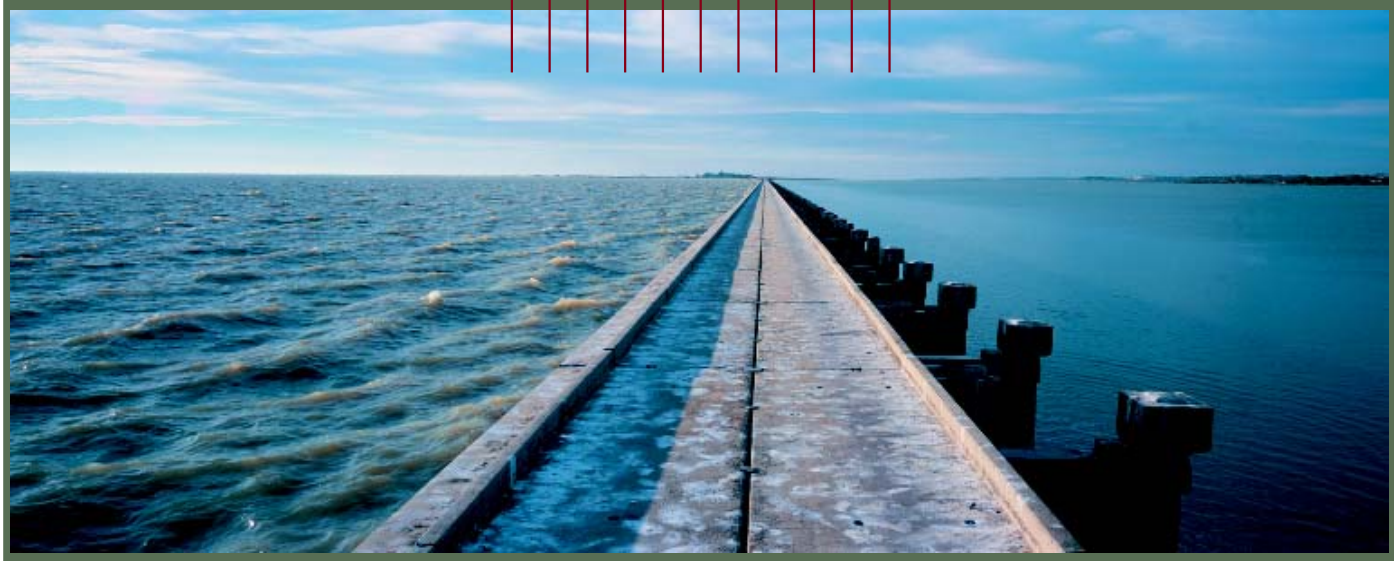
MURRAY-DARLING BASIN COMMISSION

ANNUAL REPORT 2001 – 2002



To the Parliaments of the Commonwealth of Australia, 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 Commission's Community Advisory Committee

MURRAY-DARLING BASIN

MURRAY-DARLING BASIN COMMISSION

ANNUAL REPORT 2001 – 2002

Published by the Murray-Darling Basin Commission

Level 5
15 Moore St
Canberra City, ACT

Telephone: 02 6279 0100
Fax: 02 6248 8053
Email: info@mdbc.gov.au
Internet: www.mdbc.gov.au

ISSN 1003-6745
ISBN 1 876830 484

Editing and design:	Themeda
Photographs:	©Peter Solness/Network Photographers: Tauwitchere Barrage in South Australia stretches 1.38 km from Tauwitchere Island to Pelican Point. The MDBC is improving safety standards on all such structures on the River Murray over a five-year program (cover). An upstream view from Yarrawonga Weir (p. 1). Arthur Mostead: Indigenous children on River Murray sand bar, Mildura (p. 91). John Baker: Paddleboats at Echuca, Victoria (p. 9). Hume Weir (p. 17). Snags in the Murray River at Gunbower Island, Albury, New South Wales (p. 55). Forest near Tumbarumba, New South Wales (p. 97). River Murray at Corowa, Victoria (p. 105). Old stockyards at Barmah-Millewa Forest, Victoria and New South Wales (p. 131).
Printing:	Union Offset

This report is printed on 50% recycled paper.

May 2003

31 December 2002

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 1992 *Murray-Darling Basin Agreement,* I submit our annual report and financial statements covering the year ended 20 June 2002 for tabling before the Parliaments of the Commonwealth, New South Wales, Victoria, South Australia and Queensland, and the Legislative Assembly of the Australian Capital Territory.

The year 2001/2002 represents the centenary of the Corowa meeting of the community and government which led to the formation of the River Murray Commission. The Murray-Darling Basin Ministerial Council (Ministerial Council), the Murray-Darling Basin Commission (MDBC) and community met on the banks of the River Murray at Corowa to acknowledge the contribution of those who have gone before in establishing the foundations for effective interstate cooperation on this most important national asset.

The decisions taken at the meeting to commence a dialogue with the community over environmental flows, together with the supporting Fish Management Strategy and Sustainable Rivers Audit, will be the key drivers of Commission and Ministerial Council activities over the coming years. I personally rate these as 'milestone' events in the history of the Murray-Darling Basin *Initiative* and look forward to seeing them actively developed.

I commend the 2001/2002 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

President

CONTENTS

Figures

Tables

ABBREVIATIONS

Agreement	*Murray-Darling Basin Agreement*
Basin	Murray-Darling Basin
BSMS	*Basin Salinity Management Strategy*
BSMSIWG	Basin Salinity Management Strategy Implementation Working Group
CAC	Community Advisory Committee
Cap	the Cap on Diversions
cm	centimetre
CoAG	Council of Australian Governments
Commission Office	Murray-Darling Basin Commission office
Cwlth	Commonwealth
DIRKS	*Designing and Implementing Record Keeping Systems*
EC	electrical conductivity
ERP	expert reference panel
FPRG	Fish Passage Reference Group
GIS	geographic information system
GL	gigalitre
IAG	Independent Audit Group
ICM	integrated catchment management
IMIRS	Irrigation Management Information Reporting System
IQQM	integrated quantity and quality model
iRAT	interim rapid assessment tool
Initiative	*Murray-Darling Basin Initiative*
IT	information technology
LVOS	*Lake Victoria Operating Strategy*
LWMP	land and water management plan
MD2001	Murray-Darling 2001 Program

MDBC	Murray-Darling Basin Commission
Ministerial Council	Murray-Darling Basin Ministerial Council
ML	megalitre
MWWG	Murray Wetlands Working Group
NAP	*National Action Plan for Salinity and Water Quality*
NCC	National Competition Council
NFS	*Native Fish Strategy*
NHT	Natural Heritage Trust
NHT Extension	Natural Heritage Trust Extension
OH&S	occupational health and safety
RIRDC	Rural Industries Research and Development Corporation
RMW	River Murray Water
S&D	salinity and drainage
S&D Strategy	*Salinity and Drainage Strategy*
SDAWG	Salinity and Drainage Assessment Working Group (replaced by the Basin Salinity Management Strategy Implementation Working Group
SI&E	Strategic Investigations and Education
SRA	Sustainable Rivers Audit
WRPs	water resources plans
WWF	World Wildlife Fund for Nature

ABOUT THIS REPORT

The Murray-Darling Basin Commission (MDBC) is a unique organisation, involving the Commonwealth, New South Wales, Victoria, South Australia, Queensland and the Australian Capital Territory. It was created because the 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 2001/02 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 each Commonwealth and State parliament with jurisdiction in the Murray-Darling Basin (Basin). The Australian Capital Territory's involvement is through a memorandum of understanding.

The MDBC has a role in undertaking works and measures at the direction of the Ministerial Council, and in coordinating the efforts of the government partners to the *Murray-Darling Basin Initiative* (*Initiative*). This annual report focuses mainly on those activities that the MDBC has carried out on behalf of the Ministerial Council in 2001/02. Information on the 2001/02 activities of the partners to the *Initiative* will be available through the States' annual reports to the MDBC and the Ministerial Council, expected to be provided by early 2003.

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.

OVERVIEW

The 2001/02 year was a year of celebration for the *Initiative.* It represented 100 years since the community and government met on the banks of the River Murray at Corowa to negotiate a way forward for sharing the waters of the River Murray. One hundred years later our Ministerial Council has again decided to commence discussions on whether we achieve the right balance between the consumptive use of the waters of the Basin and what is needed to sustain a healthy working river. The Ministerial Council's decision to commence a broadly based engagement process should set the foundation for the community debate necessary to balance these difficult matters. It is also important to reflect on the ingenuity and commitment of those that have gone before in managing, not only the River Murray, but all the rivers of the Basin and it rests with this generation to now build on that foundation.

Other highlights for 2001–2002

- Ministerial Council agreed to commence a discussion with the community on environmental flow requirements of the River Murray. Ministerial Council agreed to a two-stage process—the first being to 'inform and engage' and the second to 'propose'. The program is to run until October 2003.
- The *Basin Salinity Management Strategy* was finalised, establishing a strategic framework for both irrigation and dryland salinity management within the Murray-Darling Basin (Basin).
- The *Draft Native Fish Management Strategy* with its strategies for restoring native fish populations was released. The strategy indicates that native fish populations are now down to about 10% of their pre-development numbers and the strategy has set a goal to increase the numbers to 60% within the next 50 years. It also contains specific activities designed to manage carp. The document will be circulated for public comment during the period 1 October to December 2002.
- The year saw the centenary celebration of the original community meeting at Corowa that set the foundations for the sharing of the waters of the River Murray. This event was recognised by a Ministerial Council meeting at Corowa on the banks of the River Murray.
- The Basin was beset by generally low flows during the year. This was particularly true of the Darling River where flows were very low in the latter part of the year, but it is recognised that the Darling River naturally ceases to flow during dry periods.

- Most of the MDBC's stored water is in Dartmouth Dam and, unless winter/spring rains are significant, water allocations are likely to be at low levels.
- Menindee Lakes fell below the cut-off level for MDBC operation and it was returned to New South Wales so that local developments could be supported.
- Major construction continued at Hume Dam and Yarrawonga Weir with all work proceeding according to schedule.
- Work commenced on the design and construction of fishways on MDBC weirs. This is part of a program aiming to enable fish migration along the River Murray from the sea to Hume Dam.
- The Community Advisory Committee continued to develop and provide strategic advice to Ministerial Council and the Chairman of the CAC was appointed for a further three-year term from April 2002.

I would like to personally thank the staff of the Commission Office for continuing to make their highly professional contribution to the complex agenda of the MDBC and Ministerial Council.

DJ BLACKMORE
Chief Executive

1

THE *MURRAY-DARLING BASIN INITIATIVE*

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

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 Murray-Darling Basin's (Basin's) natural resources. More recently, emphasis has been placed on the development and implementation of strategic, large-scale ICM plans, concentrating resources in the areas of greatest need, and establishing an ICM framework that will help governments and communities to better address issues such as dryland salinity over the next decade.

The *Initiative* brings together communities and the governments of the Commonwealth, New South Wales, Victoria, South Australia, Queensland and the Australian Capital Territory. The overall governance of the *Initiative* is shown in Figure 1 and described in the following sections.

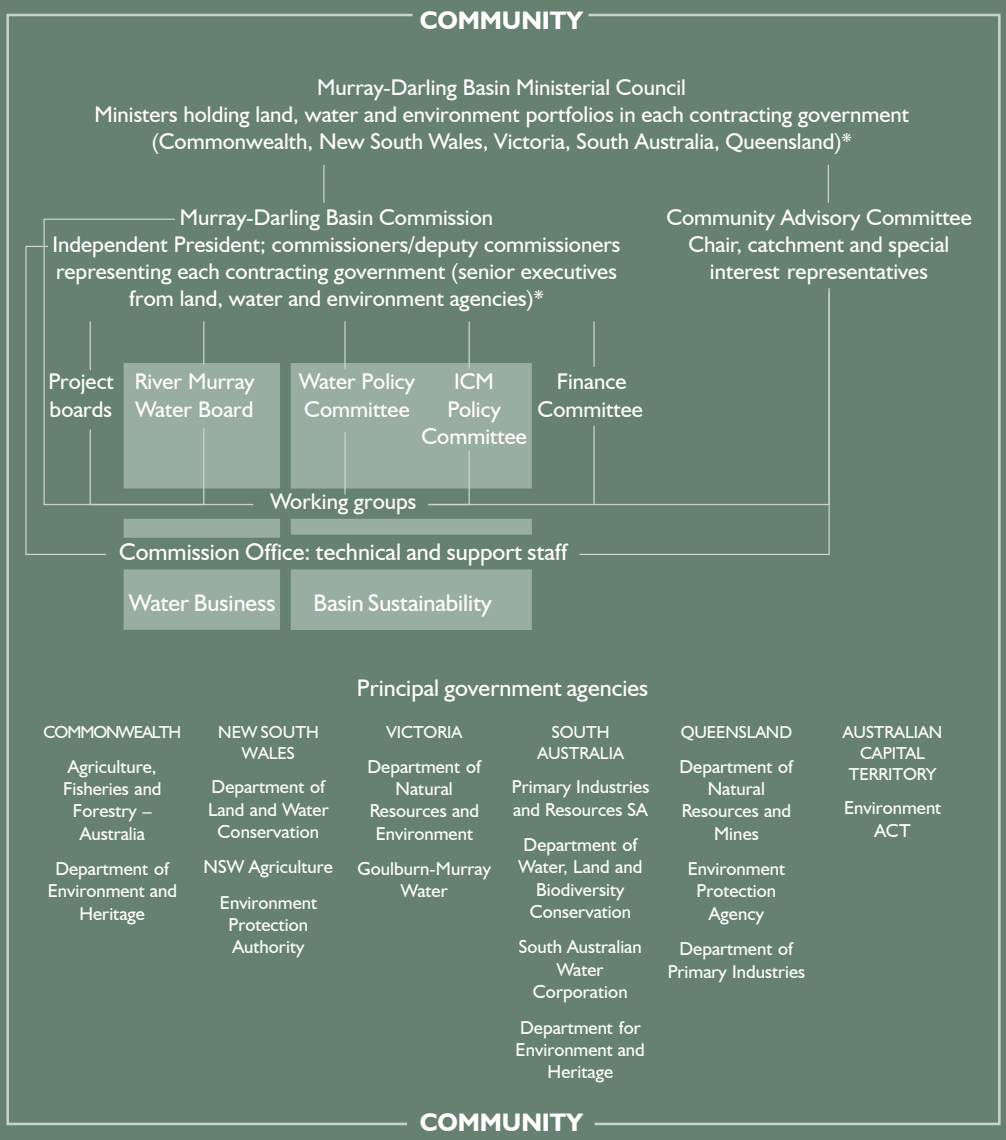
1.1 Ministerial Council

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 comprises the Ministers holding land, water and environment portfolios within the governments of New South Wales, Victoria, South Australia, Queensland and the Commonwealth. Up to three Ministers from each government may sit on the council. The Australian Capital Territory participates in the *Initiative* through a memorandum of understanding. The memorandum allows the Australian Capital Territory to take part in 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 Australian Capital Territory Government minister to be a non-voting member of the Ministerial Council.

