
- individual contractors, consultants and suppliers, who are engaged as necessary for specific tasks.

Current staff numbers that are effectively dedicated to River Murray Water activities are as follows:

River Murray Water	21 staff (3 management, 12 professional, 4 technical, and 2 administrative and support)
Constructing authorities	120

For its own staff, RMW assumes direct responsibility for training, career development, occupational health and safety and succession planning. Constructing authorities employ staff who are primarily engaged in RMW activities. Some of these staff are located at structures along the river that are not readily accessible or not well supported with normal community services. RMW takes a special interest in their wellbeing and in the level of amenity available to them.

Occupational health and safety

River Murray Water functions include the operation and maintenance of a large number of specialised structures that can incur unusual occupational health and safety risks to both the staff and the general public. While vulnerability to malicious damage has been generally assessed as low, a number of projects have been carried out as part of a program to systematically reduce health and safety risks, involving such things as the major refurbishment of structures, modifications to navigable passes, the extension of handrails and the mandatory use of safety harnesses and buoyancy devices.

Community relations

RMW's customers are the states of New South Wales, Victoria and South Australia. RMW has no direct or formal relationship with the ultimate users of the water that it delivers, or with the communities that are affected by its operations. Nevertheless RMW seeks to build cooperative and collaborative relationships with these communities through:

- active participation with community organisations in the development of relevant management plans
- publication of routine operational advice and other significant events (weekly report and flow/capacity data on website)
- providing safe and enjoyable access to sites that it controls, consistent with security considerations. Public access to structures and the surrounding areas is encouraged where possible, with recreation facilities such as picnic areas and information bays.

As well as providing public information at its sites, RMW contributes to a range of public education activities including the briefing of overseas delegations.

Environmental bottom line

Managing the river system

Central to RMW's environmental concern is management of the river system itself. Within the organisation's fundamental responsibility to deliver water in accordance with entitlements, RMW seeks to minimise undesirable environmental impacts of interventions that have taken place and obtain the maximum available environmental benefits from activities.

Careful attention was paid to river management during this year of continuing drought as system inflows remained low. River management was dominated by releases from Hume Dam to meet downstream consumption and a small spring flush, which resulted in excess flows to South Australia of about 270 GL. Notwithstanding good rainfall in south-east Queensland and northern New South Wales in January and February 2004, Menindee Lakes remained under NSW control in accordance with the Murray-Darling Basin Agreement.

Some of the key actions undertaken include:

- recognising river channel limits (River Murray–Barmah Choke) in systems operations
- minimising unseasonal forest and wetland inundation in summer
- minimising algal blooms as far as possible
- mitigating impacts in the Murray below Wentworth of salinity peaks mobilised by small flows in the lower Darling, following record low flow period due to drought
- regulating releases from barrages at Lake Alexandrina to reduce salinity in the Goolwa Channel and Coorong, to enhance fish spawning and to provide other ecological outcomes.

Salinity mitigation

River Murray Water operates seven jointly funded salinity mitigation schemes along the River Murray. These schemes intercept saline water flows that would otherwise enter the river, thereby increasing its salinity to unacceptable levels.

The efficiency and capacity of existing schemes is being progressively increased, and further schemes are being investigated and constructed. Construction commenced on new schemes at Pyramid Creek and Bookpurnong, whilst a major refurbishment of the Buronga Scheme was also commenced. The salt is captured in evaporation basins and investigations are continuing into commercial use of the resulting products. Successful disposal will have the effect of placing salinity mitigation on a more sustainable basis.

Extended drought conditions have resulted in relatively low salinity in the lower river Murray during 2003–04. The principal contributing factors were:

- low tributary inflows
- lower groundwater levels on the flood plain hence reduced discharge of saline groundwater
- effective operation of salt interception schemes.

In the lower lakes, however, the limited flow to the sea has resulted in an accumulation of salt. Effectively, much of the salt that has passed downriver continues to be stored in the lower lakes.

Electricity generation and consumption

Most activities of River Murray Water are not energy-intensive, but the operation of salinity mitigation schemes requires pumping and is a modest energy user, consuming less than 10 GWh per annum. Electricity consumption is minimised by careful control and good maintenance.

This consumption is more than offset by the production of 'green' hydroelectric power from water stored in structures operated by River Murray Water. Hydro

power stations at Dartmouth and Yarrawonga are operated by Meridian Energy, whilst the power station at Hume is operated by Eraring Energy.

Economic bottom line

Commercial structure

RMW operates as a business unit of the Murray-Darling Basin Commission. Its revenue comes primarily from the three states that are its customers, with charges based on a surrogate pricing model. Charges are set on a 'break-even' basis and no dividends are paid.

A summary of the income and expenditure statement for 2003–04 is given in Table 5. Table 6 shows the volumes of water delivered for the year.

Table 5: River Murray Water income and expenditure, 2003–04

	NSW $'000	Vic. $'000	SA $'000	2004 Total $'000	2003 Total $'000
INCOME					
Refund of contributions					
Water storage and supply—access	8 512	7 269	3 105	18 886	20 210
Water storage and supply—consumption	3 648	3 115	1 331	8 094	8 661
Salinity mitigation	4 600	4 600	4 600	13 800	6 062
Specific beneficiaries	1 003	1 003	1 622	3 628	3 061
Subtotal (Income from primary customers)	**17 763**	**15 987**	**10 658**	**44 408**	**37 994**
Hydro-generation				538	2 191
Other operating income				519	507
Interest				982	845
				46 447	41 537
Add: 2002–03 carried forward				8 925	10 967
Less: 2003–04 carried over				-3 713	-8 925
Total income				**51 659**	**43 579**
RECURRENT EXPENDITURE					
Water storage and supply				18 382	16 773
Salinity mitigation				3 104	3 112
Navigation				1 574	1 275
Recreation and tourism				695	612
Other				298	109
Total recurrent expenditure				**24 053**	**21 881**
OPERATING SURPLUS (available for investigation & construction)				**27 606**	**21 698**
Commonwealth contribution				6 957	5 927
TOTAL AVAILABLE FOR INVESTIGATION AND CONSTRUCTION				**34 563**	**27 625**
These funds were applied to investigation and construction expenditure of:				**25 455**	**22 914**

Table 6: State diversions from the River Murray and the Lower Darling River, 2003–04

	River Murray Water (GL)*
New South Wales	1 284
Victoria	1 488
South Australia	610
Total	**3 382**

* Operational data, subject to revision

Asset sustainability

During 2003–04 good progress was made on drafting legislation to progress amendments to the Murray-Darling Basin Agreement which, when enacted, will allow the adoption of maintenance and renewals annuities. The purpose of such annuities is to enable funds for the renewal, replacement and refurbishment of infrastructure assets to be provided on a relatively consistent basis from year to year rather than raising the funds in the year in which the expenditure is actually incurred.

This will achieve stability in operating costs from year to year and is consistent with COAG water reform principles. It also provides a sustainable approach to the long-term operation of the infrastructure assets controlled by RMW and the preservation of their service potential.

Economic impact in the region

Approximately 94 per cent of RMW expenditure is in the states that are its customers. In 2003–04, a total of $42 million was expended by constructing authorities (state government agencies in the three states) in connection with RMW activities.

Part 3

Photographs by (clockwise from bottom left): Phil Pfeiffer; Arthur Mostead; Peter Solness; Jane Roots

4. Natural Resources Business

Strategic directions

Throughout 2003–04 the Natural Resources Division maintained a high level of knowledge generation and input to policy development across a broad range of issues in the Basin.

Strategic investments were made to progress the development or implementation of Basin-wide initiatives, such as the Salinity Management Strategy, the Native Fish Strategy and the Sustainable Rivers Audit.

Further, a number of Basin-wide knowledge activities were completed:

- The Landmark Project, investigating land management practices in the Goulburn Broken (Vic), Billabong Creek (NSW) and Condamine (QLD) catchments of the Basin, developed clear insights into the interdependencies of economic, social and biophysical determinants of natural resources condition.
- The Watermark series of projects explored water sharing, water policy formulation and information management for the irrigation industry.
- The Groundwater Status Report documented groundwater resources, their usage and condition across the Basin.

Ongoing support was also provided for the Murray-Darling Freshwater Research Centre to develop technical knowledge of riverine ecology through laboratories at Mildura, Albury and Goondiwindi.

Issues relating to Indigenous participation and advice in the management of all natural resources in the Basin were identified at a Basin Gathering of Indigenous nations and subsequently progressed through the development of an Indigenous Action Plan.

The Division's activities were dominated, however, by The Living Murray. Significant resources were committed to:

- investigating water recovery options in conjunction with Catchment Management Authorities and irrigation industries throughout the Murrumbidgee, Goulburn and Murray river systems
- completion of a significant number of studies, including comprehensive ecological, economic, social and legal assessments, that informed partner governments in processes leading to the First Step Decision by Ministerial Council in November 2003
- implementing the Environmental Works and Measures Program of activities to enhance the efficiency of environmental flows at the significant ecological assets
- the development of the initial Environmental Watering Plan for the River Murray.

Recent activity has focused upon providing technical advice to develop the implementation arrangements for the Murray-Darling Basin Inter-Governmental Agreement under the Council of Australian Governments (COAG) National Water Initiative.

Implementing the ICM policy

The ICM policy is not supported by a specific funding program. Rather, the Australian and state governments provide funding to implement the policy through their own programs.

All states in the Basin have now signed bilateral agreements with the Australian Government under the National Action Plan for Salinity and Water Quality (NAP):

- South Australia signed in June 2001
- Victoria signed in October 2001
- Queensland signed in March 2002
- New South Wales signed in May 2002.

The NAP involves a joint Australian Government and state funding package of $1.4 billion for targeted action in regions that are highly affected by salinity and water quality problems. It takes place over a period of seven years and will be relevant to most catchments in the Basin. The Natural Heritage Trust (NHT) has been extended (NHT Extension), with funding of a further $1 billion over five years, and will further support activities across the Basin. Each state and territory has a range of funding programs that also support implementation of the ICM policy.

The coordinating mechanisms for investments under the ICM policy are the integrated catchment management plans of the nineteen regions of the Basin. Revision of these plans has been undertaken during 2002–03 and will continue into the future to meet requirements of investors.

Knowledge is a key component of natural resources planning and management. The MDBC invests in knowledge to support implementation of the ICM policy, and to supplement the work of research and development organisations, and other groups working to generate knowledge for future decision-making (see KPA 6, page 62).

KPA 5: Integrated Catchment Management

ICM policy

> *Policies, processes and information that support institutional arrangements enabling effective partnerships for ICM throughout the Basin and effective participation by the Basin community.*

Performance assessments and achievements:

- Adoption of an ICM policy for the decade 2001–2010 and progress in its implementation.

A snapshot of ICM implementation across the Basin was produced for the first time during 2003–04. The snapshot demonstrated that considerable progress has been achieved, though not necessarily in the direction and in the same way as envisaged under the ICM Policy. The National Action Plan for Salinity and Water Quality and the Natural Heritage Trust arrangements with the states have affected investment and management arrangements for catchments. Accreditation of catchment strategies and associated management action and resource condition targets under bilateral agreements has been mostly completed. The progress made by the MDBC in developing Basin-scale strategies and targets is outlined in Table 7.

Table 7: ICM implementation—a snapshot

Resource objectives	Milestones	Status
Water quality including surface and groundwater		
Reducing or slowing the rate of increase of in-stream salinity	By 2001—a Basin strategy and end of valley targets Over time—within valley targets	Basin Salinity Management Strategy in place 2001. End of Basin target: '800EC 95% of the time at Morgan' in place. End of valley targets will be completed 2004. Within valley targets in progress.
Reducing the threat of algal blooms	By 2003—a Basin strategy for in-stream nutrients and other causes of algal blooms. Over time—within valley targets informed by SRA	Interim water quality objectives for River Murray agreed in 2002. The value of a Basin strategy and integrated in-stream nutrient concentration targets is questionable as an effective mechanism for minimising algal blooms, due to the non-conservative nature of nutrients as contaminants, and the complex relationship between algal blooms, flow, light and nutrients. Other alternatives are being pursued. SRA is moving from pilot to full implementation in 2004.

Table 7: ICM implementation—a snapshot (continued)

Resource objectives	Milestones	Status
Water-sharing including surface and groundwater		
Balance consumptive, in-stream, wetland, floodplain, riparian and estuarine water requirements.	By 2002—interim targets for environmental flows for the River Murray	Current water-sharing arrangements are underpinned by the Cap on diversions set on 1993–94 development levels. The Living Murray has developed flow-related ecosystem health targets for six significant ecological assets of the River Murray agreed in 2003. A watering plan for those assets is in preparation.
	By 2006—a Basin strategy and targets for each major catchment informed by SRA	Water planning is being actively progressed by all jurisdictions. It is unclear when a Basin-wide water sharing strategy and targets for each major catchment will be commenced.
Riverine ecosystem health		
Maintain/re-establish native communities in floodplain, wetland, riparian, in-stream and estuarine ecosystems	By 2006—a Basin strategy and targets for each major catchment. Informed by SRA, water quality and sharing targets	The Living Murray has established flow related ecosystem health targets for six significant ecological assets of the River Murray agreed in 2003. The SRA pilot has been completed and work will commence in 2004–05 on a Basin riverine ecosystem health framework. The usefulness of moving to a coordinated and integrated strategy for riverine ecosystem health will be assessed on completion of that work. A Floodplain Management Strategy was adopted by Council in 2003. The Native Fish Strategy was adopted by Council in 2003.
Terrestrial biodiversity		
Maintain key ecological processes, populations and ecological communities	By 2002—a native vegetation Basin strategy and interim targets for each major catchment	Native vegetation planning is being actively progressed by all jurisdictions. Work on the development of a Basin strategy or interim Basin native vegetation targets has been suspended and the need for a Basin strategy is being questioned.
	By 2006—a terrestrial biodiversity Basin strategy and targets	The biodiversity project, which examines appropriate targets to reflect terrestrial biodiversity, has been suspended until 2007 when catchment scale biodiversity outcomes will have been assessed.

Project communication

Performance assessments and achievements

Effective communication in MDBC projects which reflects the Initiative Communication Strategy

The Communication Unit within the MDBC Office takes responsibility for media liaison, corporate publications and public relations. The MDB Initiative Communication Strategy continued to be the foundation for a strategic approach to corporate MDBC communication activities. The process developed by the MDBC in planning communication activities has continued to be used by a number of natural resource organisations within and beyond the Basin.

This strategic approach to planning places great emphasis on the early identification of key communication partners, establishment of agreed communication messages and definition of desired relationships. A wide range of MDBC projects and programs have now allocated specific resources to communication planning and funding of communication activities under the direction and guidance of the Communication Unit.

Key activities coordinated by the Communication Unit during 2003–04 included:

Strategic objective: Maintaining communication networks

- Increased liaison with regional information providers through the Basin Link project
- Sponsorship of MDBC International River Health Conference in October 2003 involving over 500 students focussing on river health
- Continued support to partner government initiatives, attendance at the Adelaide Royal Agricultural show and sponsorship of six major conferences dealing with natural resource issues
- Improved liaison with the 180 regional libraries across the Basin—each library increasing its catalogue of MDBC material through receipt of a complimentary copy of all new MDBC material.

The Rivers Program Publications Reference Kit presents the results of the Murray-Darling Basin Commission Riverine Program, which was initiated to counter the degradation of river, stream and floodplain wetland environments in the Basin. The Kit is the result of a strategic review of 74 projects from the Riverine Program. Summaries are provided for 45 of these projects; the remainder are listed in an appendix.

1. Understanding the Basin
2. Managing Catchments
3. Managing Rivers
4. Managing Fish
5. Managing Wetlands

Each theme is represented by a superbly illustrated full-colour booklet that summarises knowledge from the Riverine Program and presents the key issues for each theme.

Strategic objective: Information exchange

- Provision of a Newscan—a weekly clipping service of natural resources articles from regional papers around the Basin
- Continued development of the MDBC website
- Development of a monthly e-letter that provides information on current issues in the Basin to over 600 subscribers
- Production of a wide array of new publications, in particular the Riverine Program's Publication Reference Box
- Completion of an internal media training program to over 37 MDBC staff
- Increased media liaison and media monitoring activities—completion of the transition from hard copy dispatch of media releases and alerts to a web based electronic transfer system.

The website

The website continued to provide a consistent, reliable source of information to stakeholders and other Basin partners throughout the period under review.

Most visitors came to read media releases and other public announcements, such as Ministerial Council communiqués. Interest in natural resources information, especially salinity, water and the environment, remained consistently high throughout the year, as did interest in river water levels and general information about the River Murray system.

Educators and students at all levels used the Basin Kids and Encyclopaedia sections of the site regularly throughout the year.

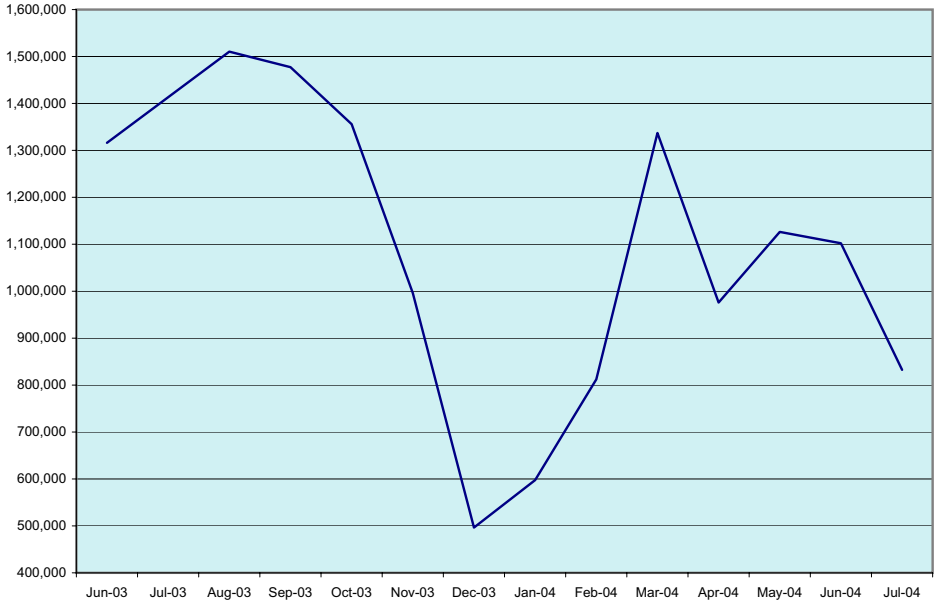
There was a drop in hits to the site December to February of the financial year under review, not just due to the holiday period, but also to the disruption caused by moving the site to a new, enhanced server host (see Figure 8). Once this was completed, the numbers of visitors began to regain their former levels reaching 1.21 million in June 2004.

The website underwent continuing development in response to changing needs of stakeholders, such as The Living Murray feedback site, Native Fish Strategy pages and continuing changes to the publishing system. There were also changes to the search engine and other navigation aids to make information more accessible.

The MDBC website—a consistent, reliable source of information to stakeholders and other Basin partners.

(©MDBC)

Figure 8. Hits on the MDBC website 2003–04



E–letter

Twelve issues of the MDBC's monthly email distributed newsletter continued to inform stakeholders of important new developments and initiatives within the MDBC and throughout the Basin. With improvements in general Internet infrastructure, trials were being carried out to produce the newsletter in an html format to allow linking of titles to the body of each item and a more attractive layout. The html format was due to be implemented early in 2004–05.

The number of new subscribers continued to increase and had gone by more than 150 to a total of 650 subscribers by the end of June 2004.

These new subscriptions came from people describing themselves as:

- technical adviser (25 per cent)
- policy developer (19 per cent)
- other (17 per cent)
- scientist (16 per cent)
- journalist (8 per cent)
- farmer (4 per cent)
- tertiary student (3 per cent)
- agribusiness (2 per cent)
- urban resident (2 per cent).

Media liaison

Improved media networks, both print and electronic, and the streamlining of the process used to provide media with access to MDBC public statements and other materials, were the media relations highlights for the period 2003–04.

Averaging three media releases per month, the Communications Unit progressed from a manual facsimile-based media distribution process, to a web-based media release upload system targeting specialised MDBC generated lists of media and other organisation contacts.

Along with this, a special email-based distribution list was developed which contained reporters' names that had shown particular and ongoing interest in the natural resource management business of the Basin. As a courtesy, these contacts received media releases a short time earlier than the general distribution list.

All members of staff were afforded the opportunity to receive regular lists of media monitoring items from Basin-wide electronic and print media outlets. This encouraged individuals and program managers to continue to learn about and improve the process of generating media releases for maximum impact.

Library

The MDBC maintains a small specialised library, which is staffed part-time. It offers loan and reference services to staff and external clients on request. External demand to use library resources continues to increase. The collection comprises more than 11 500 items, with 369 items catalogued during 2003–04. Most items accessioned are reports generated within or for the MDBC, making it often a unique source for many resources.

About 3000 maps were added to the library's database (ATHENA) during a recent 13-month project, enhancing search and loan capability.

The library operates within MDBC Communications working to complement and facilitate an efficient information provision service. Currently 169 libraries within the Basin receive MDBC publications. This ensures stakeholders have ready access to hardcopy and raises the MDBC profile and product in the community.

During an image restoration project completed last year almost 200 pages of old infrastructure images, dating back to the early 1920s were cleaned, repaired and rebound using existing binding where appropriate. The pages were digitised to allow for ready access, selection and to enhance preservation (see photo, page 98).

Basin Communities Program

The aims of the MDBC's Basin Communities Program (as established by the MDBC 2001 Human Dimension Strategy) are to:

- build the capacity of the natural resource management sector in the Basin
- support more meaningful working partnerships between Basin communities and governments (good practice engagement).

Capacity-building activities this year include:

- commencement of Course 2 of the MDB Leadership Program and approval by Ministerial Council to undertake a third course in 2004–05. At the completion of Course 2, a total of 31 participants will have undertaken the Leadership Program
- continuation of a collaborative project with the National Museum of Australia and University of Tasmania to involve people in natural resource management who would generally not be involved such as children, older people and Indigenous people. Pilot projects have been undertaken in Echuca, Wentworth and Mildura
- continued support for the Cooperative Venture for Capacity Building in Rural Industries (managed through the Rural Industries Research and Development Corporation), which focuses on capacity-building, education and extension within rural industries.

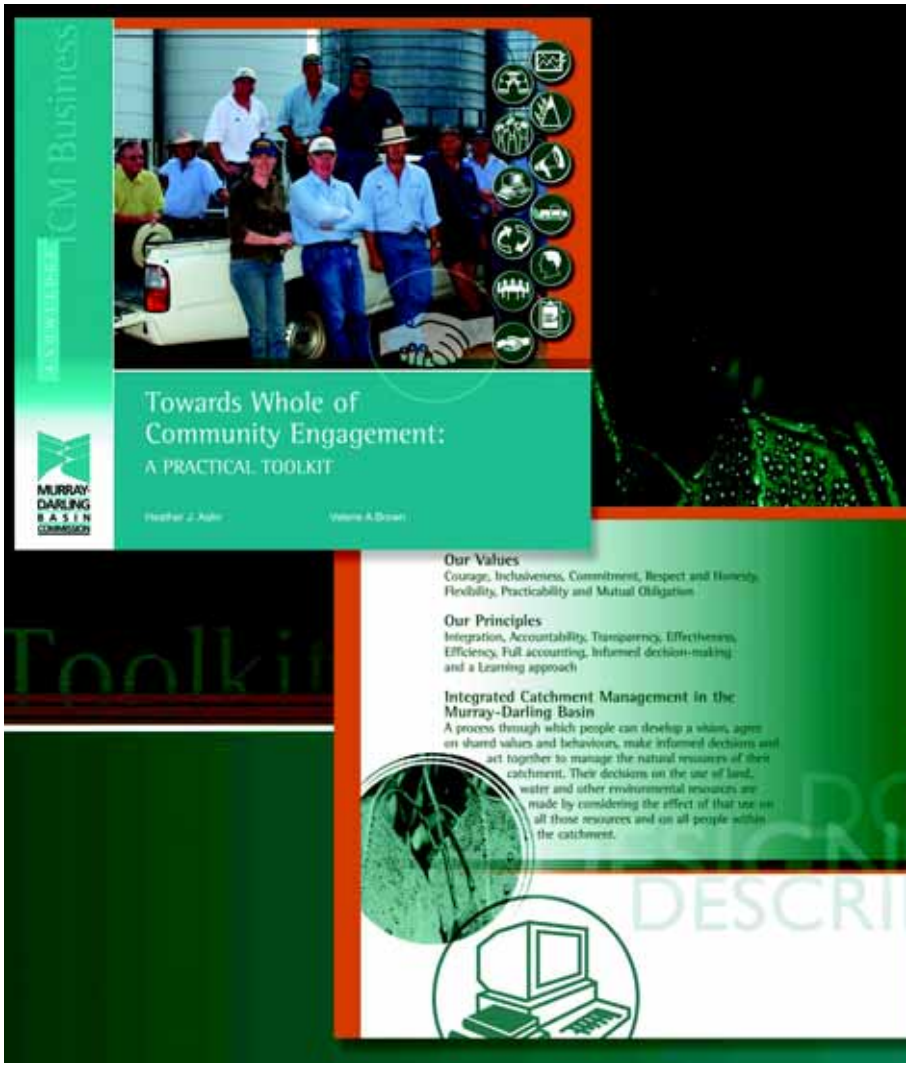
Activities supporting good practice engagement in natural resource management include:

- release of the publication *Towards Whole of Community Engagement: A practical toolkit*. This has led to the commencement of collaborative work with state agencies to trial and further develop the toolkit
- under the MDBC's Native Fish Strategy, commencement of a consultancy looking into engagement issues relevant to the establishment of demonstration reaches for native fish rehabilitation
- commencement of a partnership with the Australian National University to develop engagement processes around land use change which make science more accessible to communities and which recognise the importance of community knowledge.