Names of members of the Ministerial Council are shown in *Appendix A*.

Figure 1. Governance of the *Murray-Darling Basin Initiative*.



* Participation of the Australian Capital Territory is through a memorandum or understanding (see *Section 1.1*)

1.2 Community Advisory Committee

Leith Boully, Chair of the Community Advisory Committee.

The 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 them and to provide a two-way channel of communication between the council and 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.*

The terms of reference of the CAC are to advise the Ministerial Council and Murray-Darling Basin Commission (MDBC) on:

- natural resources management issues that have been referred to CAC by the Ministerial Council or MDBC; and
- the views of the Basin's communities on matters identified by the CAC as being of concern.

The CAC has a Chairman and 26 members. Twenty-one members are State representatives chosen on a catchment or regional basis—seven from New South Wales, five from Victoria, four from South Australia, four from Queensland and one from the Australian Capital Territory. Additionally there is a representative from each of four special interest peak organisations, and an appointee to provide an Indigenous perspective on natural resources management issues.

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

The names of members of the CAC during the year are listed in *Appendix B*.

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

1.3 The Murray Darling Basin Commission

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

COMMUNITY ADVISORY COMMITTEE KEY MESSAGES

What we are

The CAC:

- was established by legislation—the *Murray-Darling Basin Agreement* (Clause 14);
- is appointed by and reports directly to the Ministerial Council;
- is the peak community body bringing a collective wisdom and range of community perspectives on natural resource management;
- was established to provide community advice on natural resource management issues directly to the Ministerial Council; and
- is a unique forum for sharing information about natural resource management in the Basin.

Our aspirations and commitments

- The CAC is committed to the *Initiative.*
- Change required to implement ICM in the Basin must be the initiative of the people of the Basin.
- It is people working in partnership with governments that will effect implementation of ICM in the Basin.
- The CAC is visionary, looks at the 'big picture' and takes the long-term view.

How we do things

The CAC:

- has representatives from the 23 Basin catchments plus five special interest groups—National Farmers Federation, Australian Landcare Council, Indigenous peoples, Australian Conservation Foundation and Australian Local Government Association (as at November 2001);
- meets formally four times a year throughout the Basin;
- wants and needs to hear what the people in the Basin know and think;
- appoints individuals to provide a grounded community perspective to MDBC working groups, committees and project boards; and
- is independent of, but works collaboratively with, the MDBC;
- provides a direct conduit from the Basin community to the Ministerial Council;
- helps to form, and adds value to, natural resource management priorities and policies of the *Initiative;*
- supports the capacity of the Ministerial Council to make hard decisions; and
- provides independent, professional and credible advice that is apolitical and independent of jurisdictions.

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 the implementation of or, where directed by the Ministerial Council, implementing those measures; and
- giving effect to any policy or decision of the Ministerial Council.

In meeting its responsibilities, the MDBC has dual functions. The first is in *developing* a Basin-wide framework for the sustainable management of the Basin's water, land and other environmental resources. The second is 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 executive of the MDBC comprises an independent President, two commissioners from each contracting government and a representative of the ACT Government (each contracting government appoints two deputy commissioners). Apart from the President, commissioners are normally chief executives and senior executives of the agencies responsible for stewardship of land, water and the environment. The memorandum of understanding for the participation of the ACT Government (see *Section 1.1*) 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 shown in *Appendix C*.

Achieving an outcome of equitable, efficient and sustainable use of the Basin's environmental resources requires coordinated effort by the six governments that are partners to the *Agreement* 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; and avoids 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 Resource Business—*Chapter 4*;
- Partner Relations—*Chapter 5*; and

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 organisations which 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, 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.

- Business Administration—*Chapter 6*.

Through its *Corporate Plan*, the MDBC also agreed to adopt the values (see box, p. 7) it developed with the CAC to guide the way it operates.

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

1.4 Policy and program implementation to achieve outputs

Policies and programs of the Ministerial Council and MDBC are implemented by the MDBC Chief Executive and by commissioners representing the partner governments. In 2001/02 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,* pp. 98–99). Funds are allocated to States for agreed *Initiative* programs in accordance with estimates approved by the Ministerial Council.

River Murray Water

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

Natural Resource Business, Partner Relations and Business Administration

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

An important activity during the year was the transition from three issue-specific 'issues working groups' (Dryland, Riverines and Irrigation) to three 'knowledge management committees' that more closely relate to the *ICM Policy*. This transition was completed on 1 July 2002 and forms the basis of budget allocation from this time on.

2

REPORT OF THE COMMUNITY ADVISORY COMMITTEE 2001–2002

The Community Advisory Committee of the Murray-Darling Basin Ministerial Council is the peak community body established under the *Murray-Darling Basin Agreement*. The CAC provides advice to the Ministerial Council and the MDBC on issues related to the sustainable management of the Basin's natural resources. During 2001/02, the CAC focused on the key issues of ICM and environmental flows.

In 2002, the CAC celebrated 10 years of existence. In recognition of the strong community involvement in the River Murray Water Conservation Conference held in Corowa in 1902, members of the CAC actively participated in the Ministerial Council celebrations held in Corowa to mark the centenary of this conference.

2.1 Strategic issues

The CAC's *Work Plan*, approved by the Ministerial Council in March 2001, continues to focus on the key issues of ICM, Basin salinity management and environmental flows.

CAC *Work Plan* priorities

Current issues

1. ICM implementation, including:
   - development of performance measures for ICM particularly in the areas of institutional arrangements and governance, knowledge generation and developing whole-of-Basin and whole-of-catchment approaches; and
   - implementation of the *National Action Plan for Salinity and Water Quality* (NAP) and the Natural Heritage Trust Extension and the relationship between these and ICM.
2. Basin salinity management
3. Environmental flows and associated access rights, water recovery and adjustment issues.

Emerging issues

1. Biodiversity and ecosystems services
2. Governance—including corporate governance

Other issues identified by the CAC

1. Community involvement and leadership and how it underpins the concept of ICM
2. Appropriate Indigenous involvement in natural resource management at all levels of planning and implementation
3. The need to better develop CAC processes and resource more effective community input into MDBC activities.

This work plan, in general, complements the MDBC's *Corporate Plan*, reflecting a commonality of concerns and issues. However, with regard to priority directions identified by the MDBC, there was some divergence with the CAC considering ICM issues—'evolution of ICM', 'strategic investment in ICM', and 'human dimension and education'—as high priority issues along with 'terrestrial biodiversity'.

Integrated catchment management

The publication of the *ICM Policy* was a major achievement in 2000/01. This document enshrines a commitment to engage in an ICM approach where the behaviour of all participants reflects the values and principles articulated in the statement. The CAC continues to strongly support the implementation of this policy as a key priority in taking a whole-of Basin approach to natural resource management.

In response to community concerns about the degree of commitment of policy makers to ICM, the CAC and the Australian Landcare Council jointly hosted a community forum on ICM in October 2001. The CAC is keen to develop and progress an ongoing dialogue with the wider community through the ICM approach.

A strong focus on the relationship between the implementation of ICM in the Basin and government funding initiatives emerged, in particular the *National Action Plan for Salinity and Water Quality* (NAP) and the Natural Heritage Trust Extension. The CAC continues to be interested in how institutional and governance arrangements will be changed to ensure investment follows a multilateral approach with Basin-scale outcomes.

The CAC continued the development of ICM performance measures against which the CAC and the Ministerial Council will jointly review the progress of the ICM approach. The CAC believes that the process developed to set targets must:

- be accountable and achievable;
- take social and economic values into account; and
- be allowed to evolve over time.

The CAC acknowledges that the evolution of this process will be difficult because it will involve a shift in culture, behaviour and the institutional arrangements operating in the Basin. In recognition of this, the CAC has made significant efforts to ensure that the values and principles agreed in the *ICM Policy* are embedded in activities across the Basin.

Environmental flows

A number of CAC members continued to participate on the Community Reference Panel for the River Murray Environmental Flows and Water Quality Objectives Project.

Members of the CAC agree that structural options alone are inadequate for finding a balance between environmental concerns and consumptive demands. While additional water must be found for environmental flows, issues of effectiveness, efficiency, equity and compensation must also be addressed.

Property rights, appropriate water pricing and compensation measures for buying back water rights are key challenges to achieving a balanced approach to environmental flows. Providing advice to the Ministerial Council on access rights, water recovery options and adjustment mechanisms will be a key goal of the CAC for 2002/03.

Community engagement, including genuine engagement with Indigenous communities, is vital to achieving successful outcomes for this project.

Community involvement and leadership

Community involvement continued as a key issue in 2001/02. The CAC has increasingly tried to ensure that MDBC activities are inclusive of a wide range of sectors that are only partially represented on the CAC.

The CAC believes that it is essential that partnerships between community, industry, business and all tiers of government work together focusing on shared values and principles to guide decision-making processes. Community leaders, who can inspire, direct and communicate the issues to those who will be affected by change, will be required if we are to succeed in securing a future for Basin communities. The CAC, together with the Ministerial Council, has initiated a community leadership program. The CAC also strongly advocates the need for continuing community capacity building as an integral part of natural resource management.

2.2 Communication

During the year, the CAC developed a *Communication Strategy* to support the CAC and members in developing relationships and operating networks. The implementation of the strategy will be closely integrated with the CAC *Work Plan*.

Newscan

The CAC Secretariat, in association with staff from the MDBC's Communication Unit, continued the preparation and distribution of its weekly press clipping service, *Newscan*, which provides wide-ranging perspectives on natural resource management issues across the Basin.

This free, awareness-raising activity continues to be popular with recipients and is a good indicator of the increasing interest and sophistication of rural communities in environmental issues in the Basin. Several media campaigns by major newspapers highlighting salinity and the state of Basin rivers did much to increase public awareness of land and water management in the Basin.

Internet

The CAC has a page on the MDBC's website outlining its role and current membership < www.mdbc.gov.au > .

2.3 Performance report

CAC participation

The CAC met on only two occasions during the year, with the reduced activity related to the delay in appointing a CAC Chairman in early 2002 and the new CAC Executive Officer. The CAC was inactive from January to April 2002 due to this delay. The CAC Chairman attended Ministerial Council and MDBC meetings from July to December 2001 and all subsequent meetings following appointment of the Chairman in April 2002. CAC members participated in all major MDBC activities.

During the year, members of the CAC participated on:

- the Water Policy Committee, Finance Committee and ICM Policy Committee;
- working groups including the Basin Salinity Management Strategy Implementation Working Group, Leadership Program Implementation Working Group, Community Reference Panel for Environmental Flows, Human Dimension Working Group, Groundwater Technical Reference Panel, Sustainable Rivers Audit Taskforce; and
- project boards including River Murray Environmental Flows and Water Quality Objectives Project, Interstate Water Trade, and the Vegetation Bank.

CAC members were also the community representatives on a number of steering committees and reference panels for specific Strategic Investigations and Education (SI&E) projects.

CAC members responded to a questionnaire regarding the services provided by the CAC Secretariat and the Commission Office. Twenty-one responses were received. Members on the whole were satisfied with Secretariat support, however a majority expressed concern that general MDBC support of the CAC is declining. The circumstances around the delay in appointment of the CAC Chairman and CAC Executive Officer exacerbated concerns members had for the CAC actually going about its business.

Table 1. CAC satisfaction with support provided by the CAC Secretariat for effective participation in MDBC activities (% of members).

Support services provided	**Rating**				
	VP	P **(%)**	S **(%)**	G **(%)**	VG **(%)**
Ability of committee to address priority issues	–	10	24	14	–
Agenda papers (including quality of information, strategic approach, timeliness of distribution and method of distribution)	–	–	14	57	29
Efficiency and effectiveness of meetings (including use of time, handling of subject matter, opportunity for input, frequency of meetings)	–	5	25	60	10
Coordination of follow-up actions (including opportunity for further CAC member involvement in Basin activities, out-of-session meetings and teleconferences and general background briefing on issues)	–	10	33	43	14
Responsiveness to specific requests by CAC members regarding information on MDBC activities and appropriateness of responses	–	10	30	50	10

Overall performance of the CAC Secretariat (19 responses)

Declined (%)	**No change** (%)	**Improved** (%)
11	47	42

VG very good
G good
S satisfactory
P poor
VP very poor

In recognition of the need to better resource community members' input to MDBC activities, the Chief Executive agreed to increase the commitment of the CAC Executive Officer's time dedicated to CAC activities to 70%. This acknowledges the increasing involvement of CAC members in the business of the MDBC.

The CAC also welcomed the decision of the Ministerial Council to initiate a review of the Committee and has strong hopes that this will be useful in further developing a more effective and stronger CAC for the future.

3

RIVER MURRAY WATER

Output

Water for consumptive and environmental uses delivered to New South Wales, Victoria and South Australia consistent with their entitlements under the *Murray-Darling Basin Agreement*, and with environmental qualities of the River Murray system.

3.1 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 titled River Murray Water (RMW) as an internal division within the MDBC. The distinct nature of RMW clearly delineates the service delivery functions of the MDBC from its resource 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 2001/02 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 *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; and
- recognition by the National Competition Council (NCC) that the achievements have, in the circumstances, satisfied the relevant CoAG principles.

However, the NCC has specified that transparent, expert and independent price regulation reporting to the Ministerial Council is a further essential achievement. It recognised that this step would require amendments to the *Agreement* both in relation to powers to set prices for services as distinct from cost-sharing between governments and powers to recognise depreciation or to introduce a renewals annuity.

In 2001 the Ministerial Council authorised an independent review of the pricing principles applied by RMW. The review team, comprising Dr John Langford and Mr Chris Scriven, was engaged and requested to report back to the Ministerial Council after review and consultation with government agencies.

While confirming that the achievements have been significant, the review team promoted several further developments including:

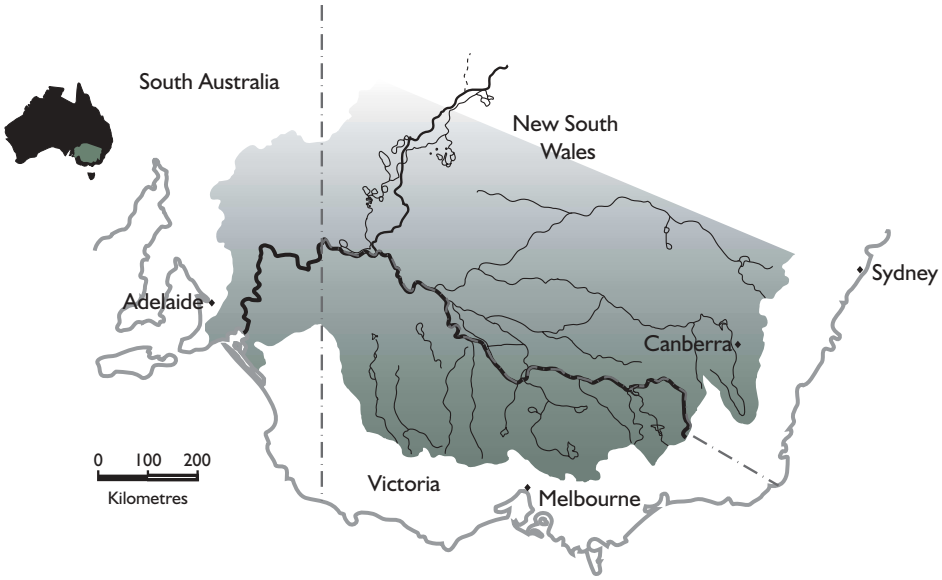
- introduction of a renewals annuity;
- recognition of environmental costs;
- transparent publication of pricing information;
- periodic independent price reviews reporting to the Ministerial Council; and
- a focus on the notion of environmental dividends rather than financial dividends.

The Ministerial Council has endorsed, in principle, the findings of the review team and requested the MDBC to propose a program for implementation.

3.2 Water resources management

The water resources of the River Murray system (see Figure 2) are used for a wide range of beneficial purposes. In addition to their inherent natural value to riverine, floodplain and estuarine ecosystems, they are also used for irrigation, industrial and domestic water supplies, navigation, recreation, and hydro-electric generation. RMW manages the river system to ensure that available water is documented in the water accounts and distributed to South Australia, Victoria and New South Wales in accordance with the *Agreement*.

Figure 2. Water resources of the River Murray system.



RMW undertakes the tasks of sharing and supplying water through three main processes:

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

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. The States then announce water allocations based on these shares and their own plans for water management.

The following sections summarise the availability of water in 2001/02, quantities supplied and diverted, and key issues related to the delivery of that water.

Water availability

Inflow conditions in upper Murray catchments during the latter part of 2000/01 were slightly drier than median following relatively high inflows in spring 2000. At the end of July 2001, Menindee Lakes storage volume was close to surcharge capacity following a small flood event in the Darling River during the previous summer and autumn. Inflows to Menindee Lakes had receded to very low rates by October 2001 and very little inflow reached Menindee Lakes from the Darling River upstream during the remainder of the season.

In the River Murray catchment upstream of the Darling junction (excluding the component of Hume catchment regulated by the Snowy Mountains Scheme), inflows from July to November 2001 were relatively dry, at 75% probability of exceedance. Very low inflows during summer and autumn resulted in total inflows for the year having an 85% probability of exceedance. When inflows to Menindee Lakes from the Darling River are included, the inflow to the entire system (excluding the Snowy–Murray development) was equivalent to approximately 90% probability of exceedance—in other words inflows are expected to be greater in nine years out of ten over the long term.

At the start of July 2001, the share of water available to New South Wales was 1331 GL less than that available to Victoria, mainly as a result of greater accumulated use of water by New South Wales over the previous five irrigation seasons. At the end of June 2002, New South Wales and Victorian reserves were depleted by 1141 and 966 GL respectively in comparison with the end of the previous season.

At the end of June 2002, water held in active reserve by New South Wales was 1347 GL. This compares to 659 GL at the end of June 1998, and 1204 GL at the end of June 1999 (1999/2000 was the season of the lowest recorded New South Wales diversion for over 25 years). Despite New South Wales reserves being lower in June 1998 and June 1999, their outlook for water availability for 2002/03 was very low in the event of dry conditions. At the end of June 2002, Victoria's active reserve was 2668 GL, and as a result Victoria had an outlook of significantly higher resource availability than New South Wales for 2002/03 in the event of dry conditions. Water availability at the beginning and end of 2001/02 is summarised in Table 2.

Table 2. Water accounts for New South Wales and Victoria 2001/02 (GL).

Storage location	**Storage at 30 June 2001**				**Storage at 30 June 2002**			
	NSW	VIC	Total	Out of balance	NSW	VIC	Total	Out of balance
Dartmouth Reservoir	1 185	1 953	3 138	768	1 316	1 953	3 269	637
Hume Reservoir	343	911	1 254	568	0	563	563	563
Menindee Lakes	990	986	1 976	-4	105	290	395	185
Lake Victoria	180	179	359	–1	139	253	392	114
Total	**2 698**	**4 029**	**6 727**	**1 331**	**1 560**	**3 059**	**4 619**	**1 499**

Accounts are based on operational data (rounded to nearest GL).

Data relates 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.

State irrigation allocations

At 1 July 2001, South Australia was assured of receiving its full water entitlement in 2001/02. Approximately three months of additional dilution flow to South Australia was also projected to be available in the early part of the year due to high storage levels in Menindee Lakes.

On 15 August 2001, Victoria's initial irrigation allocation for the major River Murray gravity diversion districts was announced as 100% water right plus 74% 'sales' water. This allocation was possible as a result of relatively high Victorian water reserves at the end of the 2000/01 season. Victorian irrigation allocation announcements increased to 100% water right plus 80% 'sales' on 15 October, then reached the maximum allocation of 100% water right plus 100% 'sales' on 15 November 2001.

In contrast, New South Wales initial water availability was low, owing to higher use in 2000/01, although some users had access to carry-over of unused entitlements from the previous season up to a limit of 30% of entitlement. New South Wales allocations increased significantly through spring. The initial general security allocation in the Murray Valley for 2001/02 was 17% (announced 1 July). This was more than doubled on 1 October to 36% and then rose to 100% by mid-December. A final season allocation of 105% was announced on 15 February 2002. High security licence holders had access to 100% of their entitlement throughout the season.

State water diversions

Relatively mild conditions throughout summer were followed by extremely dry conditions in autumn 2002. The dry autumn conditions resulted in very high demands for irrigation water, which caused a period of restricted access to water for both New South Wales and Victorian irrigators downstream of the Barmah Choke during March 2002. While restrictions have been imposed on irrigators in the past as a result of internal capacity constraints within irrigation districts, this was the first time that restrictions had been applied to New South Wales and Victorian diverters from the River Murray.

The very high diversions during autumn 2002 contributed to above-average diversions by both New South Wales and Victoria for the season as a whole, despite a relatively low New South Wales allocation at the end of October, when key decisions with respect to rice plantings are made.

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

Table 3. State diversions+ (GL).

Year	River Murray				Darling**
	NSW	VIC	SA	Total	NSW
1982/83	1 638	1 637	707*	3 981	27
1983/84	1 765	1 318	508	3 590	373*
1984/85	2 163	1 749	547	4 460	280
1985/86	1 939	1 580	568	4 087	73
1986/87	1 780	1 472	454	3 706	72
1987/88	2 104	1 845	521	4 469	180
1988/89	1 411	1 337	548	3 296	322
1989/90	2 068	1 651	580	4 299	216
1990/91	2 277	1 856	627	4 760	140
1991/92	2 600*	1 827	589	5 016*	98
1992/93	1 589	1 147	482	3 218	77
1993/94	1 972	1 407	587	3 967	156
1994/95	2 123	1 990*	663	4 776	52
1995/96	1 904	1 742	568	4 215	169
1996/97	2 223	1 745	600	4 569	234
1997/98	1 863	1 696	664	4 223	71
1998/99	1 978	1 766	690	4 434	140
1999/00	1 212	1 540	642	3 395	85
2000/01	2 048	1 712	662	4 422	246
2001/02#	**2 070**	**1 950**	**600**	**4 620**	**130**

\+ 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 2001/02 is estimated based on hydrographic and operational data.

Water trade

The MDBC continued to monitor permanent and temporary interstate water trade during the year. RMW made all the necessary adjustments to the water accounts of New South Wales and Victoria, and made adjustments to the flow to South Australia to take account of water traded between the three States. Total net adjustments made to water accounts were:

- Victoria to New South Wales 1.1 GL;
- New South Wales to South Australia 6.9 GL; and
- Victoria to South Australia 8.4 GL.

Trade into the Victorian tributaries of the River Murray balanced with trades out resulting in zero balances in all Victorian Valley accounts. Consequently no water was available from these tributaries to supplement flow in the River Murray. Despite net trade into the Murrumbidgee Valley resulting in an overdraw of the account, New South Wales agreed to allow RMW to further overdraw the Murrumbidgee Valley account to assist in meeting peak demands late in the irrigation season. Payback of this overdraw will be arranged by New South Wales through a transfer from Murray to Murrumbidgee within the Snowy Mountains Scheme.

An automated trade notification and accounting system is currently being developed jointly by the MDBC and RMW and is expected to be operational in 2002/03. Further details on permanent interstate water trade are given in *Chapter 4* (see KPA 6, Water entitlement and efficiency of use).

Flow to South Australia

Total flow to South Australia for the year was 2270 GL, which is a little more than the annual entitlement of 1850 GL, and considerably less than the annual average of 6200 GL. Adjustments to account for net permanent and temporary trade into South Australia amounted to an increase in South Australia's entitlement of 15 GL.

The additional 405 GL above entitlement was almost totally made up of additional dilution flow—3000 ML/day above the normal entitlement to achieve further dilution of river salinity—which was delivered from the beginning of the year until mid-November 2001.

The highest flow rate into South Australia seen during the year was approximately 13 000 ML/day. Flow and salinity behaviour of water into South Australia is shown in Figure 3.

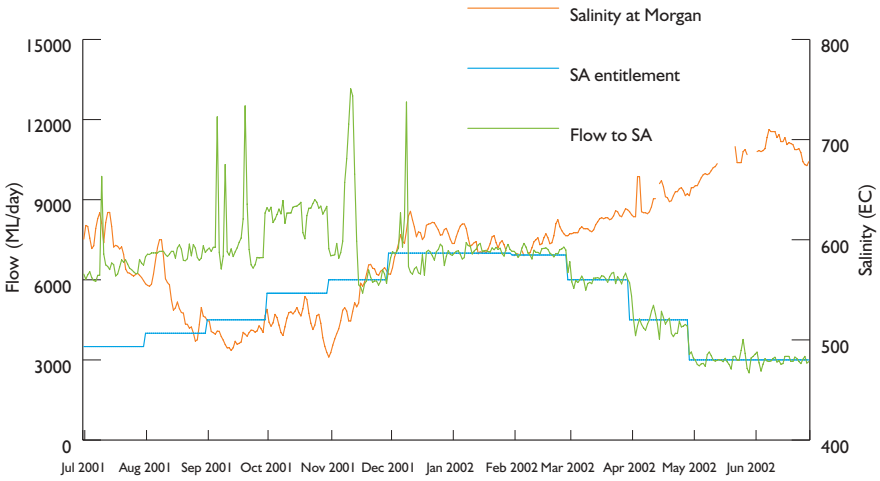
Operation of storages

Total MDBC storage at the beginning of July 2001 was 70 % of active capacity and 8 % higher than that seen at 1 July 2000. This was the highest opening storage since 1996 when 80 % of active capacity was available. Storage progressively rose until mid-November 2001 following winter and spring inflows to the upper Murray storages. Total storage peaked at 82 % in mid-November 2001 and was then steadily drawn down to 42 % in mid-May 2002. Total storage then rose only to 47 % by 30 June 2002.

At the beginning of July 2001, storage in Hume Reservoir, the MDBC's main regulating storage for irrigation and water supply, was low at 41 % of capacity. Storage in Hume Reservoir peaked at 80 % of capacity in mid-November and was then steadily drawn down to meet downstream requirements throughout the remainder of the irrigation season. Very dry conditions throughout late summer and autumn resulted in storage in Hume Reservoir reaching a minimum level of 7.8 % in mid-May 2002. This was the lowest level seen in Hume since 1983 when storage fell to 7.3 % of capacity.

Storage in Dartmouth Reservoir gradually increased from 80 % in July 2001 to 89 % at the end of October 2001 before being drawn down to 84 % by the end of June 2002. Release from Dartmouth Reservoir was increased in mid-October 2001 in accordance with 'harmony transfer' requirements. Harmony transfers are made when the probability of Dartmouth spilling exceeds the probability of Hume spilling. Harmony transfers provide recreational benefits in Lake Hume by helping to maintain higher levels over

Figure 3. Flow and salinity behaviour of water into South Australia.



summer, and can provide benefits in the Mitta Mitta River as a result of reduced need to transfer at higher flow rates later in the season. Harmony transfers also provide flood mitigation to Mitta Mitta Valley floodplain landholders. These transfers were undertaken to the extent that total resource would not be jeopardised in future years. Resource transfers to augment storage in Hume Reservoir to meet forecast demands in 2002/03 were commenced in early June 2002. Low levels of storage in Hume Reservoir, combined with limited channel capacity in the Mitta Mitta River, required an early commencement of transfers to ensure security of supply should conditions remain dry in 2002/03.

Storage in Menindee Lakes at 1 July 2001 was surcharged at 117% of nominal capacity after minor flooding in the Darling River upstream of the lakes in the previous summer and autumn. Storage remained near surcharge capacity until mid-August 2001 when release was increased in accordance with the harmony operation of Menindee Lakes and Lake Victoria. Release was progressively increased throughout August and September 2001 to near channel capacity rates before being gradually reduced to minimum rates by about March 2002. Dry conditions in the Murray upstream of Wentworth required this sustained release to help maintain storage in Lake Victoria to assist in meeting South Australia's entitlement. As a result, storage in Menindee Lakes fell to 480 GL in mid-March, and thereby reverted to New South Wales control as required by the *Agreement*. This provision allows New South Wales to fully manage a 'drought reserve' to best meet the needs of irrigation, stock and domestic use, and town water supply (including Broken Hill) in the Lower Darling and Darling Anabranch. Storage subsequently fell to 395 GL by the end of June 2002.