(Photo: Australian Rural Leadership Foundation)

Graduates and coordinators of the Murray-Darling Basin Leadership Program at Armidale, New South Wales

Figure 9. Community Engagement Toolkit front cover



Natural resources information management within the MDBC

Natural resources information represents a key resource for the MDBC—building knowledge management capacity and improving information access and integration is fundamental to providing a sound foundation for ICM.

A core initiative to build this capacity is the MDB InfoBank project (InfoBank). The key objectives for InfoBank are to:

- provide a coordinated point of access to objective and authoritative knowledge and information resources on the status, trends and future of the Basin environmental, social, economic and institutional resources

- develop and support information management capacity and expertise with robust knowledge management systems and processes
- implement common information exchange, and sharing protocols and processes to promote resource sharing and coordination with other natural resources management practitioners across the Basin.

InfoBank development work has progressed from concept to design and testing over 2003–04.

The first stage of the InfoBank system, the InfoBank Spatial Data Catalog, an online repository of spatial data which implements the OpenGIS spatial data access protocols as documented in the Australian Spatial Data Infrastructure (ASDI) and the associated data maintenance tools has completed design and is currently under test. Public release of this web-based information service is planned for September 2004. This will allow the MDBC to achieve the full benefit from the last year's implementation of ANZLIC version 2 standards for spatial data and associated metadata.

KPA 6: Land and water management

Strategic Investigations and Education program is well managed and supports knowledge generation in priority areas

The total budget for the Strategic Investigations and Education (SI&E) funding program for 2003–04 was $8.45 million. This was made up entirely of annual contributions from contracting governments with no carry forward from 2002–03.

During 2003–04 a number of large projects that commenced in earlier years under the SI&E Three Year Rolling Plan were completed. This has enabled some of the new projects and initiatives proposed under the Integrated Knowledge Plan to commence and provides further capacity for the coming year's programs.

The intensive review of projects and priorities commenced in 2002–03, continued in 2003–04 and resulted in a much more targeted approach to the selection of projects supported under SI&E funding. During the year commitments of $8.43 million were funded under the SI&E Program comprising $7.5 million in projects continued from the previous year and $0.9 million in new projects. (see Table 8 for a breakdown of funding commitment by Unit).

Projects were managed by internal managers and external program coordinators to ensure that contractual obligations during the year were met.

Table 8: Strategic Investigations and Education commitments 2003–04

Unit	Ongoing projects		New projects		Total projects	
	(number)	($million)	(number)	($million)	(number)	($million)
ICM Business	20	2.432	7	0.159	27	2.591
Rivers and Industries	38	5.059	4	0.182	42	5.241
Communication	0	0	3	0.597	3	0.597
Total	**58**	**7.491**	**14**	**0.938**	**72**	**8.429**

Water regulation and statutory assessment

Water resource operations advice

The modelling capabilities of the MDBC continue to be used to provide a range of forecast information to aid RMW operations and to inform partner governments and the wider community:

- The Flow and Salinity Model is used to provide forecasts of flow and salinity levels for the River Murray system from Hume Reservoir to the barrages. Weekly updates are distributed directly to stakeholders and via the MDBC website.
- The Accounts Model uses recorded flow and diversion data to calculate the states' shares of available water.
- The Assessment Model is used to assess the water available to the states for the next two seasons under a range of future inflow conditions. The available water if the minimum historical inflow sequence was repeated is generally used by the partner governments to inform their allocation announcements.
- The Multi-history Model is used to determine the probability of certain events occurring over the next one to five years. Model runs commence at the current settings and project into the future using the full range of climatic sequences experienced over the last 113 years.
- Scenario Modelling is also undertaken to inform the decision-making process. Such modelling provides information on the impacts of proposed policy initiatives based on how they would have performed over the climatic sequence observed over the last 109 years. Significant modelling projects currently under way include The Living Murray and Water Trade.
- Resources related to the modelling systems are used to produce the data provided in the RMW Weekly Report which includes summary data regarding the River Murray and its tributaries from the Snowy Mountains to the Murray Mouth.

The continuing dry conditions in 2003–04 ensured the increased demand for modelled information seen over recent years was sustained. The models (which included some revised minimum flow assumptions to reflect the inflows observed in 2002–03) again proved to be reliable and helped to inform RMW's management of the Murray, and state water allocations. As of this season RMW now routinely supplies state Water Agencies with forecasts of resource availability both based on the full historical record and incorporating persistence (where future inflow sequences are adjusted according to recently observed inflows). The salt slug seen from the Darling in February 2004 was an example of an event that generated very high demand for modelled information, and saw the RMW salinity forecast website being updated on a daily basis at the peak of the event.

River Murray modelling

In July 2000, the MDBC agreed that it would adopt the NSW Government's Integrated Quantity and Quality (IQQM) modelling package as the basis for a future modelling suite for the River Murray system. Project planning for implementation of this software and further development work started towards the end of the financial year.

To meet the modelling requirements of various policy initiatives such as Basin Salinity Management Strategy (BSMS), The Living Murray and water trade as an interim arrangement, the MDBC's existing monthly simulation model (MSM) and its daily forecasting model (BIGMOD) have been linked and tested to provide 109 years of daily flow output for The Living Murray and 25 years of daily salinity output for the BSMS.

In 2002–03, the MSM-BIGMOD package was approved by the MDBC under Clause 38(3) of Schedule C, as an appropriate model to simulate the salinity, salt load and flow regime. During 2003–04 this model was updated based on new information received from New South Wales and Victoria from flow and salinity models for their tributary catchments. These models for the tributary catchments were developed as part of the BSMS initiative.

The MSM-BIGMOD package continued to be used successfully to assess options for The Living Murray. Daily outputs from the model for a number of scenarios have been input to the Murray Flow Assessment Tool, which is being developed under The Living Murray to assess the environmental impacts of different flow regimes.

This modelling suite was also set up to forcast flow and salinity over the next few months if dry, average or wet conditions were to occur. These forecasts were useful to get an understanding of system behaviour under worst and likely scenarios for the near future based on current resource availability.

During the year additional capabilities to compute hydrological indicators identified under Sustainable Rivers Audit program were added to the package.

Water sharing and efficiency of use

Performance assessment:

- preservation of existing balance between environmental and consumptive uses of water
- progress towards a water use balance that better meets the environmental needs of rivers
- permanent interstate water trading achieved progressively across the Basin
- information management system in place that enables reporting on irrigation water use efficiency.

Addressing the balance between environmental and consumptive uses (the Cap)

The MDBC has taken a range of measures to preserve the existing balance between consumptive and environmental use of water resources in the Basin. The aim is to promote the health of the river system and enhance the efficiency of water use. These measures include introduction of the Cap, The Living Murray, the Sustainable Rivers Audit (SRA), and permanent interstate water trading. In 1995 the Ministerial Council decided to cap diversions in the Murray-Darling Basin (see box). This decision, now called 'the Cap', was one of the most important initiatives ever undertaken by Council.

(Photo: Peter Solness)

Vineyard, Macquarie catchment, central NSW

What is the Cap?

The Cap is the balance struck by the Ministerial Council between the significant economic and social benefits that have been obtained from the development of the Basin's water resources on the one hand, and the environmental uses of water in the rivers on the other.

By limiting future growth in consumptive water use, the Cap promotes the sustainable use of the Basin's resources by:

- preserving the existing security of supply for river valleys
- helping maintain water quality
- encouraging the efficient use of water which reduces waterlogging and land salinisation
- preventing further deterioration of the flow regime for the environment.

In most of the Basin, the Cap will limit future water use to the volume of water that would have been diverted under 1993–94 levels of development. Targets for each state are approved by the Ministerial Council. Once targets are set, each state is responsible for implementation within its own jurisdiction, allowing them to take account of local circumstances.

It is important to understand what is meant by 1993–94 levels of development. It does not mean the volume of water that was used in 1993–94. Rather, the Cap in any year is the volume of water that would have been used with the infrastructure (pumps, dams, channels, areas developed for irrigation, management rules, etc.) that existed in 1993–94, assuming similar climatic and hydrologic conditions to those experienced in the year in question. For example, to establish the Cap target in the 2001–02 water year, computer models are used to calculate the diversion that would have occurred under the climatic sequence experienced in 2001–02, if 1993–94 management rules and infrastructure were still in place.

Thus, the Cap provides scope for greater water use in certain years and lower use in other years. The Cap itself does not attempt to reduce Basin diversions, merely prevent them from increasing. New developments are possible under the Cap provided that the water for them is obtained by improving water use efficiency or by purchasing water from existing developments.

In each state the key tasks are:

- defining and monitoring all diversions
- detailing the Cap development conditions in each river valley
- developing and calibrating the computer models which will be used to calculate the Cap target in each river valley at the end of each season
- obtaining MDBC endorsement that the calibrated river valley models are fair and accurate representations of the approved Cap
- streamlining the processes for collecting and collating diversion data and producing annual reports
- adjusting water allocation rules to ensure that diversions stay within the Cap in all designated river valleys.

2002–03 Audit of the Cap

As directed by the Ministerial Council, the Independent Audit Group (IAG) conducted the annual review of Cap implementation in October 2003 and February 2004 and reported to the MDBC in March 2004. The key conclusions and recommendations of the IAG were that:

- for South Australia, diversions in all Cap valleys were within acceptable bounds for Cap management
- for Victoria, diversions in Cap valleys were within acceptable bounds for Cap management
- for New South Wales:
  - diversions in the Lachlan valley exceeded long-term Cap estimates
  - the assessment of the Cap compliance for the Macquarie valley could not be done because the Cap target for 2002–03 was not made available
  - due to some concern with the reliability of the modelling for the Gwydir valley, the IAG could not determine whether or not it has exceeded the Cap trigger requiring a Special Audit
  - an assessment of Cap compliance for the NSW Border Rivers was not possible because the Cap had not been defined in that valley
  - diversions were within acceptable bounds for Cap management in the remainder of New South Wales
  - New South Wales should report to the Ministerial Council meeting in May 2004, on the underlying reasons for excessive diversions on Lachlan including management actions proposed to bring diversions within Cap limits
- for Queensland:
  - growth in off-stream storages stopped since the introduction of a moratorium on construction in September 2000 and remains at 1878 GL
  - the final Water Resource Plans for the Border Rivers, Moonie and Paroo/Warrego/Nebine became law with gazettal in December 2003
  - a revised draft Water Resource Plan for the Condamine–Balonne was released for public comment in December 2003 and likely to be finalised by mid-2004.
- for the Australian Capital Territory:
  - the IAG encourages the Australian Capital Territory and New South Wales to complete their negotiations on trading rules and a regional NSW/ACT Cap in order to allow the finalisation of a Cap for the Australian Capital Territory

- the IAG draws the Australian Capital Territory's attention to its comments on the extra principles proposed by the Australian Capital Territory and to the precedent set by other states in agreeing to a Cap consistent with the overall aims and objectives of the June 1995 Council resolution.

An independent auditor conducted the technical audit of four Cap models, two each from Victoria and New South Wales and one from South Australia as a part of accreditation of Cap models by the MDBC. Other Cap models are expected be audited and approved during 2004–05 and 2005–06.

The Living Murray First Step Decision

In 2003–04 the Ministerial Council took the historic First Step Decision on The Living Murray modifying the balance between environmental and consumptive use to achieve the vision of the Council of 'a healthy River Murray system sustaining communities and preserving unique values'. Coupled with the consideration of COAG of these matters in 2004–05, this is one of the most significant decisions in over a century of cooperative management of the River Murray. Further information on this initiative is at pages 13–14 and 71–3.

Water trading

Permanent interstate water trading achieved progressively across the Basin

Continuing dry conditions across the Southern Basin in 2003–04 resulted in continuing reduced water availability and highlighted the importance of water trade to irrigators' ability to maximise the returns gained from available water. The MDBC's Interstate Water Trading Pilot Project continued to enable permanent trades across the three state borders in the Mallee Zone. Since the pilot's inception in August 1998, the net volumes traded permanently out of New South Wales and Victoria are 4598 ML and 10 533 ML respectively, with an equivalent net volume of 15 130 ML traded into South Australia. In addition, activity on temporary markets within and between states was very high.

Commitment to enhancement of permanent interstate trade has been reconfirmed and the MDBC is working on key tasks identified by the Ministerial Council to enhance trade. These include:

- mechanisms for trade between water access rights of different reliability and tenure
- zones and rules for interstate trade across the southern Basin
- ways of removing barriers to trade out of irrigation districts and provide mechanisms to deal with financial and asset management impacts
- ensuring the legal validity of trade.

The National Water Initiative (NWI) and Murray-Darling Basin Intergovernmental Agreements adopted by COAG on 25 June 2004 have given additional impetus to the development of water markets. Enhanced water markets are a key feature of

the NWI inter-governmental agreement (IGA), which establishes the framework for inter- and intra-state trade. The MDB IGA describes the conditions under which environmental water can be traded and how water markets can be used as one source of water recovery. MDBC is providing regular contributions to the water trade component of the NWI.

Reductions in barriers to trade are fundamental to expanding trade. The NWI has obtained commitments from the states to ease barriers to trade. MDBC is assisting this process by establishing principles for development of access and exit fees and developing a guide to dealing with stranded assets to support the establishment of robust pricing reforms.

The Ministerial Council will consider the prospects for commencement of an expanded market in the coming year.

Water use efficiency investment framework

As part of the MDBC's Watermark group of projects, focusing on longer-term, strategic irrigation-related issues within an ICM context, investigations have been undertaken on ways of improving water use and management, including water use efficiency (WUE).

The investigation project, which commenced in 2001, has involved WUE research organisations in Queensland (National Centre for Engineering in Agriculture, Toowoomba), New South Wales (Water Use Efficiency Advisory Unit, Dubbo) and Victoria (Institute of Sustainable Irrigated Agriculture, Tatura).

WUE has many complex technical and socio-economic dimensions and the water reform policy process has progressed since the project began. The focus of project has therefore gradually shifted from identifying policies to improve WUE in the irrigated regions, to the development of a holistic policy framework for investment to improve productivity growth and environmental outcomes through improved water management in the Basin. This broader approach addresses not only the economic issues of choice among technical alternatives to improve the delivery and use of water for irrigated agriculture, but also wider issues affecting the propensity of irrigators and other stakeholders to invest in irrigation reform.

To date the project has developed a suite of seven background papers which inform a draft investment framework. Key findings from the background research are that:

- substantial savings in water use can potentially be achieved in irrigated agriculture, but use of these savings to meet broader policy objectives involves public–private good issues and warrants special policies
- realising these savings is an issue in enhancing investment to modify the rate and level of uptake of new and modified technologies and management systems
- a business case exists on economic, social and environmental grounds for governments to provide greater incentives and support to enhance

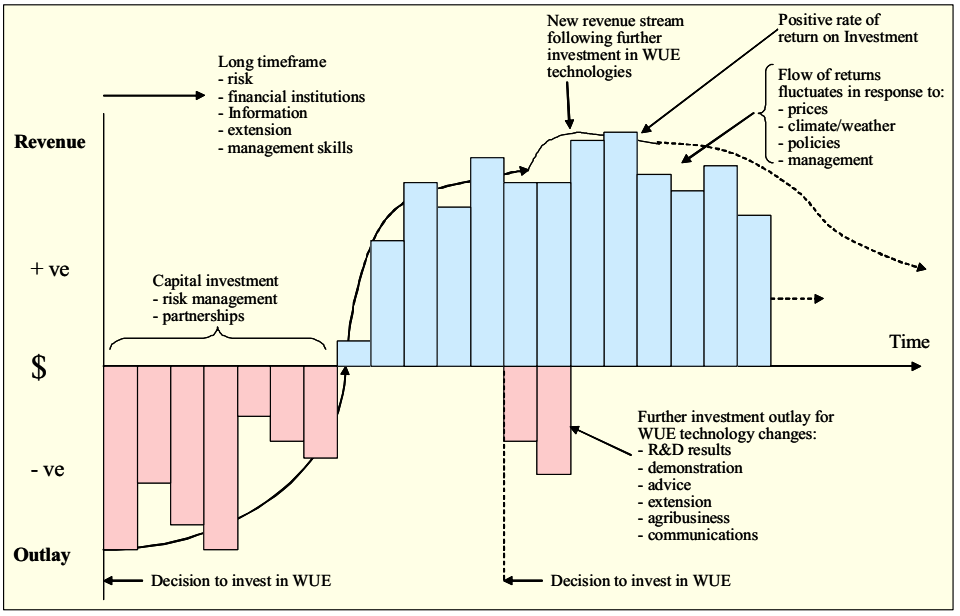
investment in water use efficiency (WUE) on-farm and by irrigation water providers (IWPs), as well as at the catchment and whole system levels—irrigation reform extends beyond the farm gate

- a wider policy approach to reforming irrigation practices will require change at both the structural (institutional) and operational (marginal) levels since band-aid measures to enhance WUE implemented without addressing deficiencies in underlying institutions are not likely to change the propensity to invest
- complexities in the investment, policy and operating environment justify the adoption of a more coordinated approach to policy development and implementation
- an enhanced policy approach can best be achieved within an 'investment policy framework' which will contribute to policy clarity, reduce uncertainty and lead to an investment environment that is more conducive to change.

Project findings indicate that improving WUE is not just about hydrological and agronomic aspects of physical irrigation processes but largely about technological and managerial change and innovation and the appropriateness of supporting policy settings.

The WUE policy agenda is about the investment environment in which farmers and irrigation water providers operate (see Figure 10). This environment can be characterised by externalities and failures in capital markets, in the use and management of natural resources, in water distribution and delivery systems and in bureaucracies and government.

Figure 10. The investment environment for water use efficiency (WUE)



Often capital requirements to upgrade irrigation practices are large and beyond the scope of individuals and water providers. Time frames for investment can be long and generally beyond the vision of financial institutions. There is no culture within which genuine partnerships can develop. Risks are high and stem from change in commodity prices, climate, policies, administration and the economy as a whole. Skills requirements for new technologies and management systems are also high, often involving substantial investment in human capital. As well, there are significant socio-economic barriers to WUE investment.

For the above and other reasons, while farmers are investing for productivity growth (including to save labour) WUE investment per se has not been a high priority. Thus, as noted above, special policies for WUE may be warranted to overcome inertia. This is not simply a matter for capital markets. Achieving gains in WUE is pervasive, involving confluence of private sector and government action in areas as wide as R&D arrangements, agribusiness, trade, structural change and education and training. Also involved will be institutional and policy settings in areas such as agriculture, natural resources management, water resources, the environment, business structures, and regional and rural communities development. All these areas influence the commitment of capital to technological change in water use.

Water quality and flow management

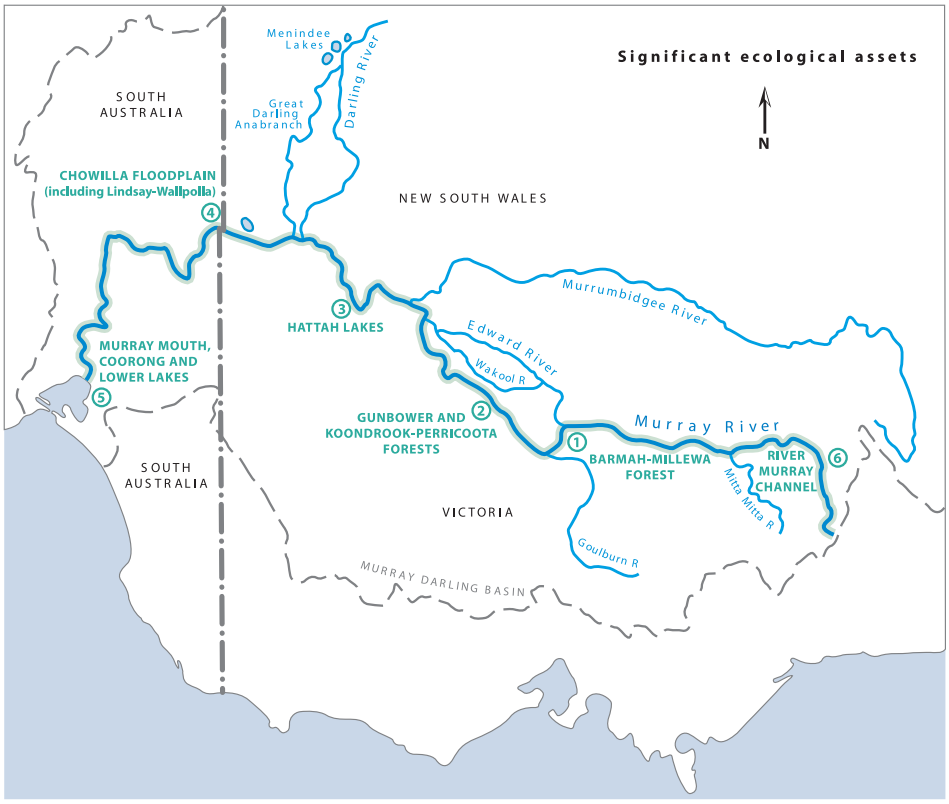
The Living Murray

The year 2003–04 saw the Murray-Darling Basin Ministerial Council and the Council of Australian Governments make major decisions to achieve the Ministerial Council vision of '... a healthy River Murray system sustaining communities and preserving unique values'.

In August 2003, jurisdictions of the southern Murray-Darling Basin agreed to provide new funding of $500 million over five years to address water over-allocation in the Basin.

On 14 November 2003, the Murray-Darling Basin Ministerial Council took its historic decision to address the declining health of the River Murray system. The focus of the First Step Decision is on maximising environmental benefits for six significant ecological assets along the Murray: Barmah–Millewa Forest; Gunbower and Koondrook–Perricoota Forests; Hattah Lakes; Chowilla Floodplain (including Lindsay–Wallpolla); the Murray Mouth, Coorong and Lower Lakes; and the River Murray Channel.

Figure 11. Location of the six significant ecological assets for The Living Murray



The Ministerial Council decision was informed by a significant body of technical work—covering science, economics, social impact, hydrological modelling—along with input from communities provided through community meetings, submissions, The Living Murray Community Reference Panel, the Community Advisory Committee to the Ministerial Council and an Indigenous consultation process undertaken in conjunction with the Murray Lower Darling Indigenous Nations.

On 25 June 2004, the Intergovernmental Agreement on Addressing Water Overallocation and Achieving Environmental Objectives in the Murray-Darling Basin was signed by the Prime Minister, the Premiers of New South Wales, Victoria and South Australia and the Chief Minister of the Australian Capital Territory. The Agreement reinforces and gives effect to The Living Murray First Step and the $500 million funding commitment of southern Murray-Darling Basin jurisdictions.

Water to achieve benefits at the significant ecological assets will be provided through 'new' water and through a program of environmental works and measures (see page 90). The 'new' water will be built up over a period of five years to an estimated 500 GL per year, with the volume to be used each year depending

on a range of factors such as droughts and flood events. Funding will be provided through the $500 million provided through the Intergovernmental Agreement together with $150 million provided through the Ministerial Council for environmental works and measures over an eight-year period.

At the direction of the Council of Australian Governments a business plan to address the Intergovernmental Agreement is now being developed. The Business Plan will detail the implementation approach to be taken to recovery and application of water for the significant ecological assets.