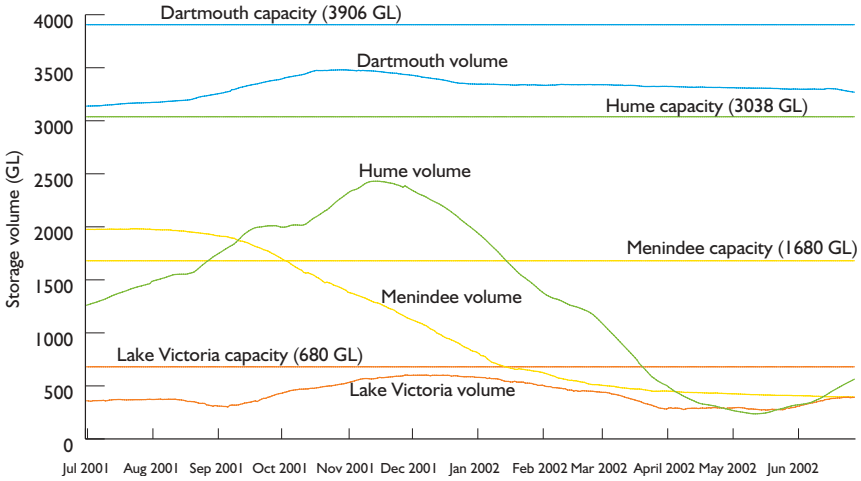
Storage in Lake Victoria at the start of July 2001 was 53% of capacity and remained fairly steady until mid-August when, due to receding tributary flows, storage fell to 44% in early September. A combination of minor inflows from the River Murray upstream of Wentworth and harmony transfers from Menindee Lakes then resulted in storage rising until December when it remained steady at about 88% until about Christmas 2001. Storage was then gradually drawn down to help supply South Australia's entitlement and fell to about 41% in early April 2002. Storage then fell very slowly to about 40% in mid-May before tributary inflows increased it to 58% by the end of June 2002.

In March 2002, the MDBC approved the *Lake Victoria Operating Strategy* (LVOS), which forms part of the *Lake Victoria Cultural Landscape Plan of Management*. The LVOS was subsequently approved by the NSW National Parks and Wildlife Service in May 2002. It provides opportunities for vegetation regrowth on the foreshore of Lake Victoria (which is expected in turn to reduce erosion) by enhancing the late summer–autumn drying cycles that are a feature of the operation of Lake Victoria. Storage levels in Lake Victoria during autumn 2002 were below the upper limits described in the LVOS and, as a result, it was not necessary to draw down Lake Victoria any further.

By the end of June 2002, the bulk (almost 80 %) of the MDBC's active reserve storage was retained in Dartmouth Reservoir.

Storage behaviour resulting from RMW's operation of the MDBC's four major storages is shown in Figure 4.

Figure 4. Storage behaviour resulting from River Murray Water's operation of the four major storages of the MDBC.



The Snowy Mountains Scheme

Storage in the Snowy Mountains Scheme was high at the beginning of 2001/02, and the Snowy Mountains Council approved the release of up to 1614 GL from Murray 1 Power Station for the 12 month period 1 May 2001 to 30 April 2002—significantly above the 'minimum notification' release volume of 1062 GL for the 12 months to the end of April. The approved release was made up of 1062 GL minimum notification release, plus 552 GL underdraw available at 1 May 2001. The actual release, however, from Murray 1 Power Station for the 12 months to 30 April 2002 was 1049 GL—while this was 13 GL less than the minimum notification release, the shortfall is to be provided over 2002/03.

A request for an advance in release from the Snowy Mountains Scheme to supplement water availability to New South Wales Murray irrigators was made in October 2001. However, the MDBC did not support that request because the New South Wales Murray irrigation allocation was not exceptionally low, and it was considered that additional water should be sought through the water trade market.

Environmental report

River flows

In comparison to the relatively wet 2000/01 season, relatively dry conditions during 2001/02 created few opportunities for environmental flows. No spills of major River Murray system water storages occurred during 2001/02. Inflows to the River Murray from the Goulburn River catchment were very low, and were generally confined to a low regulated flow rate. Minor flushes reached the River Murray from the Murrumbidgee River during July, August and September 2001, and were contained in Lake Victoria.

On the Darling River upstream of Menindee Lakes, flows receded to very low rates following flooding in early 2001. Inflows to Menindee Lakes were negligible from October 2001 to June 2002.

As a result of the lack of natural spring 'freshes', the Barmah–Millewa Forest allocation was not used, and the 100 GL annual allocation was credited and carried over for use in a future season. However, two small trials were undertaken to investigate the feasibility of manipulating regulated flows for environmental benefit.

During November 2001, a trial watering of low lying areas within the Werai Forest (downstream of Deniliquin on the Edward–Wakool River system) was undertaken by the New South Wales Murray Wetlands Working Group

(MWWG). This involved switching some of the regulated flow from the River Murray to the Edward River to increase the flow downstream of Stevens Weir to a level sufficient for water to enter the Werai Forest. Water that entered the forest, as well as an estimate of the additional losses that occurred as a result of transferring regulated flow from the River Murray to the Edward River (a slightly less efficient carrier), were accounted as New South Wales water supplied from the New South Wales MWWG account.

From November 2001 to early January 2002, a trial 'sawtooth' pattern of release from Dartmouth Reservoir to Hume Reservoir was undertaken. At the time, transfer from Dartmouth to Hume was being made in accordance with harmony transfer requirements. RMW assessed that there was an opportunity for harmony release from Dartmouth Reservoir to the Mitta Mitta River at a flow rate of approximately 4000 ML/day. This release commenced on 17 October. From 19 November, release was varied to include a short rise over two days followed by a slow recession over 12 days, to simulate response to a natural rainfall event. A relatively small variation of about 25 cm gauge height ($\pm$ 800 ML/day) in the Mitta Mitta River was selected for the trial, to assess whether there were any impacts on the downstream riparian landholders.

Release from Dartmouth Dam was cycled in three distinct pulses, over a period of six weeks. Landholders were asked to comment on the trial via a questionnaire and the response was generally positive with no inconvenience to landholders being identified. In addition, monitoring of water quality and macro-invertebrates was undertaken by Charles Sturt University. Preliminary results appeared to show an encouraging increase in the species diversity and numbers of macro-invertebrates present during the trial, although it is unclear whether this was a direct result of the release pattern or other seasonal influences.

Water quality

The River Murray generally experienced an acceptable outcome in regard to blue–green algae. Alert levels remained mostly within the low to medium range with only short periods at high alert levels.

Many of the high cell counts detected during the year were dominated by the *Aphanocapsa* species of blue–green algae. Due to its extremely small cell size, current alert trigger levels were deemed to be inappropriate and after discussion with CSIRO a high alert trigger level for this species of 100 000 cells/mL, compared to the normal 15 000 cells/mL, was adopted by the Murray Regional Algal Coordinating Committee. Despite counts in excess of 200 000 cells/mL being recorded in Hume Reservoir in December 2001 and January 2002, no adverse reactions or impacts were reported.

The development of a new approach to determining alert levels, based on bio-volumes instead of cell counts, will be progressed and potentially trialled in the River Murray next year.

Salinities in the River Murray system remained fairly consistent throughout the year with EC readings at Morgan ranging from 490 to 710 EC and averaging about 590 EC for the year. The greatest range in salinity levels occurred in the Lower Darling River at Burtundy where readings rose from 400 EC to 850 EC as release from Menindee Lakes reduced from channel capacity rates to minimum requirements.

Turbidities were also consistent throughout the year in the River Murray, with a period of high turbidity—in excess of 150 NTU—seen in the Lower Darling. This was associated with high rates of transfer from Menindee Lakes between September 2001 and January 2002.

Murray mouth

At the beginning of July 2001, following a period of several months of River Murray flow that was not significantly greater than entitlement flow, significant volumes of accumulated sand remained near the mouth and Coorong Channel. With the mouth being severely blocked with sand deposits, and a forecast of low regulated Murray flow in coming months, there was a risk of closure of the Coorong Channel in late 2001.

In winter 2001, flow along the River Murray in South Australia was supplemented by additional dilution flow of 3000 ML/day above minimum entitlement. However, after being provided for 19 months from April 2000 (except for temporary cessation in June 2001 in order to undertake a river salinity survey), the additional dilution flow was ceased in mid-November 2001 in accordance with the combined operating rules for Menindee Lakes and Lake Victoria.

In late 2001, as flow in the River Murray upstream of the barrages declined, it was necessary to close the barrages completely in late November 2001. With continuing low regulated river flows, the barrages remained closed to the end of June 2002.

Some improvement in condition of the mouth occurred in late 2001, when the width increased to about 150 m, and the depth to about 3 m. However, in early 2002 with lower river flows, the mouth became progressively more choked with sand deposits. By the end of June 2002, it was again severely blocked with sand. At that time, with the prospect of continuing low flows due to dry conditions and low storage levels in River Murray system storages, the outlook was for the barrages to remain closed. Consequently, at end of June 2002, there was a significant risk of closure of the mouth and the Coorong Channel.

The Murray-Mouth Advisory Committee met regularly throughout the year to monitor conditions and to coordinate barrage operation aimed at maintaining a flow path at the mouth and preventing it from becoming seriously constricted and subsequently vulnerable to closure. The committee's activities included:

- coordination and review of monitoring of physical conditions at the mouth;
- review of results of environmental monitoring at the mouth; and
- coordination of studies on modelling of sediment transport.

A sediment transport study for the mouth area commenced in early 2001/02, and Stage 1 of the study was completed in October 2001. Stage 2 of the study, which includes the development of a sediment transport model for the mouth region, commenced in March 2002, and is scheduled for completion in December 2002.

River management activities

Hume-Yarrawonga Waterway Management Plan

Significant milestones achieved during 2001/02 included the finalisation of a scoping study for a waterway management plan for the Hume to Yarrawonga reach of the River Murray. The *Hume-Yarrawonga Waterway Management Plan* aims to balance water conveyance, economic production and environmental objectives for the reach. Programs under the plan include:

- Priority Reach Program;
- Whole of Reach Program; and
- Land Management Review.

The *Waterway Management Plan* includes works on anabranches, with the aim of managing the waterways (main stem and anabranches) in a holistic sense and in conjunction with landowners.

A series of public meetings with stakeholders was held during late 2001 to introduce the *Hume-Yarrawonga Waterway Management Plan* to the community. In addition, a small subcommittee was formed to investigate land management aspects of the floodplain, including consideration of longer-term land tenure.

The 2001/02 physical works program was expanded based on the priorities expressed in the *Hume-Yarrawonga Waterway Management Plan*. Activities on the main stem of the River Murray (Whole of Reach Program) were similar to those undertaken in the past, and included remedial bank protection at erosion 'hot spots' with a combination of vegetation (using native long-stem tube stock) and rock armouring as a last resort.

In addition, substantial works were undertaken in two priority reach anabranches—Wodonga Creek (Victorian side) and Travellers Creek (New South Wales side). The reaches were analysed to identify detailed management objectives and ensure that proposed works were compatible with the hydraulics of the system as a whole. The physical works included the placement of 1000 and 2000 timber piles respectively, in the form of groynes. Some large woody debris was placed in Travellers Creek to increase hydraulic roughness and in-stream habitat, and revegetation with indigenous native species will follow.

3.3 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 Land and Water Conservation (including its commercial water business—State Water);
- Goulburn-Murray Water; and
- South Australian Water Corporation.

RMW exercises the MDBC's responsibilities in relation to management of the assets (a list is at *Appendix G*). Daily operation and maintenance of the structures is by a collective team from these three authorities totalling 100 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 50 years to the team looking after the asset judged to be the best maintained lock and weir. In 2001 the trophy was awarded to Bob Bonner, Tony Waye and Robbie Bonner at Murtho Weir and Lock 6.

At ceremonies at Hume Dam and Blanchetown Weir in late 2001, the Institution of Engineers Australia dedicated the engineering works of the River Murray as a 'National Engineering Landmark'. The award recognises not only the role these works have played for more than 80 years in the development of the Murray Valley but also the significant contributions by the engineers who investigated, designed and built the works, and the four or more generations of engineers and operating personnel who have monitored, maintained, repaired and refurbished them.

MDBC President Roy Green (left) and National President of the Institution of Engineers Australia Dr Martin Cole (right) at the unveiling of the plaque recognising the Hume Dam as a major Australian engineering work.

THE ENGINEERING WORKS OF THE RIVER MURRAY

The inter-governmental conference on the waters of the River Murray at Corowa in 1902 gave rise to one of the great engineering initiatives of the new Federation.

The creation of the River Murray Commission in 1915 by the governments of the Commonwealth, New South Wales, South Australia and Victoria established the framework under which the four governments would work together for the equitable, efficient and sustainable use of the water of the River Murray. A comprehensive scheme of works, comprising Hume and Dartmouth Dams, Lake Victoria and a series of locks, weirs and barrages from Yarrawonga to the Murray mouth, has been constructed to support irrigation, urban water supply, hydro-electric generation, navigation, recreation and flood mitigation. Their purpose continues to be to contribute to human welfare. The challenge remains for current and future governments to ensure that continuing operations sustain the health of the river's ecological community.

Similar plaques are at Yarrawonga Weir and Blanchetown Weir.

Dedicated by
The Institution of Engineers, Australia
and the Murray-Darling Basin Commission
2001 – The Centenary of Federation

Since 1995 the investigation program has been dominated by Hume Dam. While work continued on a Phase 3 program at Hume, the rate of expenditure has slowed significantly. This has allowed remedial works to proceed at other assets including:

- Yarrawonga Weir (seismic upgrade);
- Mildura Weir (trestle replacement);
- Tauwitchere and Ewe Island barrages (OH&S upgrade);
- Locks and Weirs 1 to 10 (replacement of navigable passes); and
- Dartmouth Dam (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 addresses stability of the dam itself, the reliability of outlet works and spillway, and the capacity of the spillway under extreme floods. Excluding considerations of spillway capacity, total cost is now expected to be in the vicinity of $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 reasonably practicable in line with Australian national guidelines and international best practice.

Expenditure on the works for 2001/02 was $3.9 million, bringing total expenditure to date to $74 million. Good progress was achieved throughout the year.

- Embankment 1 is the main earth embankment on the Victorian side of the river, and connects to the concrete spillway section. During the second half of 2001 the crest road was rebuilt including improved drainage, thus completing a program of work on Embankment 1 which has been under way since 1995.
- A detailed review of Embankment 4, (the small bank on the New South Wales abutment), had commenced in May 2001 and was completed by early 2002. The review recommended that Embankment 4 should be modified to provide a filter zone on the downstream side and thus further reduce the risks to the dam.

  Throughout the remedial works program the MDBC has relied on the Technical Review Committee to provide expert independent advice on appropriate measures to ensure that Hume Dam meets contemporary design standards. The committee is chaired by Ken Johnson; other members are Phil Cummins, Mike Fitzpatrick and Warren Martin. Their advice is highly valued and they have made significant contributions to

the remedial works program. In March 2002 the Technical Review Committee endorsed the need for a filter layer on Embankment 4 and recommended that further studies be undertaken on the stability of the downstream section of the northern training wall of the spillway, prior to any decision to carry out any remedial work to this wall.

Excavation for Embankment 4 commenced in May 2002 and was undertaken by plant hire contract under the direct supervision of consultants, SMEC Victoria. This approach to executing works on an existing and operating asset has proven to be very effective throughout the remedial works program. Program management has been by State Water with design by New South Wales Department of Public Works and Services. By the end of June, excavation was complete and the foundation had been prepared in readiness for installation of vertical sand filter columns, in the area adjacent to the northern training wall. Further up the abutment a filter trench was excavated and filled.

- Other works undertaken throughout the year have related to tidying the site after nearly seven years of remedial works and completing the makeover of the structure, which was originally constructed between 1919 and 1936. Activities included:
  - constructing a new turning bay at the southern abutment of Embankment 1;
  - replacing the water supply main;
  - reshaping and landscaping the terraced area upstream of Embankment 4;
  - constructing a new roundabout and upgrading the car park on the New South Wales (northern) abutment;
  - installing new fences to enhance security;
  - planting trees and shrubs;
  - reshaping and planting borrow pit batter slopes; and
  - completing planting of a wetland in the base of the old borrow pit.

For more than a decade the MDBC and its consultants from DLWC have been investigating the determination of extreme flood estimates for 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 been made over the last year. The Technical Review Committee has provided valuable advice throughout this process.

A comprehensive cycle of surveillance readings continued to monitor the performance of the modified embankments. Continuing deformations have been consistent with design predictions. However inflows in 2001/02 only resulted in the lake level reaching 80% of capacity, (maximum level elevation above sea level 188.79) on 16 November 2001. Accordingly, the detailed program agreed for the first two fill cycles will be continued until after the lake next fills.

Yarrawonga Weir

A program of remedial works at Yarrawonga Weir was commenced in 2000, with a focus on improving the seismic capacity of the weir. Physical construction works commenced in late July 2001. Excavation and earth works have been undertaken by plant hire contracts under the direct supervision of Goulburn-Murray Water. In addition major contracts have been undertaken for:

- rock and filter columns (Frankipile Australia);
- structural works (Geotechnical Engineering); and
- erosion protection blocks (Austral Constructions).

Initial focus was on the downstream side of the weir with works moving to the upstream side only after downstream rock columns, filter layer and weighting berm had been completed.

Placing a rockfill blanket upstream between the embankment and the railway embankment, and structural improvements to upstream training walls required draining of Lake Mulwala. The draining commenced in mid-May and the lake was emptied by early June. Contractors made very effective use of the limited time available as refilling had to start by mid-July to allow irrigation commitments to be met in August.

By the end of June 2002, total expenditure was $8.4 million out of a total project budget of $12.9 million.

The upstream and downstream faces of Yarrawonga Weir must be able to withstand erosion due to waves or flooding. In the 1930s stone pitching had been placed by skilled rock masons but the cost of such a finish today would have been prohibitive, even if skilled artisans had been available. The solution adopted involves the use of interlocking, concrete, erosion protection blocks, which are also tied together with stainless steel cables, secured to an anchor beam along the crest.

The draining of the lake was an opportunity for landholders adjacent to the foreshore to carry out much needed repairs to retaining walls and jetties. At the same time Moira Shire was able to reclaim a strip of land fronting the Yarrawonga town centre, which will be later developed as a focal point for visitors to the area.

Other dams and weirs

Dartmouth Dam

At Dartmouth Dam good 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. A very 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.

The installation of piezometers to monitor groundwater pressures in the left looking downstream abutment was completed.

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

Mildura Weir

Detailed inspection of five standard trestles, that had been removed for maintenance in May 2001, revealed extensive corrosion. A study of repair or replace options led to a decision to bring forward the fabrication of five new trestles. The trestles were delivered in May 2002 in time for installation following removal of the weir and coinciding with the end of the irrigation season.

A further five replacement trestles have been ordered to be available by late spring, in case a further removal of weir is needed due to flooding.

The various improvements to occupational health and safety practice associated with weir removal and reinstatement have proven to be very effective. Nevertheless further improvements are being pursued to try to mechanise the installation and removal of timber drop bars that form the waterproof membrane on the face of the steel trestles.

Euston Weir

An outage of the lock chamber took place in February 2002 to allow repairs to inlet valves and downstream gate seals. At the same time the opportunity was taken to obtain a detailed record of cracking in the lock floor.

Other locks and weirs

The program of replacing the Robway system on lock cranes was completed. The system provides an indication of load, radius, depth and overload cut-out during crane operation to crane operators.

A program to improve safety for operators of locks was commenced with handrails being installed at Locks 3, 5, 6, 9 and 10. At the other locks operated by SA Water, a system of concrete barriers will be installed to provide safer transit for boats when the locks remain in use on rising or falling floods. By the end of June 2002, most of the concrete barriers had been delivered to site and were awaiting installation.

SA Water has also undertaken a program to replace the upstream and downstream buoy lines at its locks and weirs. The new yellow fibreglass buoys are highly visible and are much easier to handle during floods, when they need to be relocated.

Barrages

Good progress on OH&S improvements at Tauwitchere and Ewe Island barrages was made through the year. Prototypes of a number of options for upstream and downstream handrails and for safer lifting and latching of taintor gates were designed and trialled. A series of value engineering workshops has assisted the development of designs.

In addition, electro-mechanical lifting arrangements have been developed for the taintor gates. A trial installation on 10 gates will proceed in 2002/03 to allow operating systems and control sequences to be developed and tuned. More flexible gate operation is considered to be an essential component of improved management of the Murray mouth.

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 Department of Land and Water Conservation, State Water (New South Wales).

The project involves:

- replacing the navigable pass section of the weir;
- repair or replacement of piers constructed in the 1960s when the navigable pass sections were narrowed; and
- construction of a vertical slot fishway.

The first two locks and weirs to be modified will be 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, that will sit on top of half height concrete piers. The stoplogs and bridge sections will be removed during floods, and vessels will pass over the half height piers which will be submerged by at least 1.9 m of water.

The fishway component was added to the project following the decision by Ministerial Council in March 2001, to provide for fish passage from the sea to Hume Dam.

To oversee the fishway program and to provide advice to the MDBC on fish passage issues throughout the Basin, the MDBC established a 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:

- preparing detailed design of a navigable pass;
- developing a concept design of fishways;
- preparing a detailed design of fishways;
- undertaking a baseline fish monitoring program;
- pre-qualifying construction contractors;
- obtaining development approvals;
- calling, receiving and analysing tenders for construction; and
- assembling a construction supervision team.

At the end of June 2002 a decision was taken to redesign the fishways to take account of information learned through the tender analysis process.

The aim of the fishway project is to design and construct fishways that will be capable of being used by fish ranging in size from 40 mm to up to 1 m long and for the full range of differential heads, to within 300 mm of drownout. Having optimum attraction flow conditions at all times has been a major focus.

Collaboration between members of the FPRG, the project team and the fishway design consultants Department of Public Works and Services (New South Wales), have been very effective. There is a high level of confidence that these fishways will be the most effective yet constructed for Australian native fish, reflecting the priority of the lower Murray structures for fish passage.

Occupational Health and Safety

The safety of staff, their families and the general public is a high priority at all the River Murray assets. A number of the initiatives with a safety focus were undertaken in 2001/02, including:

- further progress towards replacement of navigable passes;
- safety barriers and handrails on locks;
- installation of child-safe fencing across Lock 6, which is primary access for families living at Lock 6;
- further progress towards the OH&S upgrade of Tauwitchere and Ewe Island barrages;
- improved documentation of OH&S risk assessment processes;
- improved documentation of safe working procedures;
- improved access onto the downstream face of Dartmouth Dam;
- improved access to the spillway batter slopes at Dartmouth Dam;
- improved approach to the mowing of batter slopes at Hume Dam;
- installation of personnel-rated hoist on the gantry at Torrumbarry Weir;
- provision of safe access to the spillway gates at Yarrawonga Weir; and
- improved practices for removing/reinstalling Mildura Weir.

3.4 Performance reports

KPA 2. River salinity mitigation

Sub-output

Salinity mitigation schemes (interception schemes and river management issues) that achieve targets and are operated cost-effectively.

Performance assessment

- *Agreed river salinity targets met through operation of interception schemes and river operations*
- *Cost-effectiveness of operating existing salt interception schemes*
- *New and upgraded salinity mitigation schemes in place*

Performance report

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) which is to maintain the river salinity at Morgan at less than 800 EC for 95 % 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 2001 to June 2002	590	597	690
5 year			
July 1997 to June 2002	541	541	735
10 year			
July 1992 to June 2002	547	547	810

Salt interception schemes

VICTORIA

Barr Creek Drainage Diversion Scheme

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. To improve the efficiency of this drainage disposal scheme it is proposed to construct a new weir immediately downstream of the pumps. This new weir will be larger than the existing weir ensuring that the frequency of overtopping of the weir during periods of high river flows in the River Murray will be reduced. Although the detailed investigations and design of the new weir by the Victorian constructing authority were completed during the year, construction was delayed while the project was referred to Environment Australia under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth). It is now expected that construction will commence and be completed during 2002/03.

Mildura-Merbein Scheme

This scheme was operated in accordance with the operating criteria, although pumping rates on some of the wellpoints were slightly below design capacity. Modifications were made at Pump Sites 15 (installation of a chlorination system) and 16 (gas inducer pumping unit to improve pumping performance). However due to a recurring gas problem in the pumping line, remedial investigations are continuing.

Due to low flow conditions in the River Murray and the dry conditions experienced in the region during the year, no releases were made to the river from Lake Hawthorn. In addition, the dry condition experienced during the year and the impact of improved irrigation practice resulted in a reduction of irrigation drainage water requiring disposal. Hence pumping to the Wargan Basins during the year was minimal. This has resulted in maintenance of low storage volumes in these basins.

NEW SOUTH WALES

Mallee Cliffs Interception Scheme

The Mallee Cliffs Interception Scheme operated successfully during 2001/02. Good scheme performance during the year has ensured that the scheme continues to significantly reduce impacts of saline groundwater on downstream salinity.

Buronga Interception scheme

The Buronga Interception Scheme was originally built in 1979 with upgrade work carried out in 1988. It is now in need of a major upgrade. This scheme has been plagued with ongoing operational difficulties due to infrastructure breakdowns. The scheme infrastructure has continued to deteriorate during the year with numerous emergency temporary repairs to the asbestos rising main.

SOUTH AUSTRALIA

Woolpunda Salt Interception Scheme

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

A performance review of the Waikerie Salt Interception Scheme has indicated that in a number of locations the wellpoint pumps are achieving their design targets while there is indication that some of the extraction bores are overpumping and will require adjustment.

The construction of Waikerie Phase IIa was completed during the year extending the protection of the River Murray westward and addressing the required enhancements of the original works.

Rufus River Salt Interception Scheme

Rehabilitation of the interception scheme including the installation of iron bacteria control measures has been carried out over the past two years. Work has been completed on Wellpoint Lines 3 and 4. However due to a number of delays, this maintenance program has not yet been completed. It is now planned that installation of a chlorination system on Wellpoint Line 2 will be complete in 2002/03. Once complete it will then be appropriate to review and optimise the scheme performance.

KPA 3. Navigation services

Sub-output

Navigation services that are cost-effective.

Performance assessment

- *Quality of navigation services at weirs*
- *Cost-effectiveness of navigation services*

Performance report

Quality of service

There are 13 locks on the lower Murray from Blanchetown (Lock 1) to Torrumbarry (Lock 26). Locks 13 to 14 and 16 to 25 were never built, so navigation upstream of Mildura is only possible when river flows are high. There is also a lock at the Goolwa Barrage and a small hand-operated lock at Tauwitchere Barrage.

These locks are available for use by the public every day of the year except Christmas Day. The locks are used by a wide variety of vessels from large river boats with barges to canoes. Tourist houseboats are frequent users of the locks, as are tourist vessels, particularly at Mildura.

Only one unscheduled outage of a lock was recorded in 2001/02. At Lock 5, Paringa, an upstream gate required emergency repairs, necessitating closure of the lock for 2 days in March 2002.

Minor breakdown of hydraulic gate operating systems have also occasionally delayed lockages by up to two hours.

Planned outages of locks were undertaken for a number of purposes including:

- refurbishment of lock gates and valves; and
- removal of weir trestles and consequent lowering of weir pool at Mildura.

At Torrumbarry and Euston Weirs, use of the locks is dependent on high river flows to maintain satisfactory tailwater levels. Skippers of vessels wishing to use these locks are accustomed to maintaining close contact with lock staff to monitor likely river conditions.

In September 2001, lockmasters and their staff were pleased to assist the fleet of the 'source to sea', celebrating the Centenary of Federation, in its passage downstream from Mildura to Goolwa. The fleet included more than 100 vessels with the total crew numbering 400. SA Water also assisted the

larger vessels navigate a shallow reach downstream of Lock 7 by temporarily increasing release from Lake Victoria to raise water level and by guiding the fleet through this shallow reach.

Cost-effectiveness

In 2001/02 navigation services were provided at a cost of $1.348 million compared with budget for the year of $1.278 million.

3.5 River Murray Water: Triple Bottom Line (Sustainability) Report

Introduction

River Murray Water (RMW) 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 pricing review that proposed the introduction of an 'environmental dividend'.