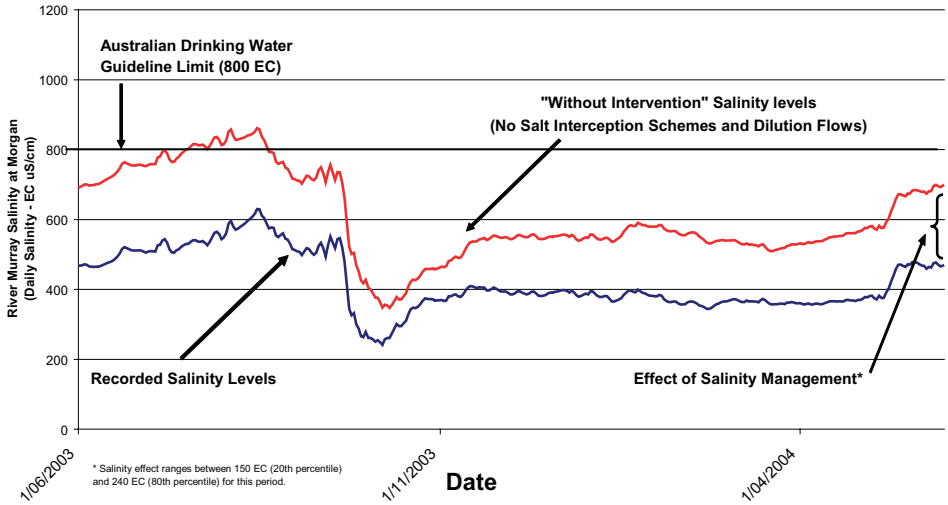
Further information about the background and progress on The Living Murray First Step Decision can be found at www.thelivingmurray.mdbc.gov.au and about the COAG meeting and Agreement of 25 June 2004 on further information at www.coag.gov.au

Salinity levels 2003–04

In order to understand why the River Murray salinity trend is currently improving, factors that impact on water quality need to be understood in association with each other and not in isolation. Salinity levels in the River Murray during the continued drought in 2003–04 were lower than the long-term average as a result of several factors including:

- salt interception schemes preventing 1100 tonnes of salt from entering the river each day
- the water is sourced from the top of the river system and has very low salinity levels
- the higher salinity drainage and tributary inflows have been dramatically reduced during the drought
- there is low salt discharge from floodplains where salt is stored during periods between floods.

Figure 12. Daily salinity levels at Morgan, June 2003 to May 2004



During the 2003–04 season, most flows along the River Murray were again sourced from Dartmouth Reservoir, which holds some of the freshest water in the River Murray system. This situation was in contrast to other drought periods, such as 1982–83, when flows were sourced from more saline storages including Menindee Lakes and Lake Victoria and salinity at Morgan exceeded the 800 EC target (see Figure 12).

Basin Salinity Management Strategy 2001–2015

The Basin Salinity Management Strategy 2001–2015 guides communities and governments in working together to monitor and control salinity and protect key natural resources values within their catchments, consistent with the principles of the ICM Policy. It establishes targets for river salinity in each tributary valley and the Murray-Darling system itself. These targets reflect the shared responsibility for action both between valley communities and between states. It provides a stable and accountable framework that, over time, will generate confidence in progress of joint efforts to manage salinity.

The BSMS provides a comprehensive, strategic and well thought out approach to a most challenging environmental issue facing the Basin and the nation.

Under the BSMS, partner governments have committed to the following elements of strategic action, to be implemented over the next 15 years:

- developing capacity to implement the BSMS
- identifying values and assets at risk
- setting salinity targets
- managing trade-offs with the available within-valley options
- implementing salinity and catchment management plans
- redesigning farming systems
- targeting reforestation and vegetation management
- constructing salt interception works, and
- ensuring Basin-wide accountability through monitoring, evaluating and reporting.

As part of this action, the MDBC will:

- manage a comprehensive knowledge-generation program
- coordinate and enhance further research and development on farming systems
- further investigate targeted revegetation for salinity outcomes
- construct and operate salt interception schemes
- establish Basin-wide monitoring, evaluation and reporting arrangements.

Developing capacity to implement the BSMS

1 BSMS Implementation Working Group

The MDBC established the BSMS Implementation Working Group (BSMSIWG) to oversee the implementation of the BSMS in November 2001. The BSMSIWG is composed of representatives of all partner governments and the CAC, with technical and administrative support provided by the MDBC Office. The BSMSIWG met four times during 2003–04, initiating a range of activities to ensure effective implementation of the BSMS.

2 Establishing the Independent Audit Group for Salinity

Clause 34 of Schedule C requires that the Commission appoints independent auditors to carry out an annual audit of Schedule C implementation. The Independent Audit Group for Salinity was established by the Commission in late 2003 and it conducted its first audit of BSMS Implementation in February 2004. The first report of the Independent Audit Group for Salinity has highlighted a number of risks and opportunities for Schedule C implementation. These will be detailed in the Audit report, which is expected to be published in late 2004.

3 Developing baseline conditions

An accurate definition of the baseline conditions for salinity (as at 1 January 2000) in the Basin is critical to the implementation of the BSMS, since end-of-valley salinity and salt load targets are expressed as a percentage of the baseline conditions. For the purposes of Schedule C, the Baseline Conditions include all aspects of land and water use and management upstream of the End-of-Valley and Basin target sites as at 1 January 2000. Recognising the significant response of salinity levels to climate variability (wet, dry and average years), the baseline conditions are represented over the benchmark climate period of 1 May 1975 to 30 April 2000.

MDBC, at its meeting of 1 June 2004, approved of the baseline conditions for salinity, salt loads and flow over the benchmark period for each of the tributary Valleys and the River Murray at Morgan. This is a significant achievement as it clearly defines the starting point for the Basin Salinity Management Strategy and assists in assessing salinity predictions for a range of scenarios, including no further intervention, implementation of the program of actions and accountable actions as defined by Schedule C.

4 Developing salinity modelling and assessment frameworks

In accordance with the requirements of Schedule C Part VIII, the Partner Governments and Commission Office have invested significant time and effort, to develop flow and salinity models to assess the salinity impacts of accountable actions and delayed (legacy of history) salinity impacts. The various models developed are:

- Queensland Tributary Valleys—Integrated Quantity/Quality Models (IQQM)
- New South Wales Tributary Valleys—IQQM Models
- Victorian Tributary Valleys—REsource ALlocation Models (REALM)
- River Murray—Murray Simulation Model-BIGMOD (MSM-BIGMOD)
- Interstate Water Trade—Salinity IMpacts Rapid Assessment Tool (SIMRAT).

Implementing the Basin Salinity Management Strategy: highlights of 2003–04

Key salinity strategy achievements

- The Independent Audit Group for Salinity was established by the MDBC in late 2003 and it conducted its first audit of BSMS Implementation in February 2004. The first report of the Independent Audit Group for Salinity will be published during the second half of 2004.
- The tributary salinity and flow modelling, the baseline conditions for each Valley and the River Murray, and the rapid assessment tool (SIMRAT) for evaluating the salinity impacts of water trade were approved by MDBC in June 2004.
- End-of-Valley Targets have been confirmed by New South Wales, Queensland and South Australia in 2004. Victoria and the Australian Capital Territory expect to finalise their targets during 2004–05.
- The 2002–03 BSMS Implementation Report has been endorsed by the MDBC and will be publicly released after Ministerial Council consideration in October 2004.

Investment in knowledge generation and tools

- Further development of tools for assessing the salinity impacts of water trade.
- Tributary salinity and flow modelling.
- Updated and accredited MDBC Model; MSM BIGMOD.
- Implementation of the Rolling Five Year Review Program.

The responsibilities of the MDBC in delivering the BSMS lie within the implementation of the strategy. They include:

- salinity and salt load target setting
- knowledge generation
- joint works program
- reporting and accountability arrangements.

All of these flow and salinity models have undergone rigorous technical peer review against the agreed assessment criteria (in accordance with the BSMS Operational Protocols) to ensure that they are fit for purpose.

The rigorous assessment of the models has helped in identifying 'recommended improvement actions', which the partner governments have committed to undertaking. In fact, Schedule C specifies an adaptive management approach, whereby each model must now be reviewed and updated within seven years (Schedule C Clause 39). These models were approved by the MDBC (Meeting 80, June 2004) in accordance with the requirements of Schedule C (Clause 38).

Finalising end-of-valley salinity and salt load targets

Schedule C (Clause 8) requires that each state Contracting Government finalise targets by 31 March 2004. Formal advice has been received from New South Wales and Queensland regarding updates to their targets. South Australia has advised verbally that its targets remain as stated in the SA River Murray Salinity Strategy (2001). Victoria and the Australian Capital Territory have indicated that they will be finalising their targets over the next 12 months.

Constructing salt interception works

The BSMS has been embodied in the Agreement, in the form of a revised Schedule C to the agreement and the BSMS Operational Protocols. In accordance with Schedule C and as stated in the Operational Protocols, a program of joint works and measures has been established to offset the predicted future increase on the average salinity at Morgan, arising from accountable actions and delayed salinity impacts, by a total of 61 EC by December 2009.

Additional detail on salt interception schemes is outlined in KPA 2 (see page 42).

Table 9: Summary of state salinity credits and debits in the Salinity Registers (A&B) (equivalent EC, S/cm)

BALANCE—REGISTERS A and B	Type	NSW	Vic	SA	Qld	Total
Commission 'A' Register						
Summary of Credits and Debits from Joint Schemes	Joint	14.8	14.8	0	0	
Summary of Credits and Debits from State Schemes	State	-8.5	-11.2	TBA	0	
Current Balance		6.2	3.5	TBA	0	**9.8**
Commission 'B' Register						
Debits		-4.1	-3.3	-10.0	-0.2	**-17.6**
Balance for total of Registers 'A' and 'B'						**-7.8**

Ensuring Basin-wide accountability—monitoring, evaluating and reporting

1 Salinity Registers

The MDBC maintains a Salinity Register to account for the credits and debits resulting from projects that increase or decrease river salinity. The 'credits' are associated with salt interception schemes (funded by South Australia, Victoria, New South Wales, and the Australian Government). 'Debits' result from activities by the states (New South Wales, Victoria and South Australia) such as construction of irrigation drains, groundwater pumps, new irrigation development and wetland flushing. The register is also used to record changes to operational policies and works that have an impact on river salinity. The effect of actions detailed on the register are summarised in Table 9.

The detailed MDBC Salinity Registers (A and B) are presented below in Table 10 (see pages 80–3). These registers incorporate transitional arrangements from the Salinity and Drainage Strategy Register (Register A), while the B Register is based on the 1999 Salinity Audit predictions. The salinity cost functions that underpin the economic assessment of salinity impacts have also recently been reviewed. The recommendation from that review to update the costs functions currently used to assess Register A items will be considered by the MDBC in 2004–05. An updated assessment of each register item will be carried out with the MDBC approved flow and salinity models, baseline conditions for the River Murray and its tributaries, and any revision to the salinity cost functions.

2 *South Australian accountability for irrigation developments 1988–2003*

One of the key outstanding issues from the S&D Strategy that requires resolution under the BSMS is the inclusion of South Australia in the MDBC A Register, with South Australia to offset the salinity impact of post-1 January 1988 developments.

South Australia has been undertaking a comprehensive review of all accountable actions for the period 1988–2003. The BSMSIWG, at its meeting in Toowoomba on 6 April 2004, considered a submission on South Australian Salinity Accountability 1988–2003. The BSMSIWG identified a number of aspects of the submission that will require further analysis and validation by South Australia. However, on the basis of the evidence provided, the BSMSIWG is assured that South Australia is salinity neutral for accountable actions over the period 1988–2003.

This submission is a working draft for the BSMSIWG and for independent audit, which outlines both the debit and credit claims proposed for inclusion on the Salinity Registers for South Australia. Once completed, a final version of the South Australian Salinity Accountability 1988–2003 Statement will be submitted to the MDBC at its September 2004 meeting. It is anticipated that the outcomes of this meeting will result in an entry of South Australian accountable actions onto the Salinity A Register.

Salinity impacts of interstate water trade and new irrigation development

The salinity impacts of water trade have been identified as one of the major contributors to accountable actions on the A Register. Accordingly, the BSMS, Schedule C, and the Protocols have each identified assessment of the impacts of trade as a priority.

A staged project has been undertaken to develop a rapid assessment tool (SIMRAT) to evaluate the salinity impacts of water trade. A final stage 1 report was prepared and circulated in October 2003. This work built upon earlier work by the MDBC (a spreadsheet model—iRAT) and South Australia (a GIS-based model—SIMPACT1) and work by the CSIRO (Unit Response Equation).

Following the implementation of an impartial review, further work has been undertaken to meet the recommendations of the review. In particular the consortium has undertaken 'model to model' cross-checks together with 'model to reality' sanity checks which have led to increased confidence in the parameters within the model and consequently the assessments made using the model.

Nevertheless, there are still some geographical regions within which there are constraints on the use of the model.

In June 2004 the MDBC approved the SIMRAT Model (in accordance with Schedule C Clause 38(5)), as 'fit for purpose' to assess the salinity impacts of new irrigation development in the Mallee Zone, including the application in South Australia as SIMPACT2 to support accountability for water trade.

Rolling Five Year Review Program

The BSMS and Schedule C (clause 33) call for a rolling five-year review and audit of each valley (Register B entries, and other valleys with end-of-valley targets) and MDBC Register entries of accountable actions (Register A). The focus of the Schedule is on the assessed effect on river salinity (at end-of-valley and Morgan) due to actions implemented to date (Register A), as well as an update of the expected change in the future flow, salt load and salinity regime due to 'legacy of history' (Register B).

Reviews for both Register A and B items were initiated in 2003–04. They include:

- the Mallee Tri-State Review
- Joint Works Program.

The Mallee Tri-State Review includes the three valleys: Lower Murray (NSW), MDB (SA) and Mallee (Vic.). The review is a coordinated approach across the region and will review the current Register B assessments for the three valleys by June 2005.

Reviews of the Rufus River and Mallee Cliffs schemes were also initiated during 2003–04.

Reporting and accountability arrangements

A key feature of the BSMS is the agreement to Basin-wide accountability and reporting arrangements, with partner governments committing to annual reporting using end-of-valley report cards and MDBC A and B salinity registers.

The 2002–03 BSMS annual implementation report was based on the four BSMS objectives, with an emphasis on measurable outcomes where possible, but recognising that in many instances it will only be possible to report progress with interventions (inputs and outputs) and modelled outcome predictions. The report also includes detailed accountability reporting using the end-of-valley report cards and the A and B registers.

The BSMSIWG prepared the 2002–03 *BSMS Implementation Report*, which was endorsed by the MDBC in June 2004 for Ministerial Council consideration at its meeting in October 2004.

Table 10: Detailed Salinity Registers (A and B)

Basin Salinity Management Strategy (Murray-Darling Basin Agreement Schedule C) Final Version 2.0 for Independent Audit Group for Salinity Consideration—12 March 2004 Salinity (Transitional as at June 2003)

COMMISSION REGISTER A	Type	Date effective	Provisional salinity effect	Salinity effect (EC at Morgan)				
				Current year	2015	2050	2100	30 year average
JOINT WORKS & MEASURES								
Former Salinity & Drainage Works								
Woolpunda Interception Scheme	Joint	Jan 1991		-40.8	-40.8	-40.8	-40.8	-40.8
Improved Buronga and Mildura/Merbein I.S.	Joint	Jan 1991		-3.0	-3.0	-3.0	-3.0	-3.0
New Operating Rules for Barr Ck Pumps	Joint	Jul 1991		-6.0	-6.0	-6.0	-6.0	-6.0
Waikerie Interception Scheme	Joint	Dec 1992		-12.7	-12.7	-12.7	-12.7	-12.7
Mallee Cliffs Salt Interception Scheme	Joint	Jul 1994		-12.9	-12.9	-12.9	-12.9	-12.9
Increased Riparian Flow in the Lower Darling	Joint	Nov 1997		1.9	1.9	1.9	1.9	1.9
Changed Internal Operation of Menindee Lakes	Joint	Nov 1997		0.7	0.7	0.7	0.7	0.7
Waikerie Phase II A Scheme	Joint	Feb 2002		-6.1	-6.1	-6.1	-6.1	-6.1
Subtotal—Former Salinity & Drainage Works				-78.7	-78.7	-78.7	-78.7	-78.7
Basin Salinity Management Strategy								
Pyramid Creek	Joint	Not effective	-4.6					
Bookpurnong	Shared	Not effective	-20.5					
Subtotal Joint Works under BSMS				0.0	0.0	0.0	0.0	0.0
Joint Works Subtotal				-78.7	-78.7	-78.7	-78.7	-78.7
STATE WORKS & MEASURES								
New South Wales								
Barwon Darling Licensing Policy	NSW	Aug 1991		0.8	0.8	0.8	0.8	0.8
Boggabilla Weir	NSW	Dec 1991		0.2	0.2	0.2	0.2	0.2
Pindari Dam Enlargement	NSW	Aug 1994		1.6	1.6	1.6	1.6	1.6
NSW LWMP's	NSW	Feb 1996		5.0	5.0	5.0	5.0	5.0
Permanent inter State Water trade—Dilution Effect	NSW	Various		-0.2	-0.2	-0.2	-0.2	-0.2
New Irrigation development due to Water Trade	NSW	TBA		TBA	TBA	TBA	TBA	TBA
New South Wales Subtotal				7.4	7.4	7.4	7.4	7.4
Victoria								
North-Central	Vic	Various		3.6	3.6	3.6	3.6	3.6
Mallee	Vic	Various		TBA	TBA	TBA	TBA	7.1
Goulburn-Broken	Vic	Various		4.9	4.9	4.9	4.9	4.9
Barr Creek Catchment Plan	Vic	Mar 1991		-3.6	-3.6	-3.6	-3.6	-3.6
Psyche Bend Lagoon	Vic	Feb 1996		-0.7	-0.7	-0.7	-0.7	-0.7
Permanent inter State Water trade—Dilution Effect	Vic	Various		-0.2	-0.2	-0.2	-0.2	-0.2
Sunraysia drains drying up	Vic	Jun 2003	-2.15	TBA	TBA	TBA	TBA	TBA
Victoria Subtotal				4.1	4.1	4.1	4.1	11.2

Salinity cost effect (30 year average $'000)					Salinity credits/debits (30 year average Equivalent EC)					5 year rolling review		
NSW	Vic	SA	Qld	Total	NSW	Vic	SA	Qld	Total	Latest review	Review deadline	Status
$575	$575	$0	$0	($3,066)	7.2	7.2	0	0	14.4	2000	2005	-
$57	$57	$0	$0	($303)	0.7	0.7	0	0	1.4	2000	2005	-
$101	$101	$0	$0	($540)	1.3	1.3	0	0	2.5	2000	2005	In progress
$193	$193	$0	$0	($1,028)	2.4	2.4	0	0	4.8	2000	2005	-
$242	$242	$0	$0	($1,288)	3.0	3.0	0	0	6.0	2000	2005	In progress
($8)	($8)	$0	$0	$45	-0.1	-0.1	0	0	-0.2	1997	Overdue	-
($65)	($65)	$0	$0	$348	-0.8	-0.8	0	0	-1.6	1997	Overdue	-
$89	$89	$0	$0	($472)	1.1	1.1	0	0	2.2	-	-	-
$1,093	$1,093	$0	$0	($6,304)	14.8	14.8	0.0	0.0	29.5			
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
$1,093	$1,093	$0	$0	($6,304)	14.8	14.8	0.0	0.0	29.5			
($40)	-	-	-	$40	-0.5	-	-	-	-0.5	1991	Overdue	-
($6)	-	-	-	$12	-0.1	-	-	-	-0.1	1991	Overdue	-
($210)	-	-	-	$210	-2.6	-	-	-	-2.6	1994	Overdue	-
($438)	-	-	-	$438	-5.5	-	-	-	-5.5	2000	2005	-
$13	-	-	-	($13)	0.2	-	-	-	0.2	2000	2005	-
TBA	-	-	-	TBA	TBA	-	-	-	TBA	-	-	-
($681)				$687	-8.5				-8.5			
-	($330)	-	-	$330	-	-4.1	-	-	-4.1	2000	2005	-
-	($557)	-	-	$557	-	-7.0	-	-	-7.0	2000	2005	-
-	($411)	-	-	$411	-	-5.1	-	-	-5.1	2000	2003	In progress
-	$323	-	-	($323)	-	4.0	-	-	4.0	2000	2005	-
-	$60	-	-	($120)	-	0.8	-	-	0.8	2000	2005	-
-	$16	-	-	($16)	-	0.2	-	-	0.2	2000	2005	-
-	TBA	-	-	TBA	-	TBA	-	-	TBA	-	-	-
	($899)			$839		-11.2			-11.2			

Table 10: Detailed Salinity Registers (A and B) continued

COMMISSION REGISTER A	Type	Date effective	Provisional salinity effect	Salinity effect (EC at Morgan)				
				Current year	2015	2050	2100	30 year average
South Australia								
Irrigation Development due to Water Trade	SA	Jun 2004	23.1	TBA	TBA	TBA	TBA	TBA
Improved Irrigation Practice	SA	Jun 2004	-7.1	TBA	TBA	TBA	TBA	TBA
Irrigation and Drainage Infrastructure	SA	Jun 2004	-11.2	TBA	TBA	TBA	TBA	TBA
South Australia Subtotal								TBA
Queensland								
No works or measures to date	-	-		-	-	-	-	-
Queensland Subtotal								
Balance—Register A								
COMMISSION REGISTER B								
New South Wales								
Namoi	Delayed	1999		1.3	6.4	21.3	42.7	-
Macquarie	Delayed	1999		0.9	4.3	14.3	28.7	-
Gwyder	Delayed	1999		0.02	0.1	0.3	0.7	-
Border Rivers	Delayed	1999		0.02	0.1	0.3	0.7	-
Murrumbidgee	Delayed	1999		1.2	6.0	20.0	40.0	-
Bogan	Delayed	1999		0.6	3.2	10.7	21.3	-
Castlereagh	Delayed	1999		-0.0	0.2	0.7	1.3	-
Victoria								
Goulburn	Delayed	1999		0.2	0.8	2.7	5.3	-
Loddon	Delayed	1999		0.1	0.7	2.3	4.7	-
Vic Mallee	Delayed	1999		3.0	15.0	50	100	-
South Australia								
SA Mallee	Delayed	1999		10.0	50.0	167	333	-
Queensland								
Condamine Ballone	Delayed	2000		0.10	0.5	1.7	3.3	-
Border Rivers	Delayed	1999		0.10	0.5	1.7	3.3	-
Irrigation development pre 1 January 2000	Delayed	TBA		TBA	TBA	TBA	TBA	-
Balance—Register B								
Balance—Registers A & B								

Notes:

TBA—To be assessed

Victorian administrative areas revised June 2003

Credits shown as positive numbers, debits shown as negative numbers

Salinity Effect—Increase in average salinity at Morgan in EC

Salinity Cost Effect—Increase in average salinity costs in $'000's (March 1988 values)

Figures rounded to one decimal place

Salinity cost effect (30 year average $'000)					Salinity credits/debits (30 year average equivalent EC)					5 year rolling review		
NSW	Vic	SA	Qld	Total	NSW	Vic	SA	Qld	Total	Latest review	Review deadline	status
-	-	TBA	-	TBA	-	-	TBA	-	TBA	2002	2004	In progress
-	-	TBA	-	TBA	-	-	TBA	-	TBA	2002	2004	In progress
-	-	TBA	-	TBA	-	-	TBA	-	TBA	2002	2004	In progress
		TBA		TBA			TBA		TBA			
-	-	-	-	-	-	-	-	-		-	-	-
					6.3	3.5	TBA	-	9.8			
-	-	-	-	-	-1.3	-	-	-	-1.3	1999	2004	In progress
-	-	-	-	-	-0.9	-	-	-	-0.9	1999	2004	In progress
-	-	-	-	-	-0.0	-	-	-	-0.0	1999	2004	In progress
-	-	-	-	-	-0.0	-	-	-	-0.0	1999	2004	In progress
-	-	-	-	-	-1.2	-	-	-	-1.2	1999	2004	In progress
-	-	-	-	-	-0.6	-	-	-	-0.6	1999	2004	In progress
-	-	-	-	-	-0.0	-	-	-	-0.0	1999	2004	In progress
-	-	-	-	-	-	-0.2	-	-	-0.2	1999	2004	-
-	-	-	-	-	-	-0.1	-	-	-0.1	1999	2004	-
-	-	-	-	-	-	-3.0	-	-	-3.0	1999	2004	In progress
-	-	-	-	-	-	-	-10.0	-	-10.0	1999	2004	In progress
-	-	-	-	-	-	-	-	-0.1	-0.1	2000	2005	-
-	-	-	-	-	-	-	-	-0.1	-0.1	2000	2005	In progress
-	-	-	-	-	-	-	-	TBA	TBA			-
									-17.6			
									-7.8			

Notes: continued

Salinity Credits—Unit of account of Salinity and Drainage Strategy (= negative of salinity cost effect)

Equivalent EC—Salinity credits (in $) expressed in EC units using the ratio of total $ credits to total Salinity Effect for the initial joint works.