As part of this emphasis, RMW 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, and be produced generally in accordance with an accepted standard—the Global Reporting Institute *Sustainability Reporting Guidelines* (draft 1 April 2002). This section is an abbreviated version of that report. Future reports will be progressively enhanced as experience is gained and detailed performance indicators are developed.

Sustainability strategy

The RMW strategy is founded on the *Vision for River Murray Water*, which has been formally endorsed by the Board and the 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 for 2002 to 2007*, which contains the following as one of its core values and principles.

> ***Environmental consciousness**. 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 for 2002 to 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 uses the services of:

- constructing authorities (State government organisations which carry out construction, operational management and maintenance activities);
- long-term contractors who undertake ongoing tasks that have been outsourced (e.g. stream gauging); and
- individual contractors, consultants and suppliers who are engaged as necessary for specific tasks.

Current staff numbers that are effectively dedicated to RMW activities are:

River Murray Water (4 management, 13 technical/professional, 4 administrative and support)	21
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 whom 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

RMW 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 public generally. 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 (e.g. the major refurbishment of structures, modifications to navigation passes, the extension of handrails, and the mandatory use of safety harnesses and buoyancy devices).

Community relations

RMW's customers are the States. It 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 by:

- active participation with community organisations in the development of relevant management plans (see below);
- publication of routine operational advice and other significant events (weekly report and flow/capacity data on website); and
- 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.

HUME–YARRAWONGA WATERWAY MANAGEMENT PLAN

The development of a plan for the management of this important section of the River Murray exemplifies the approaches now being used to involve local communities in issues of river management that affect them.

Between Lake Hume and Lake Mulwala, the River Murray meanders across a floodplain 3 to 5 km wide over a distance of 180 km. Regulation of flow by upper Murray storages and the Snowy Mountains Schemes has resulted in an increased volume of water and changed flow patterns, so that a greater proportion of the flow is directed through the river channel. As a result, the main channel has widened and deepened and the rate of anabranch development has increased. Also, the natural flow distribution has been reversed, so that high flows now occur in summer rather than winter. The consequences include bank erosion, loss of floodplain lands, and interference to access for local landowners.

An advisory committee has been formed with representatives from riparian landowners, local government, catchment bodies and State government land and water management agencies. The committee, chaired by RMW, has made good progress towards devising a sustainable system that realises an acceptable balance between environmental considerations, water conservation and supply, and economic development.

Measures being adopted include purchase of flood easements, and physical works to reduce erosion, control anabranch development and enhance vegetation. The implementation program is expected to continue over the next ten years and involves a significant investment in river management works.

As well as providing public information at its sites, RMW contributes to a range of public education activities including briefing overseas delegations and providing advice on aid programs. A substantial part of its effort is devoted to consultation and negotiation with a number of State government agencies.

Environmental bottom line

Managing river flows

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 the undesirable environmental impacts of the interventions that have taken place and obtain the maximum available benefits from activities. Some key actions undertaken include:

- reduction of unseasonal flooding in summer;
- control of water flows to conserve habitat for flora and fauna (see p. 49);
- control of levels in sensitive areas such as Lake Victoria and Menindee Lakes (see p. 49);
- minimising algal blooms;
- providing for variability of flow during long periods of discharge; and
- release of environmental flows when possible and appropriate.

Salinity mitigation

RMW operates seven jointly funded salinity mitigation schemes along the banks of the Murray River. 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.

MANAGEMENT OF LAKE VICTORIA

Lake Victoria is a naturally occurring lake whose behaviour has been changed in order to make it an effective storage in the River Murray system. Previous management arrangements maintained elevated water levels in Lake Victoria even when the need to do so to secure water supply was low.

These previous management arrangements caused Lake Victoria to be at full supply level in more than 50% of months over the long term. This hydrologic regime was unsuited to vegetation so that the lake shore became susceptible to erosion by wind and wave action when water levels were lower.

A serious consequence is potential damage to Indigenous burial grounds in the banks of the lake.

The *Lake Victoria Cultural Landscape Plan of Management* now has formal status and incorporates the agreed *Lake Victoria Operating Strategy*. Continuing vegetation and erosion surveys indicate that improvements have occurred since the introduction of altered management arrangements, and Aboriginal burial sites have received increased protection.

A current land acquisition program will result in a significant portion of the lake shore being managed to prevent stock impacts, with increased vegetation cover and hence reduced erosion the key benefits.

Lake Victoria shoreline before (left) and after (right) institution of the *Lake Victoria Cultural Landscape Plan of Management*.

The Commission is a major partner in funding the first in a series of workshops and meetings where Barkindji Aboriginal people met with landholders to discuss the ongoing management of the local area rangelands. The project is called the Lake Victoria Rangelands Management Action Planning and seeks to involve the Barkindji Community in property planning. The first workshop was facilitated by an Aboriginal Awareness Consultant and Property Planning Consultant. The workshop was held in Wentworth and at Moorna Station. Issues such as care for Indigenous burial sites, productivity, profitability, sustainability, salinisation, access and land degradation were discussed. The group discovered much in common and have agreed to work together towards shared aspirations in managing the heritage of the land and future property planning.

Electricity generation and consumption

Most activities of RMW are not energy-intensive, but the operation of salinity mitigation schemes requires pumping and is a significant energy user. A total of 7.6 GWh was used for this purpose during 2001/02. Electricity consumption is minimised by careful control and good maintenance.

This consumption is offset by the production of a total of 378 GWh of 'green' hydro-electric power from water stored in structures operated by RMW. Opportunities to increase generation capacity by installing mini-hydro plant at locks and weirs are being explored. A cautious approach is being adopted due to the need to conserve fish life in the river. Any hydro installations will need to be 'fish friendly'.

A program to establish fish passage from the Murray mouth to Hume Dam has begun and includes modifications to five barrages and 14 locks and weirs. In some cases, these will also involve changes to the navigable passes in these structures that are being undertaken as part of a program of occupational health and safety improvements.

Other measures being investigated to improve the habitat for native fish include changes to the outlets of Hume Dam to raise the water temperature downstream and protective devices at the water entry to hydro-electric stations to prevent fish entering the turbines.

At Yarrawonga Weir a 'trap and truck' operation is in place to safely move fish past the weir. Such an approach is required while modifications to the fish lift are designed and implemented.

Native fish and the River Murray

Native fish populations in the river (e.g. murray cod and golden perch) have decreased markedly since the introduction of the control structures operated by RMW. One of the reasons for this is that the fish like to travel long distances to breed and the structures impede their movement.

Economic bottom line

Commercial structure

RMW operates as a business unit of the MDBC. Its revenue is 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 2001/02 and the balance sheet at year end are given in Table 5. Table 6 shows the volumes of water delivered for the year.

Asset sustainability

It is anticipated that future income and expenditure statements will include an expense item 'renewals annuity'. The purpose of a renewals annuity 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 achieves reasonable stability in operating costs from year to year and is consistent with CoAG Water Reform Agenda 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 97% of RMW expenditure is in the States that are its customers. In 2001/02, a total of $39.6 m was expended by constructing authorities (State government agencies in the three States) in connection with RMW activities.

Table 5. Income and expenditure (2001/02).

	NSW $'000	VIC $'000	SA $'000	2002 TOTAL $'000	2001 TOTAL $'000
INCOME					
Water storage and supply-access	7 985	6 981	3 580	18 546	19 222
Water storage and supply-consumption	3 422	2 992	1 534	7 948	8 238
Salinity mitigation	2 179	2 179	2 179	6 537	5 028
Specific beneficiaries	765	765	1 317	2 847	2 265
Subtotal (income from primary customers)	**14 351**	**12 917**	**8 610**	**35 878**	**34 753**
Hydro-generation				674	713
Other operating income				367	649
Interest				1 048	1 151
				37 967	**37 266**
Add: 2000/01 carried forward				8 916	3 800
Less: 2001/02 carried over				-10 967	-8 916
Total income				**35 916**	**32 150**
RECURRENT EXPENDITURE					
Water storage and supply				15 072	12 765
Salinity mitigation				2 774	2 542
Navigation				1 348	1 047
Recreation and tourism				511	492
Other				106	100
Total recurrent expenditure				**19 811**	**16 946**
OPERATING SURPLUS (available for investigation & construction)				**16 105**	**15 204**
Commonwealth contribution				6 128	5 986
TOTAL AVAILABLE FOR INVESTIGATION & CONSTRUCTION				**22 233**	**21 190**
These funds were applied to investigation and construction expenditure of:				**21 951**	**18 924**

Table 6. State diversions from the River Murray and the Lower Darling River during 2001/02 (volumes of water delivered; GL).

	River Murray Water (GL)
New South Wales	2 200
Victoria	1 950
South Australia	600
TOTAL	**4 750**

4

NATURAL RESOURCE BUSINESS

Output

Policies, programs, systems and knowledge which contribute to achieving sustainable natural resources management and help to establish an appropriate balance between the resource needs of the environment and human needs.

4.1 Strategic directions

With the adoption of the *ICM Policy* there has been a generational change in organisation arrangements for the natural resource business of the MDBC. The *ICM Policy* now defines the strategic environment in place of the former *NRM Strategy*. Within the MDBC's responsibilities under the policy it has considered and assigned priorities to 12 investment objectives for natural resources. These investment objectives set the work program over the next three years, within a new program, subprogram and policy project structure of the Commission Office.

In 2001/02, the structural organisation of the natural resource business was significantly altered to three programs (ICM Business, Landscapes and Industries, and Rivers) under three directors. The programs are divided into eight subprograms, each with a manager. The major policy projects under governing boards involving commissioners and deputy commissioners, are each resourced and supported out of a specific subprogram and program. This is a fundamental change in the management structure where the three directors each have a portfolio responsibility rather than the former arrangement of a functional split between project management and service delivery.

Under this new program arrangement, a knowledge planning and investment process has been implemented with a program knowledge committee for each program, reporting to the ICM Policy Committee. These committees have delegated responsibilities for knowledge planning and they are expected to advise the ICM Policy Committee on strategic issues relating to policy and implementation. The functional differentiation of 'direction' and 'management' is now much clearer.

These changes were in response to a number of issues that arose within the 2001/02 year:

- no strategic planning for natural resources had taken place since December 1997;
- a major shift in the program workload had required a re-allocation across directors;
- with the appointment of the River Murray Environmental Manager and the adoption of the major River Murray Environmental Flows and Water Quality Objectives Project, there was the opportunity to provide director-level management to the rivers area;
- communication issues were arising between program management and the major policy projects answering directly to project boards; and
- the SI&E-funded knowledge program was suffering continued under-expenditure and the protracted project commissioning process needed to be addressed.

In June 2001, the MDBC President reviewed the issues around SI&E funding, project management and contracting, and his recommendations led to these organisational changes. At the same time, priority-based strategies were instituted, led by the ICM Policy Committee, and the recommended priorities agreed by the MDBC.

As at 30 June 2002, the MDBC had a draft natural resource strategic plan for 2002/03 – 2004/05 and an agreed statement on the roles and responsibility of the Ministerial Council and the MDBC to guide it into the new financial year.

4.2 Delivering the *Integrated Catchment Management Policy*

The *ICM Policy* was released jointly by the Ministerial Council and the CAC on 5 June 2001. It sets out a ten-year time frame for development of Basin strategies to meet catchment health targets. The intent of the policy is to limit the degradation of the Basin's natural resources and allow the Basin community to set those limits in full knowledge of the trade-offs that are being made.

The *Basin Salinity Management Strategy*—the first strategy developed under the *ICM Policy*, complements and strengthens the approach taken by the Commonwealth's *National Action Plan for Salinity and Water Quality* (NAP) in the Basin, as well as a number of other Commonwealth and State initiatives.

KEY ELEMENTS OF THE *ICM POLICY*

Goals, values and principles to guide community, industry and government partnerships

Balance between environmental health, social wellbeing and economic productivity

Targets for catchment health to limit the stresses that we place on the natural resources of the Basin

Knowledge generation and sharing to improve decision making by all partners

Capacity building for all partners to play their part

Catchment approaches to planning, implementing and evaluating actions to manage natural resources

Catchment planning linked with land use planning

Clear roles, responsibilities and accountabilities

4.3 Resourcing the *ICM Policy*

The *ICM Policy* is not supported by a specific funding program. Rather, the Commonwealth and States provide funding to implement the policy through their own programs.

During 2001/02, the Commonwealth provided its support through the Natural Heritage Trust (NHT), and has signed agreements with the States to initiate funding under the NAP. The NAP involves a joint Commonwealth and State government funding package of $1.4 billion for targeted action in regions that are highly affected by salinity and water quality problems over a period of seven years and will be relevant to the majority of catchments in the Basin. The NHT has been extended, 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 19 regions of the Basin. Revision of these plans has been undertaken during 2001/02 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, p. 61).

4.4 Performance reports

KPA 5. Integrated Catchment Management

Sub-output

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*

The extent to which the *ICM Policy* has been adopted and is being implemented in the catchment management regions of the Basin has yet to be determined, and will be the focus of a study initiated by the MDBC and due to commence in late 2002 (see KPA 8, p. 88).

The first targets under the *ICM Policy*—for in-stream salinity—have been agreed through the *Basin Salinity Management Strategy* which was released concurrently with the *ICM Policy* by Ministerial Council on 5 June 2001. These targets are now in place in catchment management plans across the Basin and will be adopted by the NAP. Activities under the Sustainable Rivers Audit (SRA) (see KPA 8) will inform the setting of targets for water sharing and riverine ecosystem health, and the approach will be incorporated into national frameworks for monitoring and evaluation. The MDBC is exploring methods for setting terrestrial biodiversity targets.

Effective communication in MDBC projects which reflects the Initiative Communication Strategy

In 2001/02 greater emphasis was placed on a more strategic approach to project communication. A wide range of funded MDBC projects used the agreed *Communication Style Guide* developed by the MDBC in 1999. This guide places greater emphasis on planning communication activities at the commencement of the project and reduces reliance on communication solely as a printing activity. The process has been used by all main program areas in the MDBC and six catchment boards/authorities in the Basin as a basis for strategic communication planning. The Irrigation Sub-Program completed a detailed *Communication Strategy* in June 2001.

Seven other major natural resources projects within the Basin have also used the MDBC *Communication Style Guide* to strategically plan their communication activities.

There has been a noticeable increase in the demand for web access to project information. All major MDBC strategy and project documents are now provided on the MDBC webpage. Similarly major on-line strategy documents are now supported by a compendium of supporting scientific reports.

Effective consideration of human dimension matters in MDBC projects

The social, cultural, institutional and economic aspects of natural resource management in the Basin are being addressed by the MDBC's *Human Dimension Strategy: People as an Integral Part of the Initiative*. A number of activities have been undertaken as part of the *Implementation Plan* agreed by the MDBC in 2000. The outcomes of these activities provide information, insights and opportunities for future MDBC work to meaningfully consider people and their relationship with the landscape in natural resources management. The MDBC has now established itself in the network of social and institutional research, discussion and activity that is currently taking place among research institutions, catchment management organisations and government agencies.

CASE STUDY

South Australian Watercare Program planning

The South Australian Watercare Program is an overarching program that is building on a successful campaign developed by a local catchment board. It required a framework for preparing a communication strategy for a major media campaign to assist in extending the local campaign into a State-wide program. The framework needed to ensure that all communication messages were coordinated and reflected the views of key stakeholders.

Using the communication planning framework developed by the MDBC and associated processes, the Steering and Management Committee could:

- clearly identify communication partners;
- define their relationship with these partners;
- clarify key communication messages about the program; and
- prioritise a range of possible communication strategies.

This information was developed into a detailed brief that went to tender for the media campaign. A clear message was provided to the advertising agency resulting in an enhanced and very successful advertising and promotional campaign. After use in the Watercare program the approach was again used by two catchment boards in Adelaide to assist with the strategic direction of communication activities.

The MDBC has invested in projects exploring community engagement, the drivers of agricultural policy, and the role of Indigenous engagement in catchment management. It has also established the Murray-Darling Basin Leadership Program, and has undertaken a key project to characterise ICM in the Basin and to learn from the experiences of Australian States implementing ICM.

Future work under the *Human Dimension Strategy* will incorporate studies on the institutional and governance arrangements that help or hinder the achievement of sustainable use of the Basin's natural resources, the economic and social impacts of implementing the *ICM Policy*, engagement and capacity-building principles for catchment management specifically including Indigenous Australians, and the decision-making environment for ICM.

KPA 6. Land and water management

Sub-output

Policies and programs for sustainable natural resources management, based on sound knowledge and information systems, that take account of relevant social, economic and environmental matters.

KPA 6 Land and water management—**knowledge**

Performance assessments and achievements

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

The total budget for the SI&E funding program for 2001/02 was $10.54 million. This comprised a $8.45 million annual contribution by contracting governments and $2.09 million carried over from 2000/01. The revised SI&E *Three Year Rolling Plan* was approved by the MDBC in July 2001. In 2001/02, projects to the value of $12.8 million were committed against the *Three Year Rolling Plan*. The breakdown of that commitment by program is given in Table 7.

Program coordinators continued to manage individual SI&E projects to ensure that contractual obligations during the year were being met.

In 2001/02, work commenced on implementing recommendations from the President of the MDBC's review of the program's management. This included changes to the definitions of programs (reflected in the headings in Table 7), limitations on the development and approval of SI&E investment beyond budget capacity, and a ceiling on the level of funds able to be carried over into the following year. The SI&E *Three Year Rolling Plan* will be replaced with an integrated knowledge plan commencing in

2002/03. The knowledge plan will, however, reflect the commitments made under the SI&E *Three Year Rolling Plan* for 2002/03 and, to a lesser extent, 2003/04 and 2004/05.

Table 7. Strategic Investigations and Education investment in 2001/02.

Program area	Ongoing projects		New projects		Total projects	
	(number)	($ million)	(number)	($ million)	(number)	($ million)
Rivers Program	15	1.6	29	1.8	44	3.4
Landscapes and Industries Program	29	2.7	49	5.7	78	8.3
ICM Business Program	11	0.6	6	0.4	17	1.0
Total	**55**	**4.9**	**84**	**7.9**	**139**	**12.8**

KPA 6 Land and water management—**water regulation and statutory assessment**

Performance assessments and achievements

Information systems support statutory functions and related decision making and meet best practice standards

Information systems are essential to help fulfil the water regulation and other statutory assessment requirements of the *Agreement*. These systems and their products need to be designed and implemented to support an integrated monitoring, evaluation and reporting framework that will in turn underpin evaluation of the *ICM policy* and strategies for the Basin. Information in these systems allows the Basin's natural resources and the activities that impact on them to be monitored, evaluated and reported in a reliable and consistent way over time.

Under the superseded Schedule C of the *Agreement*, formulating the *Salinity and Drainage Strategy*, partner governments are required to monitor and report on any accountable action undertaken after the baseline date of 1 January 1988. The MDBC is coordinating the development of the Basin Irrigation and Salinity Mapping Project, using a geographical information system (GIS) approach, to monitor, record and report significant changes to irrigation practice since the baseline date. These include changes to irrigated land use, drainage infrastructure, groundwater pumps and evaporation basins. The first atlas depicting this data was released in August 2001 and was circulated widely to MDBC working groups and other interested individuals in partner governments, seeking their feedback. A second edition of the atlas, taking account of the feedback, is planned for August 2002.

Clause 46 of the *Agreement* requires assessment of any proposal that may have a significant effect on River Murray flow, use, control or quality. River Murray Mapping provides detailed, accurate and reliable data and tools that assist in the assessment of impact of proposals on the River Murray floodplain. To keep information up-to-date, River Murray Mapping is repeated and updated every five years. The first and second editions were carried out in 1991 and 1996 respectively. A third edition was scheduled for 2001 but it was put on hold pending completion of a GIS review. The review's stakeholder consultation supported the need to repeat River Murray Mapping every five years. Funds for a third edition have been allocated for 2002/03.

The MDBC completed a review of its GIS in October 2001. The overall purpose of the review was to ensure a strategic approach to the development of the MDBC's GIS and information management. The review considered:

- the current use of, and demand for, existing MDBC GIS datasets;
- existing processes for dealing with MDBC GIS datasets and issues; and
- future needs and demands for Basin GIS datasets including input from partners and key stakeholders.

River Murray modelling

The MDBC's current models of the River Murray system operate on a monthly time step. This is too coarse to support activities such as those being proposed as part of the environmental flows project (see *Water Quality and Flow Management*, p. 68). These models also fail to capture the day-to-day changes that have proved to be very important in river operations (e.g. rates of rise and fall and the re-regulation of flows in weirs). Because of this, in July 2000 the MDBC decided to select and implement a daily model for the River Murray system. An international search for suitable models has been undertaken and in September 2001 the MDBC selected the IQQM (integrated quantity and quality model) package.

The MDBC is evaluating review recommendations and in some cases has begun implementation. The review recommendations were consistent with the MDBC:

- leading information system design and implementation to support an integrated monitoring, evaluation and reporting framework to underpin evaluation of the *ICM Policy* and strategies in the Basin;
- developing strategic partnerships and providing targeted information services that improve community access to natural resources data across the Basin; and
- delivering information products to targeted client/stakeholder groups.

KPA 6 *Land and Water Management Plan*—**water entitlement and efficiency of use**

Performance assessments and achievements

Maintenance of existing balance between environmental and consumptive uses of water

The MDBC has taken a range of measures, to maintain the existing balance between consumptive and environmental use of water resources in the Basin in order to promote the health of the river system and enhance the efficiency of water use. These measures include introduction of the Cap on Diversions (the Cap), the Sustainable Rivers Audit and permanent interstate water trading. In 1995 the Ministerial Council decided to cap diversions in the Basin (see p. 65). This decision, now called 'the Cap', was one of the most important initiatives ever undertaken by the Ministerial Council.

2000/01 Audit of the Cap

As directed by the Ministerial Council, the Independent Audit Group (IAG) conducted the annual review of Cap implementation in October 2001 and reported to the MDBC in December.

An independent auditor was appointed to conduct the technical audit of Cap models as a part of their accreditation by the MDBC. Four Cap models, two from Victoria and one each from New South Wales and South Australia were submitted for the audit. Upon completion of audit, these models are expected to be approved by the MDBC by December 2002. The remaining eighteen Cap models are expected to be audited and approved during 2002/03.

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; and
- 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) that existed in 1993/94, assuming similar climatic and hydrologic conditions to those experienced in the year in question (e.g. to establish the Cap target in the 2000/2001 water year, computer models were used to calculate the diversion that would have occurred under the climatic sequence experienced in 2000/2001, 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.

The key tasks in each State are:

- defining and monitoring all diversions;
- detailing the Cap development conditions in each river valley;
- developing and calibrating the computer models that 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; and
- adjusting water allocation rules to ensure that diversions stay within the Cap in all designated river valleys.

Key conclusions and recommendations of the IAG

South Australia

- Diversions were within the Cap.

Victoria

- Diversions were within acceptable bounds for Cap management.

New South Wales

- Diversions in the Namoi, Lachlan and Barwon/Darling/Lower Darling Cap valleys exceeded long-term Cap estimates.
- 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 November 2002, on the underlying reasons for excessive diversions on the Namoi, Lachlan and Barwon/Darling/Lower Darling Cap valleys including management actions proposed to bring diversions within Cap limits.

Queensland

- Growth in on-farm storages did occur, however the moratorium has slowed down the growth.
- Revised water resources plans (WRPs) for various river valleys under the Basin were expected to be released by December 2001 with a view to also finalising these plans and establishing Caps in these valleys by 30 June 2002. However, the draft WRPs were not released until July 2002. These WRPs would be audited by the IAG as and when they are released.
- Queensland Department of Natural Resources and Mines and the New South Wales Department of Land and Water Conservation should integrate their development of water resource plans for the Border Rivers to ensure environmental outcomes are identified and flow regimes and diversion targets are established to achieve these outcomes.

Australian Capital Territory

- Priority needs to be given by the Ministerial Council, to the resolution of the trading rules across the Basin.
- Once the trading rules are agreed for the Basin to the satisfaction of the Australian Capital Territory, consideration needs to be given to an average long-term Cap for the Australian Capital Territory of 38 GL/year and this should be fully transferable.

Progress towards a water use balance which better meets the environmental needs of rivers

The Sustainable Rivers Audit is an assessment and reporting process currently being developed by the MDBC and its partner governments to assess the health of the Basin rivers. The SRA aims to develop indicators and methods for river health assessment that are robust and consistent across catchments and over time.

A pilot SRA is currently being undertaken, with indicators and methods being trialled across four pilot valleys in the Basin—the Lachlan, Ovens, Condamine-Balonne and Lower Murray. The pilot phase will test the feasibility and cost of implementing proposed methods and indicators across the whole Basin for five main themes—macro-invertebrates, fish, water processes, physical habitat and hydrology.

A number of innovative indicators are being trialled in the pilot and these will be subject to review prior to recommendations by the Independent Sustainable Rivers Audit Group for a full audit across the Basin. Sampling in all pilot valleys will be completed around the end of the 2002 calendar year and results will be available by mid-2003, with recommendations for a full audit expected in late 2003.

Permanent interstate water trading achieved progressively across the Basin

The MDBC's Interstate Water Trading Pilot has continued to evolve throughout 2001/02.

Since inception in August 1998, the net volumes traded out of New South Wales and Victoria are 6102 ML and 8081 ML respectively, with an equivalent net volume of 14 183 ML traded into South Australia.

During the year, specific investigations were undertaken by the project to:

- identify current barriers to further expansion of the pilot project;
- develop a tool to assess the salinity impact of new irrigation development in the lower River Murray; and
- assess the riverine environmental impacts of water trade, specifically the variation in both the volume and timing of river flows.

Information management system in place that enables reporting on irrigation water use efficiency

Development of a framework for the Irrigation Management Information and Reporting System (IMIRS) commenced in April 2001. The system will facilitate access to the most recent and complete irrigation data available for the Basin. The IMIRS will build on current data collection networks and will provide a framework for stakeholders and data collectors so that consistent, repeatable and reliable irrigation data will be collected in the future.

Stage 1 (completed in March 2002)

Stage 1 of the project produced:

- an assessment of existing irrigation data, identifying accuracy, consistency, comparability, repeatability and the general capability to produce useful reports on the status of irrigation in the Basin;
- the first overview report on irrigation in the Basin, providing baseline data, analysis of data limitations and information gaps;
- a compilation of readily available data, that was then used to populate the irrigation theme of the National Land and Water Resources Audit website; and
- a recommended irrigation information and reporting framework to support the collection, reporting and storage of consistent, repeatable and comparable data across the Basin, and enable accessibility to all stakeholders.

Stage 2 (commenced in May 2002)

Stage 2 of IMIRS aims to:

- test and refine the framework proposed in Stage 1 by conducting case studies across a range of catchment organisations, State and water agency jurisdictions, industries and locations;
- assess the feasibility of implementing an IMIRS approach across the Basin;
- refine the system, and how it will be implemented and adopted; and
- establish procedures for ongoing collection, storage and reporting of irrigation data.

The project is due to be completed by late 2003.

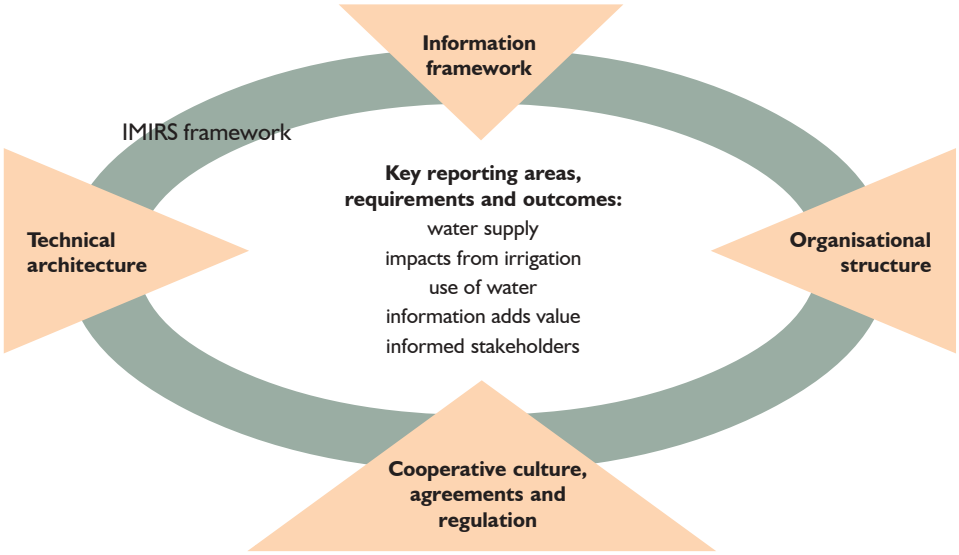
KPA 6 Land and water management—**water quality and flow management**

Performance assessments and achievements

Achievement of water quality outcomes of the Salinity and Drainage Strategy

With the release of the Basin *Salinity Management Strategy* during the year, 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. As a consequence, an expanded joint works investigation program was initiated. It is estimated that the schemes currently being investigated have the potential to deliver the 61 EC units over the next seven years as required under the Basin *Salinity Management Strategy*.