Register B—Contributions to Morgan salinity in 2015 (assuming no intervention) as predicted in the 1999 Salinity Audit (see Table 1 in Basin Salinity Management Strategy 2001–2015)

Register is Transitional from Salinity and Drainage Register (All items to be recalculated using MSMS Bigmod (to be finalised March 04) and new cost Functions (to be finalised by September 2004)

Basin Salinity Management Strategy—new schemes

Achievement of water quality outcomes of the Salinity and Drainage Strategy

With the release of the Basin Salinity Management Strategy, the contracting governments of New South Wales, Victoria and South Australia have been focusing on developing their capacities to deliver not only the required joint works program but also the state in-valley works.

The Basin Salinity Management Strategy has been embodied in the Murray-Darling Basin Agreement, in the form of a revised Schedule C to that agreement that was agreed to by the Ministerial Council in November 2002. Schedule C authorises the MDBC to make any protocols that it considers necessary to give effect to the Schedule.

In June 2003 the Ministerial Council adopted the BSMS Operational Protocols Version 1.0 as appropriate for implementing Schedule C.

In accordance with Schedule C and as stated in the Operational Protocols, a program of joint works and measures has been established to offset the predicted future increase on the average salinity at Morgan, arising from accountable actions and delayed salinity impacts, by a total of 61 EC by December 2007.

Pyramid Creek Salt Interception Scheme

In December 2002, approval was granted to construct the Pyramid Creek Salt Interception and Harvesting Scheme as a joint work as defined in Schedule C of the Agreement at a total estimated cost of $12.7 million.

Pyramid Creek is an enlarged natural stream in northern Victoria that is used as a major irrigation carrier. Approximately 50 000 tonnes of salt enters Pyramid Creek each year from highly saline regional groundwater discharge mainly in the upper reaches. Water not diverted for irrigation eventually outfalls to the River Murray via the Kerang Lakes, the Loddon River and the Little Murray River.

The Groundwater Interception Scheme will intercept this saline groundwater before it impacts on the Ramsar-listed wetlands (Kerang Lakes) and the River Murray and will provide 4.3 EC benefits to the River Murray at Morgan. In addition, to offset the operations and maintenance costs of this scheme, a financial arrangement is currently being negotiated with a commercial salt harvester to harvest salts from this interception works. To this end an Agreement is currently being drafted to formalise arrangements.

During 2003–04, stage 1 work commenced. This involved approximately 1/3 of the interception works and approximately 1/2 of the salt harvesting ponds. As of June 2004 the majority of the stage 1 pipe work was complete, all of the stage 1 salt harvesting ponds have been constructed and pond lining had commenced. It is anticipated that stage 1 of these works will be finalised around December 2004.

Bookpurnong Salt Interception Scheme

In March 2003, the Ministerial Council approved the construction of the Bookpurnong Scheme as a shared scheme between a Joint Work and a State Action as defined in Schedule C of the Agreement at a total estimated cost of $11.1 million.

The Bookpurnong – Lock 4 Preliminary Land and Water Management Plan prepared in 1999 by the Loxton and Bookpurnong Local Action Planning Group identified the need for an integrated solution to issues of floodplain degradation, irrigation drainage disposal and saline groundwater discharge to the River Murray. The plan included three main elements: improvement of on-farm irrigation efficiency; interception of saline groundwater before it reached the River; and disposal of intercepted water through an existing and underused pipeline to Noora Basin.

It is estimated that the interception of saline groundwater will achieve a total benefit at Morgan of 32.5 EC units (20.5 EC for the Joint Works component and 12.0 EC for the State Action component).

Construction of the bore field and stage 1 of the pipe laying contract were completed in June 2004. Stage 2 of the pipe laying to collect saline water from 13 floodplain bores is expected to commence in July 2004. A stage 3 of pipe laying to complete the highland borefield connections will be carried out later in 2004–05 with scheme commissioning commencing in the first half of 2005.

Loxton Salt Interception Scheme

This scheme abuts the Bookpurnong Salt Interception scheme, utilising a joint disposal pipeline. Investigations were initiated in 2001 by the Loxton Land and Water Management Planning Group and progressed by DWLBC to construction readiness.

In March 2004, The Ministerial Council approved the construction of the Loxton Scheme as a shared scheme between a Joint Work and a State Action as defined in Schedule C of the Agreement at a total estimated cost of $21.4 million.

It is estimated that the interception of saline groundwater will achieve a total benefit at Morgan of 16.5 EC units (12.5 EC the Joint Works component and 4 EC for the State Action component).

Construction is programmed to commence in 2004–05.

Integration and optimisation of salt interception in the Sunraysia region

A comprehensive study to investigate possibilities for optimising salt interception in the Sunraysia Region was initiated during 2000–01. The study takes a regional ‘no borders’ approach incorporating the Mildura–Merbein, Buronga, Mallee Cliffs and Psyche Bend salt interception schemes.

In June 2004, the MDBC was advised that the study had been finalised and reviewed. Based on the findings of this study the MDBC agreed to the establishment of a Sunraysia Regional Steering Committee to oversee a

cross-border approach to salt interception and to immediately progress a program of investigations which includes the establishment of an integrated monitoring program, review of disposal requirements in the region, rehabilitation and augmentation requirement for the Mildura–Merbein interception scheme and future operation of lakes Hawthorn and Ranfurly.

Landmark-sustainable land use in the Murray-Darling Basin

As a response to evidence of environmental degradation in the Murray-Darling Basin, the MDBC initiated the Landmark research project to assess the sustainability of current dryland land uses and farming practices in the Basin.

The objective of Landmark was to identify the need for land use and land management change and policy responses to facilitate change in broadacre dryland regions of the Murray-Darling Basin Commission.

Landmark developed and applied a method to test the hypothesis that existing land uses, with widespread adoption of management practices currently recommended for sustainability, could achieve environmental, social and economic sustainability in the Murray-Darling Basin.

Landmark's research is based around three key questions:

1. What are the current recommended practices for major dryland agricultural land uses (broadacre cropping and grazing) in the Murray-Darling Basin?
2. How economically, environmentally and socially sustainable are those land uses and practices?
3. What policy options can be used by government, industry and community to enhance the sustainability of land use in the MDB?

The research focused on the three major broadacre dryland agricultural land uses—high rainfall grazing, winter rainfall cropping and grazing and summer rainfall cropping. Pilot regions were selected to study these land use systems, with consideration to geographical spread, data availability and regional commitment. The Upper Goulburn–Broken, Condamine/Central Downs and Upper Billabong catchments were identified as suitable areas for the study.

Landmark has brought together quantitative and spatial data on a range of environmental, economic and social indicators, and shown how they can be modelled and displayed across a landscape. *Current recommended practice: a directory for broadacre dryland agriculture* (MDBC Publication 1/04) was published in March 2004. A number of other Landmark Products are currently in production:

- Landmark: A method for testing dryland agricultural sustainability
- Landmark: Testing dryland agricultural sustainability. An overview of the project, its implications and applications
- Landmark: Testing sustainability of high rainfall grazing systems—Upper Goulburn–Broken (Vic.)

- Landmark: Testing sustainability of summer rainfall cropping systems—Condamine/Central Downs (Qld)
- Landmark: Testing sustainability of winter rainfall mixed agriculture systems—Upper Billabong (NSW).

Statutory referrals

The MDBC receives a number of statutory referrals submitted for consideration. All contracting governments must, under Clause 46 of the MDB Agreement, ensure the MDBC is informed of significant proposals that may affect the flow, use, control or quality of the River Murray. As a result of this provision, New South Wales created the Murray Regional Environmental Plan No. 2 (REP2). As a statutory document, it requires planning and development proposals located on the River Murray floodplain as defined by REP2 to be referred to the MDBC.

The number of referrals for 2003–04 was 126, with an average response time of eleven days.

The Floodplain Management Strategy approved by the Ministerial Council in August 2002 includes a number of recommendations regarding the MDBC's role in floodplain planning that includes assessment of significant floodplain development proposals as well as monitoring of the cumulative impact of development on the floodplain.

Total water resources: groundwater

There has been increasing recognition of the need to manage the surface and groundwater resources of the Basin as a single conceptual system. Significant work has been undertaken during 2003–04 to improve the understanding of groundwater resources and their management.

During the year the *Murray-Darling Basin Groundwater Status Report* was completed.

This report details:

- an assessment of the current extent and condition of groundwater resources in the Basin
- an assessment of the extent to which groundwater conditions (salinity and pressure) have changed over the past 10 years
- a review of groundwater management arrangements that identifies current levels of stress on the groundwater resources of the Basin.

One of the report's key findings of the Status Report is that groundwater levels have been reduced by a sequence of drier than average years since the mid-1990s. This is because of consequent increased groundwater extraction and a reduction in groundwater recharge across the Basin.

Further, the *Groundwater Flow Systems Framework: Essential Tools for Planning Salinity Management* report was published. This is an important synthesis

document that presents an overview of the use of the catchment classification approach, based upon groundwater flow systems, for improved salinity management in the Basin.

As a part of the MDBC's Watermark group of projects, focusing on longer-term strategic irrigation-related issues within an Integrated Catchment Management context, investigations have been undertaken:

- reviewing current approaches to groundwater management in irrigated areas across the Basin
- developing a set of guiding principles for groundwater management in irrigated areas
- building an evaluation system supported by rigorous benchmarks target setting, monitoring and reporting.

Stage One of the project, completed in 2003, provides a framework for groundwater management that can be applied to the management of groundwater at a local as well as a Basin-wide scale. The framework is supported by a series of guiding principles and approaches that, together, will allow practitioners to deal with the issues they currently encounter. The framework consists of the following six key stages:

- identification of resource management issues
- identification and quantification of water users and uses
- confirmation of the (external) decision environment
- technical assessments
- planning and implementation
- monitoring and evaluation.

The framework recognises that surface and groundwater are two components of one resource. In most catchments there are significant linkages between these components and changes in one system can influence the other.

Approval of the Native Fish Strategy (NFS)

It is estimated that native fish populations are now at 10 per cent of pre-European levels and likely to decline to 5 per cent unless interventions occur now. Of the 35 native fish species in the Basin, 16 are listed as threatened under state jurisdictions, while 11 exotic species have established self-sustaining populations. The plight of native fish is a major biodiversity issue and investment in their recovery aims to achieve a sustainable level of river ecosystem health.

The NFS for the Basin was released by the MDBC President in May 2004. Its aim is to restore native fish communities in the Basin to 60 per cent of their pre-European levels after 50 years. It provides a framework for community involvement, interstate coordination of management actions and policies, as well as conducting research, monitoring and reporting management activity. The NFS will feed into

broader initiatives such as the ICM Policy and the SRA. Major achievements in 2003–04 included:

- the appointment of an NFS coordinator in each jurisdiction, to drive the implementation of the Strategy at the 'on-ground' level
- significant progress in the development of the 'demonstration reach' concept, including initial investigations into the feasibility of the first demonstration reach in the Hume–Yarrawonga stretch of the River Murray
- the development of a range of communication materials on the NFS
- Basin-wide workshops on habitat management and Murray cod
- significant progress on the daughterless carp technology project.

Significant progress by the Fish Passage Reference Group

The MDBC has allocated $25 million over five years to build fishways on all MDBC locks and weirs on the River Murray. Along with improvements at existing structures such as at Yarrawonga and Torrumbarry, the building program will result in effective fish passage from the sea to Hume Dam. Concurrently, a Basin-wide program for fish passage is being progressed under the umbrella of the NFS. It will include the construction of priority barriers for passage in Queensland, New South Wales and Victoria, and examination of other structures at sites such as Lake Victoria and the Chowilla anabranch.

The Fish Passage Reference Group, comprising engineers and fish ecologists, has been established to provide an advisory, assessment, review and monitoring role. Fishways at Locks 7, 8 and 15 were completed in 2003–04, and the designs for Locks 9 and 10 are under way. Two prototype fishways at the Barrages have also been completed.

Cultural heritage

Land management at Lake Victoria

The implementation of the Lake Victoria Cultural Landscape Plan of Management continued during 2003–04. In order to remove unacceptable grazing pressure from the Lake Victoria foreshore, and due to the inability to implement alternative forms of grazing management, NSW DIPNR purchased two properties—Noola Station, and the northern part of Lake Victoria Station—bordering the lake on behalf of the MDBC during 2003–04.

RMW continued to represent the MDBC on the MDBC's Lake Victoria Advisory Committee (LVAC) during the year. The LVAC and the Barkindji Elders Committee met several times during 2003–04 to discuss implementation of the plan. There was a preliminary discussion of opportunities for the local Aboriginal community in the ongoing management of Noola and Lake Victoria Station. A feasibility study aimed at identifying options for future management of these properties was planned, for completion in 2004–05.

The operation of the Lake during 2003–04 met the requirements of the Lake Victoria Operating Strategy, which is designed to provide opportunities for native vegetation in order to stabilise the lake foreshore and prevent the exposure and erosion of cultural material. Vegetation cover has continued to expand on the foreshore. The refilling of Lake Victoria for the first time in three seasons assisted this process.

In addition to the activities at Lake Victoria, RMW convened consultation with Indigenous stakeholders for the Lake Hume Foreshore Management Plan and for the Lake Mulwala Land and On-Water Management Plan during 2003–04.

Indigenous Action Plan

To meet the requirement of the COAG Reconciliation Commitment, the Murray-Darling Basin Ministerial Council is developing an Indigenous Action Plan (MDB IAP) within a natural resource management context and built on a framework that recognises Indigenous cultural diversity within the Basin and the need for self-representation by Indigenous nations.

The Plan will provide a set of guiding principles and protocols, performance reporting strategies and benchmarks for addressing Indigenous NRM issues and improving the way agencies engage with Indigenous nations.

Informed consent

The MDB IAP project team conducted a series of Scoping Study Feedback Workshops with Indigenous nations to present the key actions and recommendations from the MDBC Indigenous Scoping Study Report, 2003, and to introduce the MDB IAP project concept and team.

The team then conducted a series of Regional Nation Based Forums to develop the framework and core components of the Plan. At these Forums each Nation nominated five representatives to attend the Indigenous nations Basin-Wide Gathering in Canberra in May 2004.

The Gathering enabled Indigenous nations to refine the core components of the Plan; to develop principles, structures, resolutions and models for Indigenous self-governance; and to form a consensus on the way forward.

The MDB IAP is in draft form and will be completed in the first quarter of 2005.

KPA 7: Environmental Works and Resources

Environmental Works and Measures Program

The eight-year $150 million Environmental Works and Measures Program (EWMP) will deliver works and measures to improve the health of the River Murray System by targeting outcomes at the six significant ecological assets and delivering the physical interventions necessary to making the best use of water currently available and optimising the benefits of any water recovered in the future.

The Program is managed by the MDBC Office in close cooperation with the state natural resource agencies responsible for actual project delivery. Overall guidance

and direction is provided by the EWMP Reference Group made up by representatives of the partner governments, MDBC, CAC, community reference panels (CRPs) and the MLDRIN.

The year 2003–04 comprises the first of the eight-year program (2003–11) and has had a focus on studies and investigations, with construction to commence in the later years of the program. A significant undertaking in the first half of the year was to re-align the existing program objectives with the objectives of the First Step Decision and the delivery of outcomes at the six significant ecological assets.

By June 2004, 20 individual projects, ranging from the small scale Chowilla Red Gum Watering Trial to the large-scale construction of fishways at Locks 7 and 8, have commenced, of which two are supporting projects designed to assist overall program implementation. Of the other 18 projects, 15 are in the scoping and feasibility stages, two are being implemented and one project has been completed.

The projects under construction are the fishway construction at Locks 7 and 8 and the installation of remotely operated gates and fishways at the barrages. The construction of the fishway at Lock 8 was completed in November 2003 and has proved successful in providing upstream passage for native fish, while the fishway at Lock 7 is due for opening in late August 2004. The first of four fishways to be constructed at the barrages was completed, with the remaining three programmed for completion in late 2004. The installation of remotely operated barrage gates is progressing well and is expected to be complete by late 2004.

The Chowilla Red Gum Watering Trial was designed to address severe stress in flood-dependent trees on the Chowilla Floodplain and to measure the ecological response of River red gum to artificial watering. Completed in May 2004, the trial has proven very successful with a significant percentage of the severely stressed trees showing signs of recovery but equally, raising the question of the long-term effects of artificial watering. This and other questions raised as a result of the early trial are now being addressed in a follow-up watering project that is designed to provide watering to an additional five areas of severely stressed red gums on the Chowilla Floodplain as well as develop an improved knowledge of the effects and implementation of artificial watering of red gums.

Across the other assets, a number of investigations have started for the Barmah–Millewa and Gunbower, Koondrook–Perricoota forests with design and construction to begin from 2005 onwards. For Hattah Lakes, the EWMP will fund the implementation of required on-ground works identified through the Hattah Management Plan currently developed by DSE Victoria from July 2004 onwards.

For the Lindsay–Wallpolla Floodplain, investigations are ahead of schedule with construction of four of the planned regulators to commence in 2005. For the Chowilla Floodplain, the large-scale Chowilla Environmental Enhancement project was to commence in July 2004.

For the Murray Mouth, Coorong and Lower Lakes, investigations have begun to identify potential ecological benefits of additional dredging to enhance the

environmental outcomes of the existing maintenance dredging currently undertaken by River Murray Water.

For the River Murray Channel, the existing Lower Murray weir pool project is being rolled into an overarching tri-state weir pool manipulation project to commence in July 2004 that will also support the existing Euston weir pool project.

KPA 8: Monitoring Natural Resources Condition

Sustainable Rivers Audit

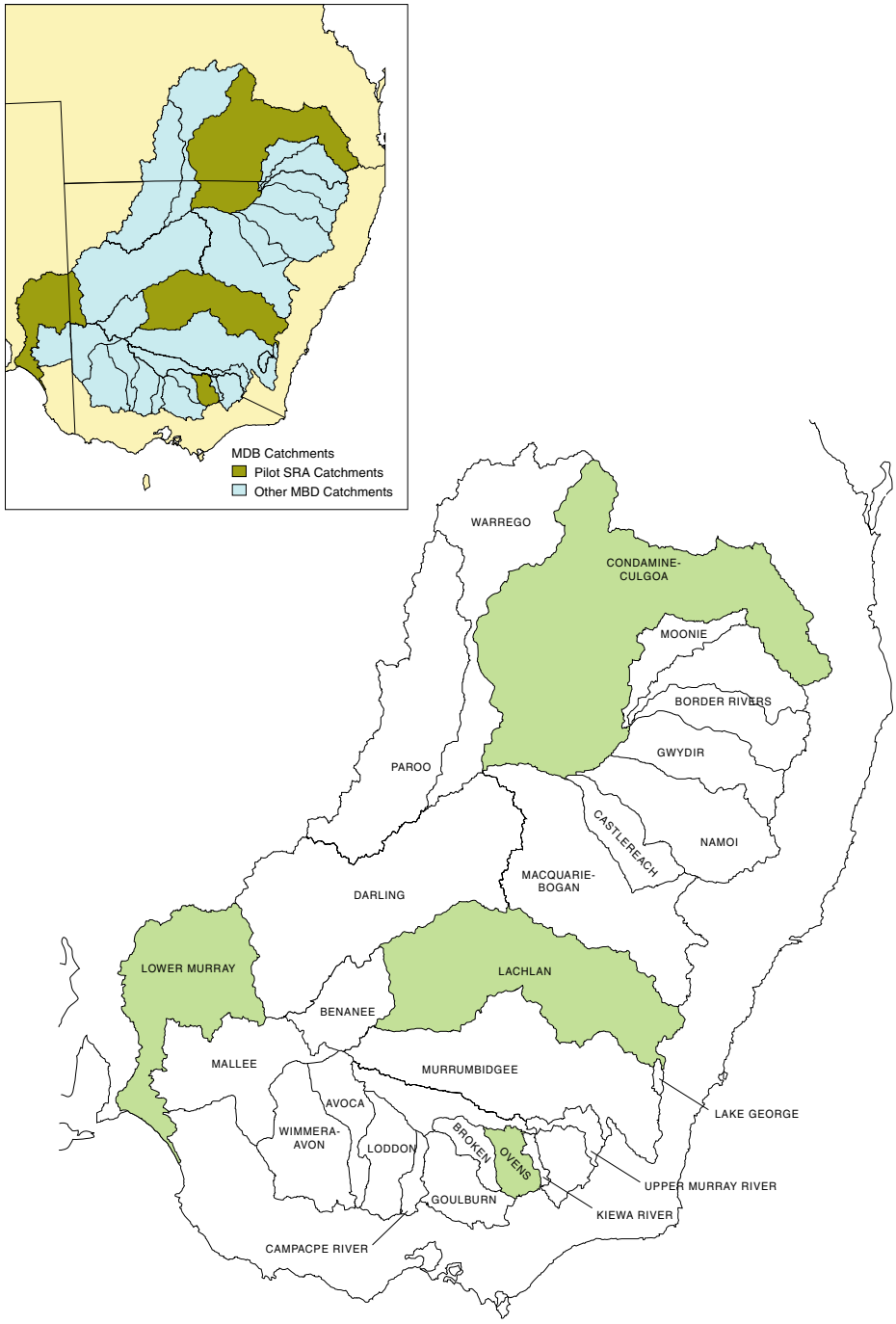
The Sustainable Rivers Audit (SRA) is a river health assessment and reporting tool developed between 2001 and 2004 by the MDBC and partner governments. It aims to provide consistent, Basin-wide information on the health of the Basin's rivers, to promote sustainable land and water management. To achieve this, the program has now developed indicators and methods for river health assessment that are robust and consistent across catchments (and jurisdictions) and will be used repeatedly over time.

This year (2003–04) saw the finalisation of the Pilot Audit which was implemented in four valleys: the Ovens Valley in Victoria; the Condamine-Culgoa catchment straddling the Queensland–New South Wales border; the Lachlan Valley in New South Wales; and part of the River Murray in South Australia. Results from the Pilot Audit were reported and published in a series of technical reports for each of the five indicator themes in May 2004: fish, macroinvertebrates, hydrology, physical habitat and water processes. A compact disc containing all five technical reports and additional investigation reports was also published in May 2004

(© NSW Fisheries)

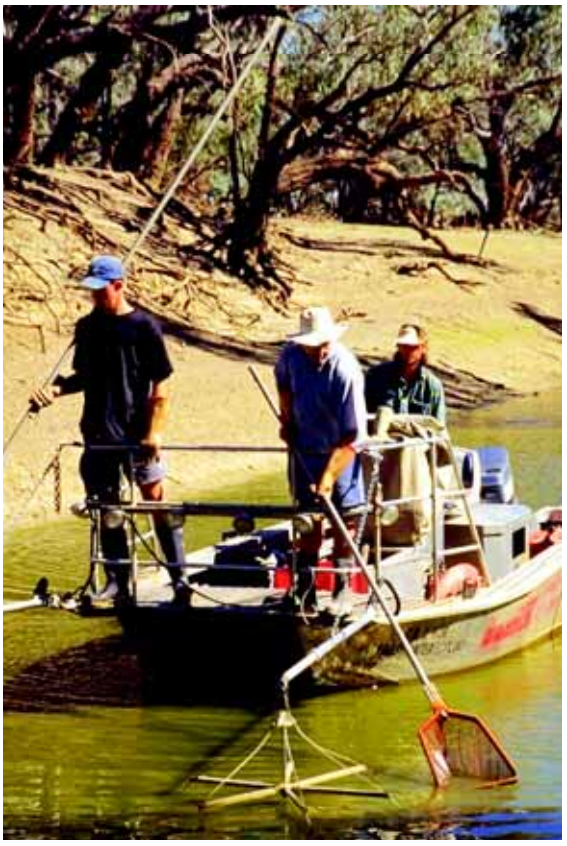
Sampling for freshwater invertebrates in the Lachlan River

Figure 13. Valleys in which methods were trialled in the Pilot Sustainable Rivers Audit



The recommendation for a full audit were adopted by the Ministerial Council in November 2003. The approved program will see immediate implementation of three indicator themes across the Basin during 2004–05 to 2009–10: fish, macroinvertebrates and hydrology. The program will include dedicated data collection across the Basin (field sampling for fish and invertebrates and modelling for hydrology) and then reporting based on a standard set of indicators.

The approved program also contained three themes to be further developed: physical form, riparian vegetation and floodplain health. These additional themes were identified under the physical habitat theme of the Pilot Audit. The water processes theme trialled in the Pilot Audit was not recommended for implementation across the Basin owing to many factors. Among these were the high cost associated with high frequency sampling required to obtain adequate statistical confidence levels, the lack of suitable referential framework at the Basin scale to interpret the data, and the substantial overlap with existing state water quality monitoring programs.



(© NSW Fisheries)

Boat electrofishing: Sampling for fish using boat electrofishing

(Photo: Glenn Moller)

Myall Creek in the Condamine Catchment was sampled as part of the Pilot Audit for the water process theme.

In March 2004, a cost-sharing arrangement was agreed to fund the implementation of the proposed program for a six-year cycle. The division of costs between partner governments was based on an analysis of the beneficiaries of the program. This arrangement recognises that the program has multiple benefits but that one of the main benefits is the collection of standardised measures of resource condition at the Basin scale. The development of the three additional themes during the first three years is to be funded under the MDBC's knowledge program. After the three-year developmental period for these themes, a further decision and cost-sharing agreement will be needed for those themes/indicators recommended for Basin-wide implementation.

The SRA Project Board, which has successfully guided the project to implementation stage, is planning to dissolve itself after handing back its responsibilities on guiding strategic directions to the MDBC in August 2004.

During 2003–04, the terms of reference for the Independent SRA Group were revised to reflect a changing responsibility from assisting with the design of the Audit program to an independent auditing function. The Audit function will include the examination of data for the three thematic groups of indicators (fish, macroinvertebrates and hydrology) provided by the participating governments and subsequent reporting to the MDBC and Ministerial Council. Annual 'Implementation Reports' will provide information on specific themes and valleys assessed in a financial year, whereas three- and six-year 'Audit Reports' will provide the Ministerial Council with an assessment of River Health across the Basin

and across groups of indicators. The reporting framework developed as part of the Pilot Audit will be further refined as the Audit progresses.

During this year, the terms of reference of the SRA Taskforce were also revised with an agreement by the SRA Project Board for the Group to be transferred into a standing committee (called the Sustainable Rivers Audit Implementation Working Group) to provide jurisdictional oversight of the implementation of the Basin-wide Audit. This new group will operate under the MDBC's Integrated Catchment Management Policy Committee and the SRA Project Board, which was convened for the decision phase of the SRA, will be disbanded.

Monitoring, evaluation and reporting

Sub-output

> *A framework for monitoring and reporting changes in the condition of the Basin's natural resources and the outcomes of investment in natural resources planning and management.*

Performance assessments and achievements

There is a framework in place to monitor, evaluate and report on:

- the condition of the Basin's natural resources and pressures associated with their use
- outcomes of investment in natural resources planning and management activities aimed at improving the condition of the Basin's natural resources
- future natural resources management investment needs.

Under the ICM Policy, the MDBC has a commitment to integrate and coordinate:

- monitoring, assessment and reporting on catchment health targets
- the effectiveness of the ICM approach (including investment) in achieving targets
- economic and social impacts of actions to achieve targets.

Work in 2003–04 concentrated on the first triennial assessment of the effectiveness of ICM in achieving agreed outcomes. A suite of studies designed to inform that assessment was either completed or nearing completion. They include:

- ICM performance measures
- a regional ICM baseline study
- jurisdictional approaches to ICM
- the ICM Snapshot.

Well-directed investment is a crucial part of ICM, however under NAP and NHT2 the MDBC no longer directly funds catchment actions. Annual reporting of investment in the Basin has not occurred in 2003–04. A reassessment of the reporting framework and monitoring processes is being undertaken with a view to agreeing on processes that draw on and are compatible with developing systems for reporting under NAP.

Work is progressing on the development of a robust, fully integrated monitoring, assessment and reporting framework for tracking the health of the Basin's catchments and the Basin itself. The framework will take until 2007 to fully develop and test, in time for a proposed Basin health report in 2010. The framework is being designed to build on and not duplicate existing Australian Government and state/regional monitoring, reporting and evaluation systems while allowing direct use of existing MDBC project evaluations and reporting.

Monitoring evaluation and reporting for individual MDBC policies, strategies and programs is carried out within the above framework once it is adopted

Water quality

Interim in-stream salinity targets have been set for Morgan on the lower River Murray in South Australia and at the end of major valleys throughout the Basin. These targets, combined with salt interception schemes, are designed to maintain predicted 2015 salinity levels at Morgan at their current levels or lower. The timetable for setting water quality targets in the Basin by 2003 other than salinity will not be achieved and an alternative approach is being explored.

Water sharing

The monitoring associated with agreed and planned water sharing arrangements is covered in detail elsewhere in the report (see section on water entitlement and efficiency of use, page 65).

River Murray Water Quality Monitoring Program

The long-term Water Quality Monitoring Program continued the surveillance of water quality in the River Murray which has been under way since 1978. This Program provides the baseline information on trends in water quality and the foundation knowledge for all investigations relating to the water quality of the River Murray. The Program underwent the third and final stage of a review towards the end of year, which will result in some revisions to the routine sampling, made in the light of information gained from the monitoring results. Data from the program, at 35 locations along the Murray Valley, is available from the MDBC by emailing DataRequests@mdbc.gov.au

(Photo: Department of Public Works NSW)

Construction of Hume Dam–work proceeding inside Coffer Dam, 25 August 1927 *(see page 59)*

Part 4

Photographs by (clockwise from bottom left): Bruce Campbell; Jane Roots; Peter Solness; Arthur Mostead

5. Partner relations

Program support and administrative structures

Overview

During 2003–04 the MDBC and Ministerial Council were advised by a number of policy and knowledge committees, technical working groups, representatives from the CAC, project boards and panels made up of representatives of the community.

These advisory groups draw on a wide range of expertise and experience and include commissioners, deputy commissioners, executives and other staff from the MDBC, CAC members, and community representatives from within and beyond the Basin. Membership of the main advisory groups is shown in Appendixes B–D.

Water Business

The River Murray Advisory Board advises the MDBC on the operation of RMW, which is an internal business unit of the MDBC. This board includes representatives from the four governments that have a direct interest in the management of the River Murray system. It has an independent business expert and is chaired by the MDBC's President.

During 2003–04, the board provided a strategic direction on:

- water resource assessment and management with particular emphasis on managing severe drought
- improvement to structures along the River Murray to enhance operational safety and concurrently to provide fish passage through The Living Murray
- development of service agreements with constructing authorities and operational protocols for all works.

Natural Resources Business

The 2003–04 financial year was a period of consolidation of the three new knowledge committees developed to support Natural Resources Business.

The ICM Policy Committee refined its investment plan for knowledge generation in the Basin. This three-year plan has prioritised areas of investment and was approved by the MDBC as a basis for the allocation of operational budgets. Following setting of broad strategic directions by the ICM Policy Committee, the three knowledge committees gave specific advice on the development of projects to be funded within that area resulting in a more targeted approach for investment in natural resources management and strengthening the connection between the two main internal funding programs.

These are:

- strategic investigation (funded through the internal SI&E Program) and
- policy development (funded through the internal Statutory Policy Development (SPD) Program).

During 2002–03 four project boards were operational and addressed a number of specific natural resources issues (see Appendix D). These boards report directly to the MDBC and have been established to address agreed, high-priority, Basin-wide issues.

Consolidation on how to maximise and ensure efficient links between the knowledge committees and relevant project boards continued. This has resulted in the development of new internal reporting arrangements in the MDBC Office and streamlined budget allocation and operating procedures.

Business administration

All areas of investment made by the MDBC are vetted by the Finance Committee. During 2003–04, this committee continued to provide advice on budgetary and other financial issues, corporate planning and corporate governance.

Information technology services were implemented during 2003–04 including the renewal of a range of operating systems and improvement of external and internal servers supporting the MDBC website and data collection and storage.

A new internal document control system was successfully completed. Roll out for the MDBC Office commenced in 2002–03. It ensures correct archiving of all internal files including incoming and external correspondence. It is essential for improved efficiency within an expanding office structure and greater reliance on electronic documentation and correspondence.

Performance report

KPA 9: Services to partners

Sub-output

> *Services that ensure effective participation of the CAC and partner governments in the development of MDBC policies and programs, and effective participation of stakeholders in relevant MDBC activities.*

Performance assessments and achievements

- Services in place for effective CAC participation in MDBC activities as an equal partner.

The CAC met on three occasions in 2003–04. The CAC Chairman attended all Council and MDBC meetings during the year and CAC members participated in many of the meetings and workshops associated with MDBC activities.

Services to support this participation are provided both from the CAC Secretariat and the wider MDBC staff. This includes preparing and distributing agenda papers, organising and helping to run meetings and coordinating follow-up actions.

In 2003–04, an interactive website was established (operational in 2004–05) to assist CAC members to be more effective in their contributions to MDBC working groups and committees and on-going dialogue on issues between meetings.

As the key community input to Council's policy development, CAC members are also cognisant of the need to develop a greater capacity to interact with and gather information on the views of the wider community.

Services in place for effective participation of partner governments in MDBC activities

The key forum for effective partner government participation in the Initiative is through the MDBC. Four MDBC meetings are held each year, with additional meetings called to address specific issues and out-of-session resolution of business between meetings. In 2003–04, seven meetings of the MDBC were held: four formal meetings, one workshop focused on The Living Murray and two teleconferences.

Other mechanisms for effective participation by partner governments are through their representation on committees, project boards and other groups advising the MDBC. Most committees, working groups and taskforces are jurisdictionally based and include participants from each partner government. Project Boards are generally made up of three to four members who are Commissioners, Deputy Commissioners and CAC members or senior agency staff.

In 2003–04, the MDBC supported some thirty committees, working groups and other groups to which partner government staff were significant contributors.

The MDBC Office provides support services to ensure the effective operation of the MDBC and these committees and groups. This includes preparing and distributing agenda papers, organising and helping to run meetings, coordinating follow-up actions and responding to other relevant requests.

The Murray-Darling Basin Contact Officers based in each participating government provide the key link to effective participation of and communication with staff from relevant government agencies.

Processes in place for effective participation of stakeholders in key MDBC projects

The CAC and staff from partner governments provide the majority of stakeholder input to MDBC activities through participation on committees, project boards and other groups. Additional opportunities may be involved through projects.

During 2003–04, special processes continued to allow wider stakeholder participation in the MDBC's Water Business and Natural Resources Business, in particular The Living Murray and the development of a Murray-Darling Basin Indigenous Action Plan. Many projects within the MDBC's Natural Resources portfolio involve extensive consultation with key stakeholders in industry, research organisations, government agencies and Indigenous communities.

A toolkit offering community, government and industry ways to foster good practice engagement in the increasingly sensitive area of managing natural resources, was developed by the MDBC and launched in June 2004. It is aimed at staff or volunteers from government, non-government, industry and private sector organisations in the Basin, catchment management organisations and other regional groups involved in natural resources management.

The toolkit was developed from reviews of previous work, interviews with Basin stakeholders and from observing events. A wide range of people attended a development workshop for the toolkit, including members of the Community Advisory Council.

KPA 10: Services to Council

Sub-output

Services that support effective Ministerial Council decision-making.

Performance assessment and achievement:

- Support services provided as agreed.

The Ministerial Council usually meets twice each year. When decisions are required outside the meeting schedule, out-of-session resolutions are coordinated through the MDBC Office. In 2003–04 the Ministerial Council met twice and four out-of-session decisions were taken.

The MDBC Office provides support services to ensure the effective operation of meetings and out-of-session decisions by the Ministerial Council. This includes preparing and distributing agenda papers, organising and helping to run meetings, and the administration of out-of-session decision-making.

The MDBC Office undertook a restructuring process within its secretariat supporting the Ministerial Council, in parallel to the review of the Community Advisory Committee. This resulted in a more centralised secretariat function spread across three permanent staff and additional responsibilities for high-level committees of the MDBC and the River Murray Water Advisory Board.

Further reforms were agreed by COAG in June 2004 requiring the development of procedures and further steps towards best practice to be implemented during 2004–05.

The independent office of President plays a key role in supporting both the Ministerial Council and the MDBC. The MDBC Office provides support to the President to fulfil this role.

(Photo: Terry Hope)

Unveiling the plaque at the completion of the Hume Dam remedial works, March 2004 (left to right) Don Blackmore, then Murray-Darling Basin Commission Chief Executive; the Rt. Hon. Ian Sinclair, AC, President of the Murray-Darling Basin Commission; and the Hon. Warren Truss, MP, Chair of the Murray-Darling Basin Ministerial Council and Australian Government Minister for Agriculture, Fisheries and Forestry.

Part 5

Photographs by (clockwise from bottom left): Arthur Mostead; Michael Bell; Peter Solness; Viv Martin

6. Business administration

Financial statements

The Australian National Audit Office (ANAO) continues as the MDBC's auditor.

The financial statements have been prepared on an accruals basis. These statements, including the auditor's report and the statement on behalf of the MDBC are provided on pages 113 to 157.

Budget expenditure 2003–04

The Ministerial Council approved a budget of $109.5 million for 2003–04 (see Table 11).

Table 11: Composition of 2003–04 budget expenditure approved by the Ministerial Council

	$m
River Murray Water	64.2
Natural resources business	38.4
Partner relations	0.9
Business administration	6.0
Total	**109.5**

Note: Includes carried forward expenditure of $13.4m. Carried forward expenditure has previously not been disclosed.

Budget revenue 2003–04

Total budget revenue for 2003–04 from contracting governments and other funding sources was $104.2m (see Table 12).

Table 12: Composition of 2003–04 budget revenue approved by the Ministerial Council

	$m
Australian Government	16.6
New South Wales	26.6
Victoria	24.9
South Australia	19.5
Queensland	0.9
Australian Capital Territory	0.3
Total contracting governments	88.8
Other income (other services)	2.0
Carry forward	13.4
Total MDBC funding	**104.2**

Budget expenditure 2004–05

In March 2004, the Ministerial Council approved a budget of $103.9 million for 2004–05 (see Table 13).

Table 13: Composition of 2004–05 budget expenditure approved by the Ministerial Council

	$m
River Murray Water	57.3
Natural resources business	39.4
Partner relations	0.9
Business administration	6.3
Total	**103.9**

Performance report

KPA 11: People management

The MDBC continued to respond to its changing operational needs through the formulation, coordination and implementation of improved human resources policies and procedures.

Staff structure

The Chief Executive is supported by the General Manager Corporate Services, General Manager Natural Resources and General Manager River Murray Water. There are eight senior executives (seven male, one female) and, with the exception of one, all senior executives are employed on fixed-term contracts.

The MDBC's salary structure is based on six broad salary bands (professional officer levels 1–6). Table 14 provides details of the employment categories and gender mix across the business areas.

Employment conditions are covered by the MDBC's certified agreement with staff engaged in full-time or part-time continuing employment, fixed-term and casual employment or seconded from partner agencies. Continuing employees make up 46.8 per cent of staff, 50.5 per cent are fixed term and 2.7 per cent are seconded.

Table 14: Employee categories

	Executive/ Secretariat	River Murray Water	Natural Resources	Corporate Services
PO1–PO2 $28,028 – $46,324*	1	7	9	10
PO3–PO4 $44,913 – $68,806*	1	4	32	8
PO5–PO6 $79,576 – $89,316*	2	4	16	1
Senior Exec	1	2	4	1
Other	2	1	2	3
Male	2	11	27	10
Female	5	7	36	13
Continuing	2	13	21	16
Fixed Term Employee	3	5	41	7
Secondment	0	1	2	0

* Base salary figure only

Recruitment and retention

In 2003–04, the total number of staff employed by the MDBC was 111. Thirty-seven vacancies were identified. Taking in the number of departures, the net gain was seven new positions. Thirty new employees were appointed by the end of the reporting period. The majority of new employees (86.6 per cent) were appointed fixed-term, reflecting the short- to medium-term project nature of the MDBC's business. The highest proportion of new starters were employed in the Natural Resources business, where project work is most concentrated.

There was a 43.7 per cent increase in the number of staff leaving the MDBC from the previous year. Again, this figure reflects the project nature of the MDBC's business and the increase in the number of short to medium term projects. The average employment period for a fixed-term employee is 1.9 years and 6.3 years for continuing employees.

MDBC Certified Agreement 2003–2006

In October 2003, the Australian Industrial Relations Commission certified the Murray-Darling Basin Commission Agreement 2003–2006 under section 170LK of the *Workplace Relations Act 1996*. This followed extensive negotiation through the MDBC's Workplace Consultative Committee (WCC) and reflects the commitment of management and staff to the development of effective working arrangements.

The Agreement provides a 14 per cent pay increase spread over three years, building on earlier agreements with streamlined conditions and enhanced family

friendly arrangements. These arrangements include support for child care costs where employees are required to work and/or travel outside of their regular pattern of work, facilities for nursing mothers and an increase in paid maternity and paternity leave.

Human resources policies and procedures

Consistent with the MDBC's objective of ensuring its workplace practices are conducive to business needs, a review of the human resources policies and procedures began during the year. The review addressed changes arising from the Certified Agreement and progressed in consultation with MDBC staff through the WCC. Revised policies on learning and development, orientation, rewards and recognition, probation and cessation were at an advanced stage at the time of reporting. Changes to the Performance Management and Development System (PMDS) and recruitment and an update to the HR Manual were also in progress.

The MDBC was working towards the implementation of a human resource strategy which will be linked to the strategic planning and budget process.

Performance management and development system

A performance management and development system (PMDS) was introduced in 1999 and its operation and use was assessed in 2003–04 in conjunction with the broader human resources policy review. Changes to procedures were identified and will be implemented later in 2004. The changes will be introduced through staff awareness programs. Support services and online self-help documentation will also be developed to enhance employees' understanding of the process and provide a mechanism for continuous improvement over subsequent years.

Staff welfare

An employee assistance program for MDBC staff will be finalised in late 2004. The MDBC continued to promote improved work practices and attitudes that sustain health and safe work environments. In April 2003, the MDBC embarked on a comprehensive occupational health and safety (OH&S) improvement campaign including training for all managers and staff, an upgrade to the OH&S policy and procedures, and a planned OH&S audit for later in 2004.

KPA 12. Business systems and financial administration

Sub-output

Systems and procedures that are effective and efficient.

Performance assessments and achievements:

- Knowledge management, administrative and financial management systems which safeguard the interests of the MDBC and provide accurate, relevant and timely information to support decision-making.

This financial year has seen consolidation in the use of records management, which will be expanded in 2004–05 to encompass an enterprise-wide approach to information management improvement. This will include a focus on information management policy and procedure and on extending the use of records management tools through a migration to Trim Context, through staff training and communication, and through an analysis of business functions to establish a revised business classification scheme.

The Finance One, Finance Management Information System has been upgraded to introduce additional functionality and investigations carried out into add-on modules are available to provide improved budget management and financial reporting.

A key objective of providing more useful financial information is to ensure that upgraded financial management reports are available to improve our existing budget management.

The financial management information system upgrade project encompasses:

- establishment of a single general ledger for the MDBC which will support multi-dimensional reporting and analysis
- integration of the financial management aspects of project
- governance with the general ledger
- an electronically based budget process and improved asset accounting
- development of a 'self service' capability within the system to provide real accountability for financial managers.

The latest version of Frontier Software's Human Resources and Payroll system (CHRIS 21) was installed providing an improved user interface and enhanced reporting capability. A web-based application called CHRIS Kiosk has also been investigated. This can provide staff with direct access to their personnel information and supports electronic workflow to manage business functions such as leave applications.

The MDBC Office has once again been challenged in terms of accommodating staff at 15 Moore Street, Canberra, and providing for co-location of work teams. An accommodation fitout project has been established which will result in the sub-leased area on Level 3 being relinquished and an option to lease Level 6 being taken up. Minor office and workstation configuration changes are also proposed for Level 4. This project will be complete early in the 2004–05 financial year.

A new Contacts Management System has been completed and implemented, providing a single repository for the contact details of the people with which MDBC Office staff interact. This is expected to lead to more efficient and effective communication with stakeholders.

A project management improvement project resulted in the development of a project management methodology being developed, supported by a Practitioner's Guide for Project Managers. This work was done by MDBC staff with the help of Best Practice Project Management and as such has a strong level of staff support. The project also resulted in a report containing recommendations to establish a project management support resource within the MDBC to continue this work. Additional work is required to review the governance aspects of program and project management.

Information technology (IT) infrastructure in place to support business and operating systems

The 2003–04 financial year was a consolidation period in terms of IT infrastructure. The infrastructure migration project of the previous year provided a solid foundation for business application upgrades, and the introduction of the Contacts Management application. This application supports a project management improvement project and catered for growth in file system storage and backup requirements.

A Pilot Study into the use of Virtual Private Networks and thin client technology (terminal services) was carried out to assist in the assessment of options to improve the MDBC's remote access facilities.

Storage management is expected to continue to be a challenge in 2004–05.

An information technology and communications strategic planning project will provide input into a corporate strategic planning framework.

Part 6

Photographs by (clockwise from bottom left): Peter Solness; Peter Solness; Arthur Mostead; Catherine Norwood

Australian National
Audit Office

INDEPENDENT AUDIT REPORT

To the Chairman of the Murray-Darling Basin Ministerial Council

Scope

The financial statements and directors' responsibility

The financial statements comprise:

- Statement by the President and Executive of the Commission;
- Statements of Financial Performance, Financial Position and Cash Flows;
- Schedules of Commitments and Contingencies; and
- Notes to and forming part of the Financial Statements

of the Murray-Darling Basin Commission for the year ended 30 June 2004.

The President and the Acting Chief Executive Officer of the Commission are responsible for the preparation and true and fair presentation of the financial statements. This includes responsibility for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial statements.

Audit approach

I have conducted an independent audit of the financial statements in order to express an opinion on them to you. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing and Assurance Standards, in order to provide reasonable assurance as to whether the financial statements are free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgement, selective testing, the inherent limitations of internal control, and the availability of persuasive, rather than conclusive, evidence. Therefore, an audit cannot guarantee that all material misstatements have been detected.

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BARTON ACT
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While the effectiveness of management's internal controls over financial reporting was considered when determining the nature and extent of audit procedures, the audit was not designed to provide assurance on internal controls.

I have performed procedures to assess whether, in all material respects, the financial statements presents fairly, in accordance with Accounting Standards and other mandatory financial reporting requirements in Australia, a view which is consistent with my understanding of the Murray-Darling Basin Commission's financial position, and of its performance as represented by the statements of financial performance and cash flows.

The audit opinion is formed on the basis of these procedures, which included:

- examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial statements; and
- assessing the appropriateness of the accounting policies and disclosures used, and the reasonableness of significant accounting estimates made by the President and the Acting Chief Executive Officer of the Commission.

Independence

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate Australian professional ethical pronouncements.

Audit Opinion

In accordance with sub-clause 84(4) of the *Murray-Darling Basin Agreement* 1992, I now report that the financial statements are in agreement with the accounts and records of the Murray-Darling Basin Commission and in my opinion:

(i) the financial statements are based on proper accounts and records;

(ii) the financial statements are in agreement with those accounts and records;

(iii) the receipt, expenditure and investment of moneys, and the acquisition and disposal of assets by the Commission during the year have been in accordance with the *Murray-Darling Basin Agreement 1992*; and

(iv) the financial statements give a true and fair view, in accordance with applicable Accounting Standards and other mandatory professional reporting requirements in Australia of the financial position of the Murray-Darling Basin Commission as at 30 June 2004, and its financial performance and cash flows for the year then ended.

Australian National Audit Office

Mashelle Parrett
Executive Director

Delegate of the Auditor-General

Canberra
24 September 2004

MURRAY-DARLING BASIN COMMISSION
STATEMENT BY THE PRESIDENT AND EXECUTIVE OF THE COMMISSION ON 16 SEPTEMBER 2004

In our opinion, the attached financial statements for the year ended 30th June 2004 are based on properly maintained financial records and give a true and fair view of the transactions of the Murray-Darling Basin Commission.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Commission will be able to pay its debts as and when they become due and payable.

This statement is made in accordance with a resolution of the Commission dated 16 September 2004.

Rt Hon Ian Sinclair AC
President

D J Doyle
Acting Chief Executive Officer

E G Haberfeld
General Manager Corporate Services

Murray-Darling Basin Commission
Statement of Financial Performance
for the year ended 30 June 2004

	Notes	2004 $'000	2003 $'000
Revenues from ordinary activities			
Revenues from Government	**4A**	**97,026**	75,116
Goods and services	**4B**	**1,091**	2,726
Interest	**4C**	**1,890**	1,425
Revenue from sale of assets	**4D**	**141**	67
Revenue on recognition of assets	**4E**	**529**	42,546
Revenues from ordinary activities		**100,677**	121,880
Expenses from ordinary activities			
Employees	**5A**	**8,614**	7,526
Suppliers	**5B**	**58,456**	45,658
Depreciation and amortisation	**5C**	**15,007**	25,847
Value of assets sold	**4D**	**185**	68
Write-down of assets	**5D**	**27**	-
Correction of fundamental error	**3,8D**	**422,637**	-
Expenses from ordinary activities		**504,926**	79,099
Borrowing costs expense	**6**	**21**	26
Net surplus / (deficit) from ordinary activities		**(404,270)**	42,755
Net credit to asset revaluation reserve	**12A**	**148,007**	-
Total revenues, expenses and valuation adjustments recognised directly in equity		**148,007**	-
Total changes in equity other than those resulting from transactions with owners as owners		**(256,263)**	42,755

The above statement should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission
Statement of Financial Position
as at 30 June 2004

	Notes	2004	2003
		$'000	$'000
ASSETS			
Financial assets			
Cash	7A	13,583	21,305
Receivables	7B	5,301	3,248
Investments	7C	29,000	18,000
Other financial assets	7D	888	888
Total financial assets		48,772	43,441
Non-financial assets			
Infrastructure assets	8A,D	1,350,259	1,618,699
Property, plant and equipment	8B,D	1,000	1,029
Inventories	8E	64	17
Leasehold improvements	8C	162	222
Other non-financial assets	8F	72	104
Investment in joint venture entity	8G	502	-
Total non-financial assets		1,352,059	1,620,071
Total Assets		1,400,831	1,663,512
LIABILITIES			
Interest bearing liabilities			
Leases	9	204	269
Total interest bearing liabilities		204	269
Provisions			
Employees	10	1,592	1,663
Total provisions		1,592	1,663
Payables			
Suppliers	11A	22,976	20,488
Revenue received in advance	11B	4,655	13,955
Total payables		27,631	34,443
Total Liabilities		29,427	36,375
NET ASSETS		1,371,404	1,627,137
EQUITY			
Contributions by contracting Governments for purchase of assets	12A	3,144	2,614
Reserves	12A	148,007	-
Retained Surpluses	12A	1,220,253	1,624,523
TOTAL EQUITY		1,371,404	1,627,137
Current assets		48,908	43,562
Non-current assets		1,351,923	1,619,950
Current liabilities		28,471	35,378
Non-current liabilities		956	997

The above statement should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission
Statement of Cash Flows
for the year ended 30 June 2004

	Notes	2004	2003
		$'000	$'000
OPERATING ACTIVITIES			
Cash received			
Contributions from Government		**87,726**	74,448
Goods and Services		**1,332**	2,796
Interest		**1,842**	1,513
Net GST received from Australian Taxation Office		**6,233**	7,207
Total cash received		**97,133**	85,964
Cash used			
Employees		**8,685**	7,103
Suppliers		**64,462**	51,546
Borrowing costs		**21**	26
Total cash used		**73,168**	58,675
Net cash from operating activities	**13**	**23,965**	27,289
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		**141**	67
Proceeds from Investments		**-**	14,000
Total cash received		**141**	14,067
Cash used			
Purchase of infrastructure assets		**20,763**	27,085
Purchase of property, plant and equipment		**530**	583
Purchase of Investments		**11,000**	-
Total cash used		**32,293**	27,668
Net cash (used by) investing activities		**(32,152)**	(13,601)
FINANCING ACTIVITIES			
Cash received			
Contributions by contracting Governments for purchase of assets		**530**	583
Total cash received		**530**	583
Cash used			
Repayment of lease debt		**65**	59
Total cash used		**65**	59
Net cash from financing activities		**465**	524
Net increase / (decrease) in cash held		**(7,722)**	14,212
Cash at the beginning of the reporting period		**21,305**	7,093
Cash at the end of the reporting period	**7A**	**13,583**	21,305

The above statement should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission
Schedule of Commitments
as at 30 June 2004

	2004	2003
	$'000	$'000
BY TYPE		
Capital commitments		
Infrastructure, property, plant and equipment	-	28
Total capital commitments	-	28
Other commitments		
Operating leases	**2,384**	2,157
Other commitments	**5,513**	10,320
Total other commitments	**7,897**	12,477
Commitments receivable	**(718)**	(1,137)
Net commitments	**7,179**	11,368
BY MATURITY		
All net commitments		
One year or less	**4,055**	8,568
From one to five years	**3,124**	2,800
Over five years	-	-
Net commitments	**7,179**	11,368
Operating lease commitments		
One year or less	**836**	572
From one to five years	**1,548**	1,585
Over five years	-	-
Total operating lease commitments	**2,384**	2,157
Capital commitments		
One year or less	-	28
Total capital commitments	-	28
Other commitments		
One year or less	**3,624**	8,805
From one to five years	**1,889**	1,515
Over five years	-	-
Total other commitments	**5,513**	10,320
Commitments receivable	**(718)**	(1,137)
Net commitments	**7,179**	11,368

All commitments are stated inclusive of Goods and Service Tax where relevant.

Commitments for capital construction exist between the Constructing Authorities and their sub-contractors and not between Constructing Authorities and the Commission.

The above schedule should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission

Schedule of Commitments

as at 30 June 2004

Operating leases are effectively non-cancellable and comprise:

Nature of Lease	***General description of leasing arrangement***
Leases for office accommodation	Lease payments are subject to annual increases in accordance with upwards movements in the Consumer Price Index. The initial periods of office accommodation are still current and may be renewed for up to five years at MDBC's option, following a once-off adjustment of rentals to current market levels.
Lease for office accommodation fit-out	An additional rent is paid on the office accommodation for the fit-out of the office premises. Fit-out rent is a set amount each year for the continuing term of the lease.
Lease for computer equipment	Lease payments are made for the supply of office computer equipment for a period of three years. Computer equipment rent is a set amount each year for the term of the lease. All leased equipment will remain the property of the lessor.

The above schedule should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission
Schedule of Contingencies
as at 30 June 2004

	Note	2004	2003
		$'000	$'000
Contingent liabilities			
Claims for damages / costs		**-**	353
Contingent assets			
Claims for damages / costs		**-**	-
Net contingent liabilities		**-**	353

Details of each class of contingent liabilities and assets, including those not included above because they cannot be quantified or are considered remote, are disclosed in Note 14: Contingent Liabilities and Assets.

The above schedule should be read in conjunction with the accompanying notes.

Murray-Darling Basin Commission

Notes to and forming part of the Financial Statements

for the year ended 30 June 2004

Note 1: Summary of Significant Accounting Policies

1.1 Basis of Accounting

The Financial Statements are required by Section 84 of the Murray-Darling Basin Agreement and are a general purpose financial report.

The Financial Statements have been prepared in accordance with:

- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board; and
- Consensus Views of the Urgent Issues Group.

The Statements of Financial Performance and Financial Position have been prepared on an accrual basis and are in accordance with historical cost convention, except for certain assets, which, as noted, are at valuation.

Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

Assets and liabilities are recognised in the Statement of Financial Position when and only when it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured.

Liabilities and assets that are unrecognised are reported in the Schedule of Commitments and the Schedule of Contingencies (other than unquantifiable or remote contingencies, which are reported at Note 14).

Revenues and expenses are recognised in the Statement of Financial Performance when and only when the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Changes in Accounting Policy

The accounting policies used in the preparation of these Financial Statements are consistent with those used in 2002–03, except in respect of:

- treatment of assets under construction (refer Note 1.14); and
- recognition of joint venture agreement (refer Note 20).

Infrastructure assets for this financial year were revalued on a fair value basis at 30 June 2003. Revaluation increments and decrements are taken directly to the Asset Revaluation Reserve in accordance with *AASB 1041 Revaluation of Non-Current Assets.*

1.3 Revenue recognition

The revenues referred to in the notes are revenues relating to the core operating activities of the Commission.

Other Revenue

Revenue from the sale of goods is recognised upon the delivery of goods to customers.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts or other agreements to provide services.

Receivables for goods and services are recognised at the nominal amounts due, less any provision for bad and doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collectability of the debt is judged to be less rather than more likely.

Interest revenue is recognised on a time proportionate basis that takes into account the effective yield on the relevant asset.

Revenue from disposal of non-current assets is recognised when control of the asset has passed to the buyer.

Revenue received in advance

In accordance with accrual accounting principles, expenditures during the year are matched with revenues provided by Governments. Amounts received in advance to fund projects in future years and unspent funds provided for the current year that have been authorised to be carried-over to the following year in accordance with Section 75 of the Murray-Darling Basin Agreement are treated as revenue received in advance.

1.4 Transactions with the Owners as Owners

Equity injections

Amounts appropriated which are designated as 'equity injections' for a year are recognised directly in Contributed Equity in that year.

1.5 Employee Benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for wages and salaries (including non-monetary benefits), annual leave and sick leave are measured at their nominal amounts. Other employee benefits expected to be settled within 12 months of the reporting data are also measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefit liabilities are measured at the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Agency is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration, including the Agency's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the work of the Australian Government Actuary as at 30 June 2004. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation. Estimated cash outflows are calculated by adjusting the nominal value for each employee for potential remuneration increases and applying a probability factor related to years of service to estimate expected payout and year of payment.

The classification of annual and long service leave liabilities into current and non-current is based on the past history of payments.

Superannuation

Staff of Murray-Darling Basin Commission are members of the Commonwealth Superannuation Scheme and the Public Sector Superannuation Scheme. The liability for their superannuation benefits is recognised in the Financial Statements of the Australian Government and is settled by the Australian Government in due course.

Murray-Darling Basin Commission makes employer contributions to the Australian Government at rates determined by an actuary to be sufficient to meet the cost to the Government of the superannuation entitlements of the Agency's employees.

1.6 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and benefits incidental to ownership of leased non-current assets. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Where a non-current asset is acquired by means of a finance lease, the asset is capitalised at the present value of minimum lease payments at the beginning of the lease term and a liability recognised at the same time and for the same amount. The discount rate used is the interest rate implicit in the lease.

Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a basis which is representative of the pattern of benefits derived from the leased assets.

Lease incentives taking the form of 'free' leasehold improvements and rent holidays are recognised as lease liabilities. These liabilities are reduced by allocating lease payments between rental expense and reduction of the liability.

1.7 Assets held by Constructing Authorities acquired with Commission funds.

Infrastructure assets used for the storage and distribution of bulk water and for related activities have been constructed with funds provided by the Commission. These assets are located in the States and operated by employees of State Government agencies.

Such assets are considered to be held in trust by State Constructing Authorities on behalf of the Commission.

The Murray-Darling Basin Agreement requires each Constructing Authority to account to the Commission for all monies received from the Commission under the Agreement. The Commission must cause a list to be kept of both the assets it acquires and the assets Constructing Authorities acquire with funds made available by the Commission. To meet these requirements, assets acquired by the Commission are included in the Commission's asset registers and accounts. Each of the State Constructing Authorities is required by the Commission to maintain an asset list which is to be made available to the Commission on request.

1.8 Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution. Cash is recognised at its nominal amount.

1.9 Other Financial Instruments

Trade Creditors

Trade creditors and accruals are recognised at their nominal amounts, being the amounts that are expected to be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

Term Deposits

Term deposits are recognised at cost.

Contingent Liabilities and Contingent Assets

Contingent liabilities (assets) are not recognised in the Statement of Financial Position but are disclosed in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability (asset), or represent an existing liability (asset) in respect of which settlement is not probable or the amount cannot be reliably measured. Remote contingencies are part of this disclosure. Where settlement becomes probable, a liability (asset) is recognised. A liability (asset) is recognised when its existence is confirmed by a future event, settlement becomes probable or reliable measurement becomes possible.

1.10 Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor's accounts immediately prior to the restructuring.

1.11 Property, Plant and Equipment (P,P&E)

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the Statement of Financial Position, except for purchases costing less than $600 in which case they are expensed (other than where they form part of a group of similar items which are significant in total).

Revaluations

Infrastructure assets are carried at valuation. Fair value is measured for infrastructure assets on the basis of depreciated replication cost.

A revaluation was undertaken of the Commission's infrastructure assets as at 30 June 2003. The revaluation was performed by qualified independent valuers, SMEC AUSTRALIA Pty Ltd and resulted in a net increase in the fair value of the Commission's infrastructure assets of $148,007,000.

The main factors behind this revaluation increase were an increase in unit rates in line with CPI, and a more accurate understanding of the components of each infrastructure asset that facilitated a more detailed assessment of the asset's replication cost.

Frequency

Revaluations of infrastructure assets are undertaken on a three-yearly cycle.

The Finance Minister's Orders require that all property, plant and equipment assets be measured at up-to-date fair values from 30 June 2005 onwards.

Depreciation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Commission using, in all cases, the straight-line method of depreciation. Leasehold improvements are depreciated on a straight-line basis over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

Depreciation rates (useful lives) and methods are reviewed annually and necessary adjustments are recognised in the current, or current and future reporting periods as appropriate. Residual values are re-estimated for a change in prices only when assets are revalued.

Depreciation rates applying to each class of depreciable assets are based on the following useful lives.

	2004		**2003**	
Motor Vehicles	**6.67 years**	**(15% pa)**	**6.67 years**	**(15% pa)**
Computers and IT equipment	**3 years**	**(30% pa)**	**3 years**	**(30% pa)**
Office Equipment	**5.88 years**	**(17% pa)**	**5.88 years**	**(17% pa)**
Furniture, fixtures and fittings	**7.69 years**	**(13% pa)**	**7.69 years**	**(13% pa)**
Infrastructure Assets	Up to 400 years based on an assessment of the useful economic life		Up to 400 years based on an assessment of the useful economic life	

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 5C.

1.12 Impairment of Non-current Assets

Non-current assets carried at fair value at the reporting date are not subject to impairment testing.

Non-current assets carried at cost or deprival value, which are not held to generate net cash inflows, have been assessed for indications of impairment. Where indications of impairment exist, the carrying amount of the asset is compared to the higher of its net selling price and depreciated replacement cost and is written down to that value if greater.

1.13 Inventories

Inventories comprise publications and videos held for sale or free distribution as part of the Commission's communications program.

Inventories held for resale are valued at the lower of cost and net realisable value.

Inventories not held for resale are valued at cost, unless they are no longer required in which case they are valued at net realisable value.

1.14 Assets Under Construction

Assets under construction are carried at cost and capitalised when completed and ready for use. Costs include both direct and indirect costs, which can be reasonably attributed to the asset under construction.

1.15 Joint Venture Entity

In accordance with AASB 1006 *Accounting for Joint Ventures*, the Commission's interest in a joint venture entity, Murray-Darling Freshwater Research Centre is accounted for using the equity method. The share of the surplus or deficit of the joint venture entity is recognised in the Statement of Financial Performance. Details of the joint venture entity are disclosed at Note 20.

Note 2: Adoption of AASB equivalents to International Financial Reporting Standards from 2005-06

The Australian Accounting Standards Board has issued replacement Australian Accounting Standards to apply from 2005-06. The new standards are the AASB Equivalents to International Financial Reporting Standards (IFRS) which are issued by the International Accounting Standards Board. The new standards cannot be adopted early. The standards being replaced are to be withdrawn with effect from 2005-06, but continue to apply in the meantime. The purpose of issuing AASB Equivalents to IFRSs is to enable Australian entities reporting under the Corporations Act 2001 to be able to access overseas capital markets more readily by preparing their financial reports according to accounting standards more widely used overseas.

It is expected that the Finance Minister will continue to require compliance with the Accounting Standards issued by the AASB, including the AASB Equivalents to IFRSs, in his Orders for the Preparation of MDBC's Financial Statements for 2005-06 and beyond.

The AASB Equivalents contain certain additional provisions which will apply to not-for-profit entities, including Australian Government agencies. Some of these provisions are in conflict with the IFRS and therefore MDBC will only be able to assert compliance with the AASB Equivalents to the IFRSs.

Existing AASB standards that have no IFRS equivalent will continue to apply, including in particular *AAS 29 Financial Reporting by Government Departments*.

Accounting Standard AASB 1047 Disclosing the Impact of Adopting Australian Equivalents to IFRS requires that the Financial Statements for 2003-04 disclose:

- An explanation of how the transition to the AASB Equivalent is being managed; and
- A narrative explanation of the key differences in accounting policies arising from the transition.

The purpose of this Note is to make these disclosures.

Management of the transition to AASB Equivalents to IFRSs

MDBC has taken the following steps for the preparation towards the implementation of AASB Equivalents:

The MDBC Audit Committee is tasked with oversight of the transition to and implementation of the AASB Equivalents to IFRS. The General Manager - Corporate Services is formally responsible for the project and will report regularly to the Audit Committee on progress against the formal plan to be approved by the Committee.

The plan will require the following steps to be undertaken and sets deadlines for their achievement:

1. Identification of key staff, project team members and stakeholders in relation to implementing AASB Equivalents to IFRSs.
2. Identification of all major accounting policy differences between current AASB standards and the AASB Equivalents to IFRSs.

3. Identification of systems changes necessary to be able to report under the AASB Equivalents, including those necessary to enable capture of data under both sets of rules for 2004-05, and the testing and implementation of those changes.
4. Preparation of a transitional balance sheet as at 1 July 2004, under AASB Equivalents.
5. Preparation of an AASB Equivalent balance sheet at the same time as the 30 June 2005 statements are prepared.
6. Meeting reporting deadlines set by key Government stakeholders for a 2005-2006 balance sheet under AASB Equivalent Standards.

The plan will also address the risks to successful achievement of the above objectives and include strategies to keep implementation on track to meet deadlines.

All system changes will be identified and tested in the 2004-05 financial year. Consultants may be engaged where necessary to assist with each of the above steps.

Major Changes in Accounting Policy

Changes in accounting policies under AASB Equivalents are applied retrospectively ie. as if the new policy had always applied. This rule means that a balance sheet prepared under the AASB Equivalents must be made as at 1 July 2004, except as permitted in particular circumstances by *AASB 1 First-time Adoption of Australian Equivalents to International Financial Reporting Standards*. This will also enable the 2005-2006 Financial Statements to report comparatives under the AASB Equivalents.

Changes to major accounting policies are discussed in the following paragraphs.

Property plant and equipment

It is expected that the Finance Minister's Orders will require property plant and equipment assets carried at valuation in 2003–04 to be measured at up-to-date fair value from 2005-06. This differs from the accounting policies currently in place for these assets which, up to and including 2003–04, have been revalued progressively over a 3-year cycle and which currently include assets at cost (for purchases since the commencement of a cycle) and a deprival value (which will differ from their fair value to the extent that they have been measured at depreciated replacement cost when a relevant market selling price is available).

However, it is important to note that the Finance Minister requires these assets to be measured at up-to-date fair values as at 30 June 2005. Further, the transitional provisions in AASB 1 will mean that the values at which assets are carried as at 30 June 2004 under existing standards will stand in the transitional balance sheet as at 1 July 2004.

Borrowing costs related to qualifying assets are currently capitalised. It is understood that the Finance Minister's Orders for 2005-06 will elect to expense all borrowing costs under the new AASB Equivalent standard. Accordingly, borrowing costs capitalised as at 1 July 2004 will be de-recognised.

Impairment of Non-Current Assets

MDBC's policy on revaluation of non-current assets is at Note 1.11.

Under the new AASB Equivalent Standard, these assets will be subject to assessment for impairment and, if there are indications of impairment, measurement of any impairment. (Impairment measurement must also be done irrespective of any indications of impairment for intangible assets not yet available for use). The impairment test is that the carrying value of the asset must not exceed the greater of (a) its fair value less costs to sell and (b) its value in use. 'Value in Use' is the depreciated replacement cost of assets which would be replaced if the Commission were deprived of them.

Inventory

The Commission recognises inventory not held for sale at cost, except where no longer required, in which case net realisable value is applied. The new AASB Equivalent Standard will require inventory held for distribution for no consideration or at a nominal amount to be carried at the lower of cost or current replacement cost.

Employee Benefits

The provision for long service leave is measured at the present value of estimated future cash outflows using market yields as at the reporting date on national government bonds.

Under the new AASB Equivalent Standard, the same discount rate will be used unless there is a deep market in high quality corporate bonds, in which case the market yield on such bonds must be used.

Revenue from sale of assets

AASB 1004 Revenue requires the fair value of the consideration received from the disposal of assets to be recognised as revenue. Consequently, when a non-current asset is disposed, an entity will recognise revenue for the gross proceeds received on disposal of the asset and a corresponding expense for the carrying amount.

Under the AASB Equivalent Standard the Income Statement will show a single net amount for the gain / loss on disposal.

Financial Instruments

Under the AASB Equivalent Standard, *AASB 132 Financial Instruments* the choice of disclosing the effective interest rate or weighted average effective interest rate no longer exists. The effective interest rate must be disclosed. A more extensive split is required to be disclosed when showing the carrying amounts of financial instruments.

Note 3: Correction of fundamental error

Correction of fundamental errors are reported in accordance with Australian Accounting Standards *AASB 1018 - Statement of Financial Performance* and *AASB 1040 - Statement of Financial Position*. In accordance with the Standards an error made in a prior reporting period must be corrected in the reporting period in which the error is detected. Where the correction gives rise to a revenue or an expense that revenue or expense must be recognised in the Statement of Financial Performance in the current year.

The Commission is required to disclose in the notes to the Financial Statements the amount of the correction of the fundamental error, including, where practicable, restated comparative information for each prior reported period to show the information that would have been recognised in the prior reporting period had that fundamental error not been made.

Nature of the fundamental error

Infrastructure assets were first recognised in the Commission's Financial Statements in the 2001-02 financial year following a decision of the Commission on 12 March 2002 that the requirements for control as specified in the Accounting Standards had been satisfied, and that it was now appropriate to recognise these assets. The 2001-02 Financial Statements recorded revenue on recognition of assets of $1,582,012,000 in the Statement of Financial Performance and infrastructure assets were recorded in the Statement of Financial Position at a carrying amount of $1,574,509,000. This opening value for infrastructure assets was based on a valuation of the Commission's assets undertaken in 2000 by the Commission's independent valuers. The valuation was provided in accordance with the Commission's policy of revaluing assets every three years.

Australian Accounting Standard *AASB 1041 - Revaluation of Non-Current Assets*, requires that where control of an asset has been gained free of charge (as was the case when the assets were recognised for accounting purposes as being under the control of the Commission) the assets should be valued initially at fair value. *AASB 1041* permits an estimate of fair value based on the replacement cost of the asset's future economic benefits. This may be made by reference to the market buying price of the components used to produce the asset. The Commission's revaluation of infrastructure assets was based on this method. However, it was identified in the current financial year that the valuation of infrastructure assets disclosed in the 2002 and 2003 Financial Statements were not based on an accurate assessment of the asset's expired useful life. The effect of this error was to overstate the value of infrastructure assets by $392,079,000 at 30 June 2002 and by $422,637,000 at 30 June 2003. This is shown in the table below.

Fair Value of Infrastructure Assets

Financial Year	Balance per Financial Statements ($'000)	Restated balance ($'000)	Overstatement ($'000)
2002	1,574,509	1,182,430	392,079
2003	1,618,699	1,196,062	422,637

Pro-forma Statement of Financial Performance	2003 $'000 restated	2002 $'000 restated
Revenues from ordinary activities		
Revenues from Governments	**75,116**	63,061
Goods and services	**2,726**	1,062
Interest	**1,425**	1,864
Revenue from sale of assets	**67**	95
Revenue on recognition of infrastructure assets	**-**	1,186,423
Revenues from ordinary activities	**79,334**	1,252,505
Expenses from ordinary activities (excluding borrowing costs expense)		
Employees	**7,526**	5,755
Suppliers	**45,658**	63,021
Depreciation and amortisation	**13,859**	3,993
Value of assets sold	**68**	107
Expenses from ordinary activities (excluding borrowing costs expense)	**67,111**	72,876
Borrowing costs expense	**26**	31
Restated net surplus from ordinary activities	**12,197**	1,179,598
Restated total revenues, expenses and valuation adjustments recognised directly in equity	**12,197**	1,179,598
Restated total changes in equity other than those resulting from transactions with owners as owners	**12,197**	1,179,598

Pro-forma Statement of Financial Position	2003 $'000 restated	2002 $'000 restated
Financial assets		
Cash	**21,305**	7,093
Receivables	**3,248**	2,792
Investments	**18,000**	32,000
Other financial assets	**888**	888
Total financial assets	**43,441**	42,773
Non-financial assets		
Infrastructure assets	**1,196,062**	1,182,430
Property, plant and equipment	**1,029**	860
Inventories	**17**	1
Fitout	**222**	283
Other non-financial assets	**104**	1,161
Total non-financial assets	**1,197,434**	1,184,735
Total Assets	**1,240,875**	1,227,508
Interest bearing liabilities		
Leases	**269**	328
Total interest bearing liabilities	**269**	328
Provisions		
Employees	**1,663**	1,240
Total provisions	**1,663**	1,240
Payables		
Suppliers	**20,488**	19,603
Revenue received in advance	**13,955**	14,617
Total payables	**34,443**	34,220
Total Liabilities	**36,375**	35,788
RESTATEMENT OF NET ASSETS	**1,204,500**	1,191,720
EQUITY		
Contributions by contracting Governments for purchase of assets	**2,614**	2,031
Restatement of retained surpluses	**1,201,886**	1,189,689
RESTATEMENT OF TOTAL EQUITY	**1,204,500**	1,191,720

Note 4: Operating Revenues

		2004 $'000	2003 $'000
Note 4A: Revenues from Governments			
Commonwealth		**16,614**	13,947
New South Wales		**26,628**	22,562
Victoria		**24,852**	21,016
South Australia		**19,522**	16,376
Queensland		**869**	869
Australian Capital Territory		**270**	261
Add	revenue recognised from prior year	**12,982**	13,650
Add	contributions paid in prior year	**250**	250
Less	contributions paid in advance for forward year	**-**	(250)
Less	revenue carried to forward year	**(4,431)**	(12,982)
Less	equity contribution for purchase of assets	**(530)**	(583)
Total revenues from Governments		**97,026**	75,116
Note 4B: Sale of Goods and Services			
Hydro generation		**538**	2,191
Land and cottage rents		**519**	508
Sale of publications and videos		**19**	15
Other		**15**	12
Total sales of goods and services		**1,091**	2,726
Note 4C: Interest Revenue			
Interest on deposits		**1,890**	1,425
Note 4D: Net Gains from Sale of Assets			
Infrastructure, plant and equipment:			
Motor Vehicles:			
Proceeds from disposal		**129**	-
Net book value of assets disposed		**(145)**	-
Net (loss) from disposal of motor vehicles		**(16)**	-
Office Equipment:			
Proceeds from disposal		**0**	-
Net book value of assets disposed		**(16)**	-
Net (loss) from disposal of office equipment		**(16)**	-
Computers and IT equipment:			
Proceeds from disposal		**12**	-
Net book value of assets disposed		**(24)**	-
Net (loss) from disposal of computers and IT equipment		**(12)**	-
TOTAL proceeds from disposal		**141**	67
TOTAL value of assets disposed		**(185)**	(68)
Total net (loss) from disposal of assets		**(44)**	(1)

Note 4: Operating Revenues

	2004 $'000	2003 $'000
Note 4E: Other Revenues		
Revenue on recognition of assets	**529**	42,546

Revenue on recognition of assets for the 2003–04 financial year refers to the Commission's 50% share of Murray-Darling Freshwater Research Centre joint venture with Commonwealth Scientific and Industrial Research Organisation (CSIRO). Refer to Note 20 - Joint Venture Entity.

Note 5: Operating Expenses

Note 5A: Employee Expenses		
Wages and Salaries	**7,512**	7,504
Superannuation	**839**	-
Separation and redundancy	**263**	22
Total employee benefits expense	**8,614**	7,526
Note 5B: Supplier Expenses		
Expenditure by State Constructing Authorities	**32,561**	20,738
Project expenditure	**22,029**	21,674
Supply of goods and services	**3,199**	2,655
Operating lease rentals	**667**	591
Total supplier expenses	**58,456**	45,658
Note 5C: Depreciation and Amortisation		
i) *Depreciation*		
Infrastructure, property, plant and equipment	**14,947**	25,787
Total depreciation	**14,947**	25,787
ii) *Amortisation*		
Leasehold Improvements	**60**	60
Total amortisation	**60**	60
Total depreciation and amortisation	**15,007**	25,847

The aggregate amounts of depreciation or amortisation expensed during the reporting period for each class of depreciable asset are as follows:

Motor Vehicles	**41**	35
Office Equipment	**91**	79
Computers	**224**	215
Furniture, fixtures and fittings	**18**	16
Infrastructure Assets	**14,573**	25,442
Leasehold improvements	**60**	60
Total depreciation and amortisation	**15,007**	25,847

No depreciation or amortisation was allocated to the carrying amounts of other assets.

Depreciation amounts are $10,869,000 lower than they would been as a result of the correction of the fundamental error.

Note 5D: Write Down of Assets		
Non-financial assets:		
Investment in joint venture entity	**27**	-
Total write-down of assets	**27**	-

Note 6: Borrowing Costs Expense

	2004 $'000	2003 $'000
Leases	21	26
Total borrowing costs expense	21	26

Note 7: Financial Assets

Note 7A: Cash		
Cash at bank	13,575	21,297
Cash on hand	8	8
Total cash	13,583	21,305
Note 7B: Receivables		
Goods and services	1,808	328
GST receivable from the Australian Taxation Office	3,324	2,799
Accrued interest	169	121
Total receivable (net)	5,301	3,248
Receivables is represented by:		
Current	5,301	3,248
Non-current	-	-
Total receivables (net)	5,301	3,248
Receivables (gross) are aged as follows:		
Not overdue	5,288	-
Overdue by less than:		
Less than 30 days	8	-
30 to 60 days	-	-
60 to 90 days	-	-
More than 90 days	5	-
	13	-
Total receivables (gross)	5,301	3,248

Note 7: Financial Assets

	2004 $'000	2003 $'000
Note 7C: Investments		
Term deposits	**29,000**	18,000
Total investments	**29,000**	18,000
Note 7D: Other financial assets		
Advances to Constructing Authorities	**888**	888
Total other financial assets	**888**	888

Note 8: Non-Financial Assets

Note 8A: Infrastructure Assets		
at 2003–2004 valuation (fair value)	**1,928,478**	1,651,644
- accumulated depreciation	**(591,173)**	(32,945)
	1,337,305	1,618,699
Assets under construction – at cost	**12,954**	-
Total Infrastructure Assets (non-current)	**1,350,259**	1,618,699
Note 8B: Property Plant and Equipment		
Motor Vehicles		
- at cost	**303**	262
- accumulated depreciation	**(50)**	(45)
	253	217
Office Equipment		
- at cost	**700**	699
- accumulated depreciation	**(433)**	(369)
	267	330
Computers & IT equipment		
- at cost	**1,299**	1,297
- accumulated depreciation	**(902)**	(912)
	397	385
Furniture, fixtures and fittings		
- at cost	**227**	252
- accumulated depreciation	**(144)**	(155)
	83	97
Total Plant and Equipment (non-current)	**1,000**	1,029
Note 8C: Leasehold improvements		
- at cost	**439**	439
- accumulated amortisation	**(277)**	(217)
Total leasehold improvements	**162**	222

Note 8: Non-Financial Assets

Note 8D: Analysis of Infrastructure, Property, Plant and Equipment

Table A - Reconciliation of the opening and closing balances of infrastructure, property, plant and equipment

Item	Infrastructure $'000	Motor vehicles $'000	Furniture fixtures and fittings $'000	Office equipment $'000	Computer and IT equipment $'000	Total $'000
As at 1 July 2003						
Gross book value	**1,651,644**	**262**	**252**	**699**	**1,297**	**1,654,154**
Additions:						
by purchase - commissioned assets at valuation	7,809	-	-	-	-	-
by purchase - assets under construction at cost	12,954	-	-	-	-	-
Total by purchase	20,763	222	4	44	260	21,293
Net revaluation increment / (decrement)	226,786	-	-	-	-	226,786
Recoverable amounts written down	42,239	-	-	-	-	42,239
Disposals	-	(181)	(29)	(43)	(258)	(511)
As at 30 June 2004						
Gross book value commissioned assets	1,928,478	-	-	-	-	-
Gross book value assets under construction	12,954	-	-	-	-	-
Gross book value	**1,941,432**	**303**	**227**	**700**	**1,299**	**1,943,961**

Item	Infrastructure $'000	Motor vehicles $'000	Furniture fixtures and fittings $'000	Office equipment $'000	Computer and IT equipment $'000	Total $'000
As at 1 July 2003						
Accumulated depreciation / amortisation	**(32,945)**	**(45)**	**(155)**	**(369)**	**(912)**	**(34,426)**
Net revaluation (increment) / decrement	(78,779)	-	-	-	-	(78,779)
Depreciation / amortisation expense	(14,573)	(41)	(18)	(91)	(224)	(14,947)
Recoverable amounts written down	(464,876)	-	-	-	-	(464,876)
Disposals	-	36	29	27	234	326
As at 30 June 2004						
Accumulated depreciation / amortisation	**(591,173)**	**(50)**	**(144)**	**(433)**	**(902)**	**(592,702)**

Notes to and forming part of the Financial Statements

Item	Infrastructure $'000	Motor vehicles $'000	Furniture fixtures and fittings $'000	Office equipment $'000	Computer and IT equipment $'000	Total $'000
As at 1 July 2003						
Gross book value	1,651,644	262	252	699	1,297	1,654,154
Accumulated depreciation / amortisation	(32,945)	(45)	(155)	(369)	(912)	(34,426)
Net book value	**1,618,699**	**217**	**97**	**330**	**385**	**1,619,728**
Additions:						
by purchase - commissioned assets at valuation	7,809	-	-	-	-	-
by purchase - assets under construction at cost	12,954	-	-	-	-	-
Total by purchase	20,763	222	4	44	260	21,293
Net revaluation increment / (decrement)	148,007	-	-	-	-	148,007
Depreciation / amortisation expense	(14,573)	(41)	(18)	(91)	(224)	(14,947)
Recoverable amounts written down	(422,637)	-	-	-	-	(422,637)
Disposals	-	(145)	-	(16)	(24)	(185)
As at 30 June 2004						
Gross book value commissioned assets	1,928,478	-	-	-	-	-
Gross book value assets under construction	12,954	-	-	-	-	-
Gross book value	1,941,432	303	227	700	1,299	1,943,961
Accumulated depreciation / amortisation	(591,173)	(50)	(144)	(433)	(902)	(592,702)
Net book value	**1,350,259**	**253**	**83**	**267**	**397**	**1,351,259**

Note 8: Non-Financial Assets

Table B - Assets at Valuation

Item	Infrastructure $'000	Motor vehicles $'000	Furniture fixtures and fittings $'000	Office equipment $'000	Computer and IT equipment $'000	Total $'000
As at 30 June 2004						
Gross book value	1,928,478	-	-	-	-	1,928,478
Accumulated depreciation / amortisation	(591,173)	-	-	-	-	(591,173)
Net book value	**1,337,305**	-	-	-	-	**1,337,305**
As at 1 July 2003						
Gross book value	1,651,644	-	-	-	-	1,651,644
Accumulated depreciation / amortisation	(32,945)	-	-	-	-	(32,945)
Net book value	**1,618,699**	-	-	-	-	**1,618,699**

Table C - Assets under Construction

Item	Infrastructure $'000	Motor vehicles $'000	Furniture fixtures and fittings $'000	Office equipment $'000	Computer and IT equipment $'000	Total $'000
Gross value at 30 June 2004	**12,954**	**-**	**-**	**-**	**-**	**12,954**
Gross value at 30 June 2003	-	-	-	-	-	-

Table D - Reconciliation of Asset Revaluation Reserve

Class	Increment to asset class	Contra Account
Infrastrucutre assets at Gross Value	$226,786,000	Revaluation Reserve
Infrastrucutre assets Accumulated Depreciation	($78,799,000)	Revaluation Reserve
Infrastructure Assets at Net Book Value	$148,007,000	Revaluation Reserve

Note 8: Non-Financial Assets

	2004 $'000	2003 $'000
Note 8E: Inventories		
Finished goods (cost)	**64**	17
Total Inventories held for sale	**64**	17

All inventories are current assets.

Note 8F: Other Non-Financial Assets		
Prepayments	**72**	104

All other non-financial assets are current assets.

Note 8G: Investment in joint venture entity		
Carrying amount on recognition of investment	**529**	-
Share of joint venture entity's net operating surplus / (deficit) for the financial year	**(27)**	-
Investment in joint venture entity at the end of the financial year	**502**	-

Investment in joint venture entity refers to the Commission's 50% share of Murray-Darling Freshwater Research Centre joint venture with the CSIRO. Refer to Note 20 - Joint Venture Entity.

Note 9: Interest Bearing Liabilities

	2004	2003
	$'000	$'000
Leases		
Finance Lease Commitments		
Payable:		
Within one year	**86**	86
In one to five years	**143**	229
Minimum lease payments	**229**	315
Deduct: future finance charges	**25**	46
Net Lease Liability	**204**	269
Lease liability is represented by:		
Current	**71**	65
Non-current	**133**	204
Net Lease Liability	**204**	269

The finance lease exists in relation to the fitout of offices at 15 Moore Street, Canberra.

The lease is non cancellable and for a fixed term expiring on 28 February 2007.

The initial term of the lease is still current and may be renewed for a further five years at the Commission's option.

The interest rate implicit in the lease is 8.75%.

Note 10: Provisions

Employee Provisions

Salaries and wages	**-**	222
Annual Leave	**576**	648
Long service leave	**823**	793
Aggregate employee entitlement liability	**1,399**	1,663
On-costs	**193**	-
Aggregate employee benefit liability and related on-costs	**1,592**	1,663
Current	**769**	870
Non-current	**823**	793
	1,592	1,663

Note 11: Payables

	2004 $'000	2003 $'000
Note 11A: Suppliers Payable		
Trade creditors	**3,573**	878
Project expenditure payable	**6,472**	5,354
Constructing Authority claims payable	**12,931**	14,256
Total supplier payables	**22,976**	20,488
Suppliers payables are represented by:		
Current	**22,976**	20,488
Total supplier payables	**22,976**	20,488
Settlement is usually made net 30 days		
Note 11B: Revenue Received in Advance		
Carry-over of current year contributions to forward year	**4,431**	13,232
Unamortised balance of lease incentive	**-**	51
Externally funded projects	**224**	672
Total revenue received in advance	**4,655**	13,955

All revenue received in advance are current liabilities.

Note 12: Equity

Note 12A: Analysis of Equity

Item	Accumulated Results		Asset Revaluation Reserve		Contributed Equity		Total Equity	
	2004	2003	**2004**	2003	**2004**	2003	**2004**	2003
	$'000	$'000	**$'000**	$'000	**$'000**	$'000	**$'000**	$'000
Opening balance as at 1 July	**1,624,523**	1,581,768	**-**	-	**2,614**	2,031	**1,627,137**	1,583,799
Net surplus / deficit	**(404,270)**	42,755	**-**	-	**-**	-	**(404,270)**	42,755
Gross revaluation increment / (decrement)			**226,786**					
Accumulated depreciation revaluation (increment) / decrement			**(78,779)**					
Net revaluation increment / (decrement)	-	-	**148,007**	-	**-**	-	**148,007**	-
Transactions with owners:	**-**	-	**-**	-	**-**	-	**-**	-
Contributions by owners:		-	**-**	-	**-**	-	**-**	-
Equity injections	**-**	-	**-**	-	**530**	583	**530**	583
Closing balance as at 30 June	**1,220,253**	1,624,523	**148,007**	-	**3,144**	2,614	**1,371,404**	1,627,137

Note 13: Cash Flow Reconciliation

	2004 $'000	2003 $'000
Reconciliation of cash per Statement of Financial Position to the Statement of Cash Flows		
Cash at year end per Statement of Cash Flows	**13,583**	21,305
Statement of Financial Position items comprising above cash: 'Financial Asset - Cash'	**13,583**	21,305
Reconciliation of net surplus to net cash from operating activities		
Net surplus / (deficit)	**(256,263)**	42,755
Depreciation / amortisation	**15,007**	25,847
Assets recognised for the first time	**(529)**	(42,546)
Loss on disposal of assets	**44**	1
Correction of fundamental error	**422,637**	-
Net credit to asset revaluation reserve	**(148,007)**	-
Net write down of non-financial assets	**27**	-
(Increase) in net receivables	**(2,053)**	(456)
(Increase) in inventories	**(47)**	(16)
Decrease in prepayments	**32**	1,057
Increase / (decrease) in employee provisions	**(71)**	423
Increase in supplier payables	**2,488**	886
(Decrease) in revenue received in advance	**(9,300)**	(662)
Net cash from operating activities	**23,965**	27,289

The net written down value of infrastructure assets at 30 June 2003 was overstated by $422,637,000. The correction of this fundamental error has been made in the Statement of Financial Performance for the 2003–04 financial year. Refer to Note 3 - Correction of fundamental error.

Note 14: Contingent Liabilities and Assets

Quantifiable Contingencies

The Schedule of Contingencies reports a contingent liability in respect of claims for damages/costs as at 30 June 2003. This claim does not exist as at 30 June 2004.

Unquantifiable Contingencies

In October 2002, a landowner commenced proceedings against the Commission and former Commissioners in the Supreme Court of New South Wales in relation to the release of water from Hume Dam in 1996. The Commission is defending the action.

In 2003, the Commission was joined as a party to a matter before the courts related to land rights. It is not possible to estimate the amounts of any payments that may eventually be required in relation to this case.

Note 15: Executive Remuneration

	2004	2003
The number of executives who received or were due to receive total remuneration of $100,000 or more:		
$100,000 to $109,999	**1**	-
$110,000 to $119,999	**1**	-
$130,000 to $139,999	**-**	2
$140,000 to $149,999	**-**	1
$150,000 to $159,999	**3**	1
$170,000 to $179,999	**-**	1
$190,000 to $199,999	**2**	1
$200,000 to $209,999	**1**	-
$220,000 to $229,999	**-**	1
$340,000 to $349,999	**1**	-
The aggregate amount of total remuneration of executives shown above.	**$1,630,058**	$1,167,605
The aggregate amount of separation and redundancy/ termination benefit payments during the year to executives shown above.	**$262,698**	Nil

"Remuneration" refers to salary, accrued leave, performance pay, employer superannuation, estimated cost of motor vehicles provided as part of a remuneration package, spouse travel entitlements and related fringe benefits tax paid during 2003–2004 for officers concerned with the management of the Office of the Commission where the total paid in respect of an individual exceeded $100,000.

Note 16: Remuneration of Members of the Commission

Remuneration is paid to one executive member. No remuneration is paid to non-executive members who are State or Commonwealth public servants or officers of State agencies. The remuneration paid to the executive member is less than $100,000.

Note 17: Remuneration of Auditors

	2004 $	2003 $
Remuneration to be paid to Australian National Audit Office for auditing Financial Statements for the reporting period	43,000	27,275
No other services were provided by the Australian National Audit Office		
Remuneration paid for internal audit services during the reporting period	31,000	6,414

Note 18: Average Staffing Levels

	2004	2003
The average staffing levels for the Commission during the year were:	103	99

Note 19: Financial Instruments

Note 19A: Terms, conditions and accounting policies

Financial Instrument	Note	Accounting policies and methods	Nature of underlying instrument
Financial assets		Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured.	
Cash on call	7A	Cash is recognised at its nominal amount. Interest is credited to revenue as it accrues.	Funds are placed on deposit with the Commission's banker. Interest is earned on the daily balance and is paid at month end.
	7B	The majority of the Commission's receipts are from Commonwealth and State Governments and major trading banks and the risk of non-payment is considered minimal. Collectability of debts is reviewed at balance date.	Credit terms are net 30 days (2003: 30 days).
Investments	7C	Investments are limited to term deposits of a duration not exceeding 90 days and are recorded at cost. Interest is accrued as it is earned.	Term deposits are with the major trading banks and earn interest rates in line with market conditions.
Advances to Constructing Authorities	7D	Under the provisions of s72(2) of the Agreement the Commission has advanced working capital to each of the Constructing Authorities.	Advances are in the form of cash and are repayable on request.
Financial liabilities		Financial liabilities are recognised when a present obligation to another party is entered into and the amount of the liability can be reliably measured.	
Financial lease liability	9	Liabilities are recognised at the present value of the minimum lease payments at the beginning of the lease. The discount rates used are estimates of the interest rates implicit in the lease.	At reporting date, the Commission had a finance lease with a term of 7 years. The interest rate implicit in the lease is 8.75%. The lease liability is secured by the leased asset.
Trade and other creditors	11A	Creditors and accruals are recognised at their nominal amounts, being the amount at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or service have been received.	Settlement is usually made net 30 days (2003: 30 days).

Note 19: Financial Instruments

Note 19B: Interest Rate Risk

The Commission's exposure to interest rate risk and the effective weighted average interest rate for classes of financial assets and financial liabilities is set out below:

	Notes	Floating Interest Rate		Fixed Interest Rate Maturing in						Non Interest Bearing		Total		Weighted Average Effective interest Rate	
				1 Year or less		1 to 5 Years		>5 years							
		2004	2003	**2004**	2003	**2004**	2003	**2004**	2003	**2004**	2003	**2004**	2003	**2004**	2003
		$'000	$'000	**$'000**	$'000	**$'000**	$'000	**$'000**	$'000	**$'000**	$'000	**$'000**	$'000	**%**	%
Financial Assets															
Cash at Bank	7A	**13,575**	21,297	**-**	-	**-**	-	**-**	-	**-**	-	**13,575**	21,297	**4.95**	4.46
Cash on hand	7A	**-**	-	**-**	-	**-**	-	**-**	-	**8**	8	**8**	8	**n/a**	n/a
Receivables	7B	**-**	-	**-**	-	**-**	-	**-**	-	**5,301**	3,248	**5,301**	3,248	**n/a**	n/a
Investments	7C	**-**	-	**29,000**	18,000	**-**	-	**-**	-	**-**	-	**29,000**	18,000	**5.39**	4.76
Advance to Constructing Authorities	7D	**-**	-	**-**	-	**-**	-	**-**	-	**888**	888	**888**	888	**n/a**	n/a
TOTAL		**13,575**	21,297	**29,000**	18,000	**-**	-	**-**	-	**6,197**	4,144	**48,772**	43,441	**-**	-
TOTAL ASSETS												**1,400,831**	1,663,512		
Financial Liabilities															
Finance Lease	9	**-**	-	**71**	65	**133**	204	**-**	-	**-**	-	**204**	269	**8.75**	8.75
Trade and other creditors	11A	**-**	-	**-**	-	**-**	-	**-**	-	**22,976**	20,488	**22,976**	20,488	**n/a**	n/a
TOTAL		**-**	-	**71**	65	**133**	204	**-**	-	**22,976**	20,488	**23,180**	20,757	**-**	-
TOTAL LIABILITIES												**29,427**	36,375		

Note 19C: Credit Risk Exposure

Credit risk represents the loss that would be recognised if counterparties failed to perform as contracted. The risk on financial assets of the Commission which have been recognised on the Statement of Financial Position, is the carrying amount net of any provision for doubtful debts. Due to the nature of the majority of the Commission's clients, such risk is considered by the Commission to be low.

Note 19: Financial Instruments

Note 19D: Net Fair Values of Assets and Liabilities

The net fair values of investments have been computed at net realisable value at balance date. For other assets and liabilities, the net fair value approximates their carrying value. No financial assets or liabilities are readily traded on organised markets in standardised form other than investments. The aggregate net fair values and carrying amounts of financial assets and financial liabilities are disclosed in the Statement of Financial Position.

	Notes	2004		2003	
		Total Carrying Amount $'000	Aggregate Net Fair Value $'000	Total Carrying Amount $'000	Aggregate Net Fair Value $'000
Financial Assets					
Cash at Bank	7A	13,575	13,575	21,297	21,297
Cash on hand	7A	8	8	8	8
Receivables	7B	5,301	5,301	3,248	3,248
Investments	7C	29,000	29,000	18,000	18,000
Advance to Constructing Authorities	7D	888	888	888	888
Total Financial Assets		48,772	48,772	43,441	43,441
Financial Liabilities					
Finance Lease	9	204	204	269	269
Trade and other creditors	11A	22,976	22,976	20,488	20,488
Total Financial Liabilities		23,180	23,180	20,757	20,757

Note 20: Joint Venture Entity

The Murray-Darling Freshwater Research Centre (MDFRC) was established as a joint venture between the Commission and the CSIRO. On inception, the Centre was charged with the task of carrying out medium to long-term research which would be of benefit to the management of the water resources of the Murray-Darling Basin.

In accordance with AASB 1008 - Interests in Joint Ventures, the joint venture has been accounted for using the equity method. The investment was first recognised in the Financial Statements of the Commission in the current year.

For the 2003–04 financial year, the MDFRC made a deficit (unaudited) of $54,000. In accordance with the joint venture agreement the operating surplus / (deficit) is shared equally between the joint venture parties. The Commission's share of the operating deficit was $27,000.

Movements in the carrying amount of investment in joint venture entity, MDFRC, is as follows:

	2004	2003
	$'000	$'000
Carrying amount on recognition of investment	**529**	-
Share of MDFRC's net operating surplus / (deficit) for the financial year	**(27)**	-
Investment in MDFRC at the end of the financial year	**502**	-

Note 21: Events Occurring after Reporting Date

No material events occurred after balance date.

Note 22: Unrecognised Liabilities

The Commission is not aware of any significant unrecognised liabilities at 30 June 2004 other than those recorded in the Schedule of Commitments.

Note 23: Liabilities assumed by Governments

Except as indicated by these statements no liabilities have been assumed by Governments.

Note 24: Economic Dependency

The Commission is dependent on contributions by Contracting Governments to undertake its normal activities.

Note 25: Location of Business

With the exception of assistance provided to the Mekong River Commission under AusAID funding the Commission operates solely in Australia.

Note 26: Related Party Disclosures

Members of the Commission

Members of the Commission during 2003–04 were:

	Member	Representative of:	Period of Membership	
President				
	Dr R. M. Green AO		To	31/10/2003
	Rt. Hon I. Sinclair		From	1/12/2003
Commissioners				
	Mr. D. Borthwick	Commonwealth	From	19/02/2004
	Dr. M. Cooper	ACT		
	Ms. L. Corbyn	NSW	From	2/06/2004
	Mr. R. Freeman	SA		
	Dr G. Gentle	Qld	To	23/01/2004
	Mr. J. Hallion	SA		
	Dr I. McPhail	Qld	To	1/12/2003
	Ms C. Munro	NSW	To	18/01/2004
	Prof. L. Neilson	VIC		
	Dr. R. Sheldrake	NSW	To	1/06/2004
	Mr. M. Taylor	Commonwealth	From	19/02/2004
	Ms. J. Westacott	NSW		
	Mr. B. Wonder	Commonwealth	To	22/04/2004
Deputy Commissioners				
	Ms L. Corbyn	NSW	To	1/06/2004
	Mr. D. Flett	VIC		
	Ms. E. Fowler	ACT		
	Mr. D. Harriss	NSW		
	Mr. A. Holmes	SA	From	20/06/2004
	Mr P. Hoey	SA	To	19/06/2004
	Ms. A. Howe	SA		
	Dr. C. O'Connell	Commonwealth		
	Mr. J. Pollock	QLD		
	Mr. C. Robson	QLD		
	Dr. R. Sheldrake	NSW	From	2/06/2004
	Mr P. Sutherland	VIC	To	31/12/2003
	Mr I. Thompson	Commonwealth	To	21/04/2004
	Mr. G. Wilson	VIC	From	1/03/2004
	Mr. B. Wonder	Commonwealth	From	23/04/2004

Loans to Members and Officers

No loans were made to members or officers of the Commission.

Transactions with Related Entities

The Murray-Darling Basin Commission is the executive arm of the Ministerial Council established by the 1992 Murray-Darling Basin Agreement. The Commonwealth and the States of New South Wales, Victoria, South Australia and Queensland are parties to this agreement whilst the Australian Capital Territory participates by a Memorandum of Understanding. Funds for activities under the direction of the Commission are paid to the Commission by the participating governments and disbursed according to Commission priorities. A high proportion of the Commission funded activity is undertaken by State Agencies. All transactions are at arms length and in accordance with budgets and programs approved by the Ministerial Council.

Note 27: Grants

The Commission is responsible for administering a number of grant programmes on behalf of Commonwealth and State Governments. Funding for these programmes and responsibility for the programmes rests with the various individual government bodies, consequently no disclosures have been made in relation to grant programmes.

Details of revenue and expenses in relation to grant programmes are as follows:

	2004	2003
	$'000	$' 000
Grants programme		
Cash available at start of financial year	672	651
Contributions by Government agencies	91	450
Total receipts	**763**	**1,101**
Payments	(539)	(429)
Cash available at end of financial year	**224**	**672**

Appendixes

Appendix A: Membership of the Ministerial Council

Members from 1 July 2003 to 30 June 2004

Australian Government

The Hon. Warren Truss, MP (Chairman)	Minister for Agriculture, Fisheries and Forestry
The Hon. Dr David Kemp, MP	Minister for the Environment and Heritage
Senator the Hon. Ian Macdonald	Minister for Fisheries, Forestry and Conservation

New South Wales

The Hon. Craig Knowles, MP	Minister for Infrastructure and Planning and Minister for Natural Resources
The Hon. Ian Macdonald, MLC	Minister for Agriculture and Fisheries
The Hon. Bob Debus, MP	Minister for the Environment

Victoria

The Hon. John Thwaites, MP	Minister for Environment and Minister for Water
The Hon. Bob Cameron, MP	Minister for Agriculture

South Australia

The Hon. Paul Holloway, MP	Minister for Agriculture, Food and Fisheries (to 24 March 2004)
The Hon. John Hill, MP	Minister for the River Murray and Minister for Environment and Conservation
The Hon. Rory McEwen, MP	Minister for Agriculture, Food and Fisheries and Minister for State/Local Government Relations and Minister for Forests (from 25 March 2004)

Queensland

The Hon. Dean Wells, MP	Minister for Environment (to 2 June 2004)
The Hon. Stephen Robertson, MP	Minister for Natural Resources and Minister for Mines
The Hon. John Mickel, MP	Minister for Environment (from 3 June 2004)

Australian Capital Territory* (non-voting member)

Mr Jon Stanhope, MLA	Minister for the Environment

* ACT participation is through a memorandum of understanding, 27 March 1998.

Appendix B: Membership of the Community Advisory Committee

Members from 1 July 2003 to 30 April 2004

Chairman

Ms Leith Boully

Member	Catchment
New South Wales	
Mr Les Boland	Gwydir
Mr Robert Gledhill	Lachlan
Mrs Karen Hindmarsh	Border Rivers (NSW)
Mr Jerry Killen (acting)	Namoi
Mr Mark King (acting)	Lower Murray-Darling
Mr Daryl McGregor	Murray
Mrs Jenny McLellan	Western
Mr Lee O'Brien	Murrumbidgee
Mr Ian Rogan	Central West
Victoria	
Mr Drew English	North Central
Mr Rodney Hayden	Mallee
Mr Athol McDonald	Goulburn–Broken
Mr Lance Netherway	Wimmera
Ms Sarah Nicholas	North East
South Australia	
Mr John Berger	Lower Mallee
Mr Leon Broster	Adelaide
Mrs Joanne Pfeiffer	Lower Murray
Mr Tony Sharley	Riverland
Queensland	
Mr John Armbruster	Condamine
Mr Dugald Cameron	Warrego/Paroo
Mr Lloyd Harth	Maranoa/Balonne
Mr Clarrie Hillard	Border Rivers (Qld)

Australian Capital Territory

Prof Peter Cullen	ACT Environment Advisory Committee

Special interest group representatives

Mr Tim Fisher	Australian Conservation Foundation
Mr Les Gordon	National Farmers Federation
Mr Bruce Lloyd	Australian Landcare Council
Mayor Ian Mann	Australian Local Government Association
Mr Derek Walker	Indigenous representative

Members from 1 May 2004 to 30 June 2004

Chairman

Ms Leith Boully

Member

New South Wales

Mr Kelvin Baxter
Mr Mark King
Mr Lee O'Brien

Victoria

Mr Don Cummins
Mr Rodney Hayden
Ms Sarah Nicholas

South Australia

Mrs Joanne Pfeiffer
Mrs Sharon Starick
Mr Derek Walker

Queensland

Mr John Grabbe
Mr Clarrie Hillard
Ms Sarah Moles

Australian Capital Territory

Prof Ian Falconer

Member	Interest
Mr Leon Broster	Urban
Mr Hamish Holcombe	Dryland Farming
Mr Lee Joachim	Indigenous
Cr Phyllis Miller	Local Government
Mr Mike Nolan	Indigenous
Mr Nick Roberts	Environment
Mr Myles Treseder (Deputy Chairman)	Irrigation Industry

Appendix C: Membership of the MDBC

Members from 1 July 2003 to 30 June 2004

Dr Roy Green AO	Independent President (to 30 November 2003)
Rt Hon. Ian Sinclair	Independent President (from 1 December 2004)

Australian Government

Mr David Borthwick	Secretary, Department of the Environment and Heritage (from 19 February 2004)
Mr Michael Taylor	Secretary, Department of Agriculture, Fisheries and Forestry (from 19 February 2004)
Mr Bernard Wonder	Deputy Secretary, Department of Agriculture, Fisheries and Forestry (to 18 February 2004)
Mr Ian Thompson (Deputy)	First Assistant Secretary, Department of Agriculture, Fisheries and Forestry (to 21 April 2003)
Dr Conall O'Connell (Deputy)	Deputy Secretary, Department of the Environment and Heritage
Mr Bernard Wonder (Deputy)	Deputy Secretary, Department of Agriculture, Fisheries and Forestry (from 22 April 2004)

New South Wales

Ms Jennifer Westacott	Director-General, Department of Infrastructure, Planning and Natural Resources
Dr Richard Sheldrake	Director-General, New South Wales Agriculture (to 1 June 2004)
Ms Lisa Corbyn	Director-General, Environment Protection Authority (from 2 June 2004)
Mr David Harriss (Deputy)	Regional Director, Murray/Murrumbidge, Department of Land and Water Conservation/ Infrastructure, Planning and Natural Resources
Dr Richard Sheldrake (Deputy)	Director-General, New South Wales Agriculture (from 2 June 2004)
Ms Lisa Corbyn (Deputy)	Director-General, Environment Protection Authority (to 1 June 2004)

Victoria

Ms Chloe Munro	Secretary, Department of Primary Industry (to 16 February 2004)
Prof Lyndsay Neilson	Secretary, Department of Sustainability and Environment
Mr Denis Flett	Chief Executive, Goulburn–Murray Water

Mr Greg Wilson (Deputy)	Deputy Secretary, Water Sector Division, Department of Sustainability and Environment (from 20 April 2004)
Mr Peter Sutherland (Deputy)	General Manager, Department of Department of Sustainability and Environment (to 23 January 2004)

South Australia

Mr James Hallion	Chief Executive, Primary Industries and Resources
Mr Robert Freeman	Chief Executive, Department of Water, Land and Biodiversity Conservation
Mr Peter Hoey (Deputy)	Executive Director, Murray-Darling Division, Department of Water, Land and Biodiversity Conservation (to 19 June 2004)
Ms Anne Howe (Deputy)	Chief Executive, South Australian Water Corporation
Mr Allan Holmes (Deputy)	Chief Executive, Department of the Environment and Heritage (from 20 June 2004)

Queensland

Dr Geraldine Gentle	Executive Director, Strategic Directions, Department of Natural Resources and Mines (to 23 January 2004)
Dr Ian McPhail	Deputy Director General, Environment Protection Agency (to 1 December 2003)
Mr Chris Robson (Deputy)	Executive Director, Natural Resource Sciences, Department of Natural Resources and Mines
Mr John Pollock (Deputy)	Executive Director, Policy Analysis and Industry Development, Department of Primary Industries

Australian Capital Territory

Dr Maxine Cooper	Executive Director, Environment ACT, Department of Urban Services
Ms Elizabeth Fowler (Deputy)	Director, Environment Protection, Environment ACT, Department of Urban Services

Partner Government Contact Officers as at 30 June 2004

Ms Elizabeth Bie	Australian Government
Mr Matthew Monahan	New South Wales
Mr Phillip Heaphy	Victoria
Mr Paul Harvey	South Australia
Mr Lamond Graham	Queensland
Mr Peter Donnelly	Australian Capital Territory

Appendix D: Membership of the Project Boards

1. Interstate Water Trading Pilot

Chair

Mr Denis Flett (DepComm)

Members

Mr James Hallion (Comm)
Mr Ian Thompson (DepComm)
Mr David Harriss (DepComm)
Mr Mike Smith (DLWBC)
Mr Les Gordon (CAC)

MDBC Senior Officer

Mr Scott Keyworth

2. Native Fish Management

Chair

Mr Ian Thompson (DepComm)

Members

Dr Geraldine Gentle (Comm)

MDBC Senior Officer

Mr Kevin Goss

3. The Living Murray Board

Chair (interim)

Mr Bernard Wonder (Comm)

Members

Ms Jennifer Westacott (Comm)
Prof Lyndsay Neilson (Comm)
Mr Robert Freeman (Comm)
Dr Conall O'Connell (DepComm)
Rt Hon Ian Sinclair (MDBC President)
Ms Leith Boully (CAC)

MDBC Senior Officer

Mr Kevin Goss

4. Sustainable Rivers Audit

Chair

Dr Conall O'Connell (DepComm)

Members

Ms Lisa Corbyn (DepComm)
Ms Sarah Nicholas (CAC)

MDBC Senior Officer

Ms Jody Swirepik

Appendix E: Committees and working groups

Advisory Group on Hume to Yarrawonga Waterway Management
Asset Management Advisory Panel
Audit Committee
Basin Salinity Management Strategy Implementation Working Group
Community Reference Panel for The Living Murray
Daughterless Carp Consultative Group
Exchange Rates Technical Working Group (to be confirmed)
Finance Committee
Fish Management and Science Committee
Fish Passage Reference Group
Groundwater Technical Reference Group
High Level Working Group on Salt Interception
Hume–Dartmouth Technical Review Committee
Hume to Yarrawonga Land Acquisition Reference Group
Independent Sustainable Rivers Audit Group
Integrated Catchment Management Policy Committee
Integrated Catchment Management Implementation Working Group
Integrated Catchment Management Business Program Knowledge Committee
Lake Victoria Advisory Committee
Landscape and Industries Program Knowledge Committee
MFAT Development Working Group
Native Fish Strategy Community Stakeholder Group
River Murray Water Advisory Board
Rivers Program Knowledge Committee
Scientific Reference Panel
Social and Economic Reference Panel
Sustainable Rivers Audit Taskforce
Technical Working Group on Salt Interception
The Living Murray Implementation Program Working Group
The Living Murray Drafting Group
Water Audit Working Group
Water Liaison Committee
Water Policy Committee

Appendix F: Information available from the MDBC

A full list of MDBC publications can be viewed on the MDBC website at http://publications.mdbc.gov.au. The following publications were produced during the 2003–04 financial year:

More than a River—The Murray-Darling system and its people, DVD, May 2004

Native Fish of the Murray-Darling Basin, Card, October 2003

Tar-Ru—The story of Lake Victoria, Video, 2003

Groundwater Flow Systems Framework—Essential Tools for planning salinity management, September 2003

Groundwater Flow Systems Framework—Essential Tools for planning salinity management, Summary Report, September 2003

Rivers program publications reference kit, December 2003

Spirit of Place, October 2003

Fish Theme Pilot Audit Technical Report—SRA, April 2004

Macroinvertebrate Theme Pilot Audit Technical Report—SRA, April 2004

Hydrology Theme Pilot Audit Technical Report—SRA, April 2004

Water Processes Theme Pilot Audit Technical Report—SRA, April 2004

Physical Habitat Theme Pilot Audit Technical Report—SRA, April 2004

Ecological assessment of Environmental flow reference points for the River Murray system—Interim report of the Scientific Reference Panel for the The Living Murray Initiative, October 2003

Ecological assessment of Environmental flow reference points for the River Murray system—Interim report of the Scientific reference panel for the The Living Murray Initiative, Summary Report, October 2003

Native Fish Strategy for the Murray-Darling Basin 2003–2013, May 2003

Native Fish Strategy for the Murray-Darling Basin 2003–2013—A summary, May 2003

Keeping salt out of the Murray, Poster, May 2003

Where to plant trees for salinity outcomes, Poster, May 2003

Appendix G: River Murray Water: assets as at 30 June 2004

Dartmouth Reservoir	
Hume Reservoir	
Lake Victoria	
Yarrawonga Weir	
Weirs and locks	No. 1 Blanchetown
	No. 2 Waikerie
	No. 3 Overland Corner
	No. 4 Bookpurnong
	No. 5 Renmark
	No. 6 Murtho
	No. 7 Rufus River
	No. 8 Wangumma
	No. 9 Kulnine
	No. 10 Wentworth
	No. 11 Mildura
	No. 15 Euston
	No. 26 Torrumbarry
Murray Mouth barrages	Goolwa
	Mundoo
	Boundary Creek
	Ewe Island
	Tauwitchere
Salt interception Schemes	Barr Creek
	Mallee Cliffs
	Buronga
	Mildura-Merbein
	Rufus River
	Waikerie
	Woolpunda
Minor regulators (various)	
Hydrometric and Water Quality Monitoring Network	
Berri Depot and Floating Plant	
Minor access works	

Glossary

anabranch. A branch of a river that leaves the main stream and rejoins it further downstream.

barrages. Five low, wide weirs built at the Murray Mouth to reduce the amount of seawater moving in and out of the Mouth due to tidal movement. They also help control the water level in the Lower Lakes and River Murray below the first lock.

baseline conditions. The current status of a system.

Basin Salinity Management Strategy (BSMS). This strategy guides communities and governments in working together to control salinity in the Murray-Darling Basin and their catchments. It establishes targets for the river salinity of each major tributary valley and the Murray-Darling system itself that reflect the shared responsibility for action both between valley communities and States.

bathymetric surveys. Program of sonar-driven systems to survey river and lake beds.

biodiversity. The variety of life forms, plants, animals and micro-organisms; the genes they contain; the ecosystems they form; and ecosystem processes.

blue-green algae (cyanobacteria). Bacteria containing photosynthetic pigments, often forming problematic toxic blooms.

Cap on water diversions. The limit imposed on the volume of surface water which can be diverted from rivers for consumptive uses. Started in 1995 as the Interim Cap.

Community Consultation and Communication Plan. This plan outlines the process for providing information to communities and seeking input and involvement from communities to progress The Living Murray First Step Decision taken by the Murray-Darling Basin Ministerial Council on 14 November 2003.

connectivity. Related to maintaining connections between natural habitats, such as a river channel and adjacent wetland areas.

Council of Australian Governments (COAG). The peak intergovernmental forum in Australia, comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Governments Association.

deformation survey. Periodic survey to check the deformation or movement of a natural or man-made feature (e.g. the face of a dam or an excavated surface).

dredging. A process whereby machines equipped with scooping or suction devices remove mud, etc., in order to deepen a waterway.

easement. A grant of rights over land by a property owner in favour of another person to enter onto land for the purpose of installing and maintaining facilities such as cables, pipelines, etc. An easement may also grant the right to cross over land in order to gain access to other land.

EC (units). Electrical conductivity unit commonly used to indicate the salinity of water (1 EC = 1 microsiemen per centimetre, measured at 25°C).

End-of-Valley Targets. A water quality target for salinity, set for a point in the lower reach of each catchment.

environmental allocation. An amount of water allocated for environmental purposes and released to meet the environmental needs of a given area, e.g. a forest.

environmental flows. Any river flow pattern provided with the intention of maintaining or improving river health.

environmental outcome. Project outcomes that benefit the ecological health of the river system.

Environmental Works and Measures Program (EWMP). An eight-year, $150 million program to deliver works and measures to improve the health of the River Murray System by making the best use of the water currently available, optimising the benefits of any water recovered in the future, and considering other policy interventions.

estuary. The part of a river in which water levels are affected by sea tides, and where fresh water and salt water mix.

First Step Decision. A decision announced in November 2003 by the Murray-Darling Basin Ministerial Council. The initial focus of the First Step Decision is on maximising environmental benefits for the six significant ecological assets.

fishways. Structures that provide fish with passage past an obstruction in a stream.

flow regime. The spatial and temporal pattern of flows in a river.

flow requirement. Relating to river flow requirements to enhance ecological health of the river and associated wetlands.

groyne. A protective structure of stone or concrete which extends from the shore into the water to prevent a beach or riverbank from washing away.

hydraulic model. Numerical modelling to simulate the hydraulics of a river and predict water surface profiles.

hydrology. The study of the distribution and movement of water.

integrated catchment management (ICM). A process through which people can develop a vision, agree on shared values and behaviours, make informal decisions and act together to manage the natural resources of their catchments. Their decisions on the use of land, water and other environmental resources are made by considering the effect of that use on all those resources and on all people within the catchment.

lock. Consists of a rectangular chamber of concrete with gates at each end. It allows vessels to move from one water level to another.

macroinvertebrate. An invertebrate animal (animal without a backbone) large enough to be seen without magnification.

Murray-Darling Basin (MDB). The entire tract of land drained by the Murray and Darling Rivers. This basin covers land in Queensland, New South Wales, the Australian Capital Territory, Victoria and South Australia.

Murray-Darling Basin Commission (MDBC). The executive arm of the Murray-Darling Basin Ministerial Council. MDBC is responsible for managing the River Murray and the Menindee Lakes system of the lower Darling River and advising the Ministerial Council on matters related to the use of water, land and other environmental resources of the Murray-Darling basin.

Murray-Darling Basin Initiative. A partnership of governments and communities formed to enhance the environmental resources of the Murray-Darling Basin.

Murray-Darling Basin Ministerial Council (MDBMC). A council of ministers of contracting governments who hold land, water and environment portfolios. A minister of the Australian Capital Territory also participates under the terms of the memorandum of understanding.

National Action Plan for Salinity and Water Quality (NAP). A commitment of $1.4 billion over seven years for applying regional solutions to salinity and water quality problems. The aim is for all levels of government, community groups, individual land managers and local businesses to work together in tackling salinity and improving water quality.

National Water Initiative (NWI). On 29 August 2003 the Council of Australian Governments agreed to the establishment of a National Water Initiative to improve the security of water access entitlements, ensure ecosystem health, expand water trading, and encourage water conservation in our cities.

Native Fish Strategy (NFS). This strategy aims to ensure that the Murray-Darling Basin sustains viable fish populations and communities throughout its rivers. The goal of this strategy is to rehabilitate native fish communities to 60 per cent of their estimated pre-European settlement levels within 50 years of implementation.

pile field. A series of closely spaced timber logs driven vertically into stream beds and banks to reduce erosion by dispersing stream energy and diverting flow away from sensitive areas.

Ramsar-listed wetland. A wetland of international importance as listed in the Ramsar Convention in Iran.

Reference Group. A committee involving a range of expertise to inform and critique projects and project findings.

regulated flow. A controlled flow rate resulting from the influence of a regulating structure, such as a dam or weir.

remotely operated gate. A regulating gate which may be operated from a remote location, such as an office.

riparian. Of, inhabiting, or situated on the bank and floodplain of a river.

river health. Status of a river system based on water quality, ecology and biodiversity.

River Murray Water (RMW). An internal business unit of the MDBC responsible by specific delegation for exercising the MDBC's function for water and asset management.

salinity. The concentration of dissolved salts in groundwater or river water, usually expressed in EC units or milligrams of dissolved solids per litre.

salinity credits and debits. Accounting units for the Salinity and Drainage Strategy. Credits are obtained through measures that reduce salinity of the River Murray.

salt interception scheme. This scheme involves large-scale groundwater pumping and drainage projects that intercept saline water flows and dispose of them, generally by evaporation.

salt spike. A sharp rise in river water salt levels.

significant ecological asset (SEA). Six sites that were chosen because they are of regional, national and international importance for their ecological value, and there is concurrence that they are at risk and require improved water flow regimes. These sites are Barmah–Millewa Forest, Gunbower and Koondrook–Perricoota forests, Hattah Lakes, Chowilla Floodplain, Murray Mouth, Coorong and Lower Lakes, and the River Murray Channel.

sustainable rivers audit (SRA). A program designed to measure the health of the rivers within the Murray-Darling Basin. The Audit aims to determine the ecological condition and health of river valleys in the Murray-Darling Basin; to give us a better insight into the variability of river health indicators across the Basin over time; and to trigger changes to natural resource management by providing a more comprehensive picture of river health that is currently available.

tidal response. The fluctuation of water level within an estuary caused by the sea's tidal effects.

turbidity. The relative clarity of water, which may be affected by material in suspension in the water.

water market. The buying and selling of water entitlements, on either a temporary or permanent basis, in order to improve the efficiency of water use.

weir. A dam placed across a river or canal to raise or divert the water, or to regulate or measure the flow.

weir pool. The body of water stored behind a weir.

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