Figure 5. Draft IMIRS framework developed in Stage 1 and to be tested in the Stage 2 case studies.



Integration and optimisation of salt interception in the Sunraysia region

In 1999 RMW commissioned a study to assess the benefits of an integrated management approach to salt interception schemes within the Basin and to identify schemes which should be managed in this way. This study identified that, in the Sunraysia Region the potential gains by integrated management are considerable and that the realignment of operating responsibility for schemes in this region should be addressed as a priority.

As a consequence 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. This study should include investigation of possibilities for the redesign of the schemes based on currently available technology to improve interception capability.

It is expected that this study will be complete in 2002/03.

Pyramid Creek Salt Interception Scheme

In March 2001 the Victorian Government offered the Pyramid Creek Salt Interception Scheme as a 'joint' works as defined in Schedule C of the *Agreement*.

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 proposed 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 5.3 EC benefits to the River Murray at Morgan. In addition it is proposed that, to offset the operations and maintenance costs of this scheme, a financial arrangement be reached with a commercial salt harvester to harvest salts from this interception works. To this end, negotiations have commenced with a commercial salt harvester.

During 2001/02, scheme development and detail design was carried out by Goulburn-Murray Water in consultation with the commercial salt harvester. It is anticipated that work will commence on Stage 1 of this project during 2002/03.

Environmental entitlements managed to achieve maximum environmental benefit

Environmental flows

The second phase of the Environmental Flows Project focused on the development of an option paper detailing environmental flow scenarios for consideration by the Ministerial Council Meeting 31–12 April 2002.

At this meeting the Ministerial Council directed the MDBC:

- to use 350 GL, 750 GL and 1500 GL returned to the River Murray as three reference points for analysis and community engagement;
- to prepare a document to inform the first stage of the community engagement process with a view to having it available for public release in July 2002; and
- to bring recommendations, on the basis of community response, to the Ministerial Council for consideration at its meeting in October 2003;

A number of investigations were completed to assist the project. These investigations along with others commencing during 2001 and 2002, will assist in developing and understanding the three reference points that will be presented to Ministerial Council in October 2003. The completed investigations included:

- a structural and operational review of river infrastructure including major dams and the locks and weirs of the Murray system;
- study of the use of existing legislation to recover and protect environmental flows in the River Murray;
- examination of future impacts of climate variability, climate change and land use change on water resources in the Basin; and
- a stakeholder profiling study.

The Expert Reference Panel (ERP) provided a draft independent report on environmental flows and water quality requirements for the River Murray. The work of the ERP was provided to the Ministerial Council to inform its decision in April 2002 and progresses the earlier work undertaken by previous scientific panels. This work will be subject to international review.

An environmental manager was appointed during the year to manage environmental flows for the health of the River Murray.

On-ground work

During the reporting period the MDBC authorised RMW to change some operational procedures to achieve enhanced environmental benefits to specific localities along the River Murray system (see *Chapter 3*).

Strategies in place to protect future water quality in the Basin's rivers

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 resource 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, that 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.

Following approval by the MDBC and the Ministerial Council, the *Basin Salinity Management Strategy 2001–2015* (BSMS) was officially released by Minister Truss, Chairman of the Ministerial Council on 17 September 2001. The release of the BSMS followed an in-depth process of informed debate and consultation between the partner governments and Basin communities, based on the *Draft Basin Salinity Management Strategy* released in September 2000.

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

BSMS OBJECTIVES

- To maintain the water quality of the shared water resources of the Murray and Darling Rivers for all beneficial uses—river salinity at Morgan, SA, will be maintained at less than 800 EC for 95% of the time
- To control the rise in salt loads in all tributary rivers of the Basin, and through that control, protect their water resources and aquatic ecosystems at agreed levels—meeting the end-of-valley targets
- To control land degradation and protect important terrestrial ecosystems, productive farm land, cultural heritage and built infrastructure at agreed levels Basin-wide—expressed as within-valley targets
- To maximise net benefits from salinity control across the Basin

Under the BSMS, partner governments have committed to the following nine 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 reafforestation and vegetation management;
- constructing salt interception works; and
- ensuring Basin-wide accountability through, 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 and forestry systems;
- construct and operate salt interception schemes;
- further develop the vegetation bank concept; and
- establish Basin-wide monitoring, evaluation and reporting arrangements.

Implementing the *Basin Salinity Management Strategy*: key achievements 2001/02

The MDBC established the BSMS Implementation Working Group (BSMSIWG) to oversee the implementation of the BSMS in November 2001. The BSMSIWG comprises representatives of all partner governments and the CAC, with technical and administrative support provided by the Commission Office. The BSMSIWG met five times during 2001/02, initiating a range of activities to ensure effective implementation of the BSMS.

Finalising end-of-valley targets

New South Wales, South Australia and Victoria have provided interim end-of-valley targets for salinity and salt load, while Queensland has until 2004 to develop its end-of-valley targets. The jurisdictions are currently finalising these end-of-valley targets in consultation with catchment communities, as part of the development of ICM plans for each valley. The end-of-valley targets are expected to be finalised in September 2002, with Queensland end-of-valley targets to be finalised by March 2004.

Reviewing the end-of-valley monitoring framework

To assist in the complex process of ongoing assessment of progress towards end-of-valley targets, partner governments committed to establishing a monitoring network for collecting continuous flow and salinity data to agreed standards. Throughout the year State governments have ensured that continuous flow and salinity monitoring stations are installed at all end-of-valley target locations.

An end-of-valley hydrographic audit was undertaken to ensure that the flow and salinity monitoring network at the end-of-valley target sites is 'fit for purpose'. This is essential to ensure that the network will allow future assessment of progress towards, and accountability against, the end-of-valley salinity and salt load targets. The project, undertaken by consultants—Ecowise Environmental—and overseen by an inter-jurisdictional steering committee developed the necessary monitoring standards and data protocols to fulfil the minimum future needs of the BSMS. A draft report was submitted for consideration by the project steering committee in May 2002, with a final report expected in July 2002.

Revising Schedule C to the *Murray-Darling Basin Agreement*

Schedule C of the *Agreement* currently specifies the statutory requirements of the 1989 *Salinity and Drainage* (S&D) *Strategy*. It includes joint salt interception schemes, operation of a register of Morgan salinity credits and debits, and capacity for reporting and accountability.

As the BSMS replaces the *S&D Strategy*, Schedule C is currently being revised to give effect to its key elements, while still preserving the achievements of the *S&D Strategy*. The development of the new Schedule C will involve detailed consultation with partner governments and coordination with the BSMSIWG and the High Level Working Group on Salt Interception.

It is expected that the revised Schedule C to the *Agreement* will be presented to the MDBC for consideration in September 2002 and the Ministerial Council for approval in November 2002.

Salinity impacts of interstate water trade and new irrigation development

The first permanent interstate trade was completed in September 1998 and, from that time until November 2001, 89 trades have been recorded on the interstate trade register, representing a total transfer volume of 15 GL. The majority of trades to date have been into the South Australian regions of the Riverland (7 GL), the Angas Bremer (2.5 GL) and the Barossa Valley (0.5 GL). Schedule E of the *Agreement* provides for limitation and

suspension of the Interstate Water Trading Pilot if there is an increase in, or acceleration of, environmental degradation from the use or management of water diverted interstate.

Following a request from the Interstate Water Trading Pilot Board in February 2001 to develop a consistent approach to assess the salinity impacts from all forms of trade within the Basin, the BSMSIWG commissioned a study to develop a 'rapid assessment tool' to assess the salinity impacts of interstate trade.

The first stage of the Rapid Assessment Tool Project was undertaken by a team of consultants including URS Pty Ltd, Australian Water Environments and Sinclair Knight Merz. It included a December 2001 workshop of key stakeholders involved in water trade throughout the Basin that demonstrated broad stakeholder support for the approach to be adopted.

Following consideration of the Interim Rapid Assessment Tool (iRAT) for Assessing Salinity Impacts of Interstate Water Trade final report, the BSMSIWG agreed in June 2002 that the iRAT could be used as a safety net for assessing the salinity impacts of new irrigation development in the absence of any other agreed approach.

Developing salinity modelling and assessment frameworks

To support a rigorous and timely reporting process to the Ministerial Council, the States and the MDBC are developing hydrologic and salt mobilisation models to allow assessment of accountable actions against agreed baseline conditions.

Tributary models are being developed in New South Wales and Queensland using the IQQM (integrated quantity and quality model), while in Victoria the REALM (resource allocation model) is being used. For the Upper River Murray and the River Murray in South Australia the BIGMOD model has been developed as an interim measure prior to the implementation of IQQM. All models are being established according to agreed criteria including the Baseline Conditions at 1 January 2000, using the benchmark climate sequence from 1 May 1975 to 30 April 2000.

Salinity modelling workshop

The BSMSIWG hosted a salinity modelling workshop in May 2002, providing an opportunity for each jurisdiction to showcase their modelling techniques and to build professional networks between key modellers. The outcomes of the workshop included a better appreciation of modelling progress within each jurisdiction, sharing of methodologies and information, and a network for key salinity modelling practitioners within each jurisdiction. Workshop presentations are being compiled on CD for circulation to participants in September 2002.

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 Morgan salinity registers.

It was agreed at BSMSIWG Meeting 1 on 13 and 14 November 2001, that the reporting structure of the BSMS annual report be 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. It was also agreed at this meeting that the report should include the detailed accountability reporting using the end-of-valley report cards and the A & B registers.

The BSMSIWG will be preparing an annual report for 2001/02 that will be presented at the Ministerial Council's first meeting in 2003, after pre-consideration by the MDBC.

Transitional arrangements—completing the *S&D Strategy*

Since 1989, the *S&D Strategy* has provided a framework for joint action by the New South Wales, Victorian, South Australian and Commonwealth governments to effectively manage the problems of waterlogging and land salinisation in the irrigation districts of the Murray Valley in New South Wales and Victoria and river salinity in the lower Murray River. The strategy is based on a balance between engineering (interception schemes that divert saline groundwater that would otherwise flow into the river) and non-engineering (land and water management) solutions, that tackle both river salinity and land salinisation. Under the *S&D Strategy*, no State is to construct works or approve any proposal that will have an adverse impact on the salinity of the River Murray unless it has previously earned 'salinity credits' by contributing to salinity mitigation works.

The MDBC maintains a register to account for the salinity 'credits' and 'debits' resulting from projects that increase or decrease river salinity under the *S&D Strategy*. The 'credits' are associated with salt interception schemes (funded by South Australia, Victoria, New South Wales and the Commonwealth). '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 8.

South Australian accountability for irrigation developments 1988–2002

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 by December 2002.

South Australia tabled a draft report assessing the impacts of post-1988 actions including new irrigation development, improved irrigation practice and upgraded irrigation and drainage infrastructure to the MDBC meeting on 25 June 2002. The final report is expected to be tabled at the September 2002 MDBC meeting and the November 2002 Ministerial Council meeting. Following these meetings, it is anticipated that the MDBC A Register will be updated to reflect the net impact of South Australian actions post-1988 in accordance with the Council recommendations. In the meantime, it has been noted in the MDBC A Register that the salinity impact of post-1988 actions in South Australia are yet to be finalised.

Table 8. Summary of State salinity credits and debits in the Salinity and Drainage Register (equivalent EC, mS/cm).

Component	**New South Wales** (mS/cm)	**South Australia** (mS/cm)	**Victoria** (mS/cm)
Joint salt interception schemes	13.62	0	13.62
State salt interception schemes	0.16	0	4.77
Accountable actions	-8.65	TBA	-14.97
Current balance (available credits)	5.14	TBA	3.42

All figures shown are 'equivalent EC' at Morgan.

The Salinity and Drainage Register is to be incorporated in the BSMS A Register.

South Australia is currently undertaking studies to confirm its post-1988 accountability.

Figures current at January 2002.

Salinity and Drainage Strategy Register

Victorian entries revised on pro rata basis using July 2002 version of the register and allocations made by Victoria in 2000/01

Table 9. Draft register of salinity credits and debits at January 2001.

Scheme details

Number& title		Type	Date effective	Salinity effect (EC)	Salinity cost effect ($'000)
A Current schemes					
1	Woolpunda Interception Scheme	Joint	Jan 1991	-40.8	-3066
2	Improved Buronga and Mildura/Merbein Interception Scheme	Joint	Jan 1991	-3.0	-303
3	*Barr Creek Catchment Management Plan*	VIC	Mar 1991	-3.3	-323
4	*Tragowel Plains Salinity Management Plan*	VIC	Mar 1991	1.5	151
5	*Shepparton Salinity Management Plan#*	VIC	Mar 1991	4.9	411
6	New operating rules for Barr Ck pumps	Joint	Jul 1991	-6.0	-540
7	*Barwon Darling Licensing Policy*	NSW	Aug 1991	0.8	40
8	*Nangiloc-Coligan Salinity Management Plan*	VIC	Nov 1991	1.1	103
9	Boggabilla Weir	NSW	Dec 1991	0.2	12
10	Waikerie Interception Scheme	Joint	Dec 1992	-12.7	-1028
11	*Nyah to South Australian Border Salinity Management Plan#*	VIC	Aug 1993	4.8	454
12	*Kerang Lakes/Swan Hill Salinity Management Plan#*	VIC	Aug 1993	1.4	114
13	*Campaspe West Salinity Management Plan*	VIC	Aug 1993	0.5	43
14	Mallee Cliffs Salt Interception Scheme	Joint	Jul 1994	-12.9	-1288
15	Pindari Dam enlargement	NSW	Aug 1994	1.6	210
16	Increased riparian flow in the Lower Darling	Joint	Nov 1997	1.9	45
17	Changed internal operation of Menindee Lakes	Joint	Nov 1997	0.7	348
18	Psyche Bend	VIC	Feb 1996	-1.1	-120
19	Koondrook/Murrabit drains	VIC	Feb 1996	0.1	11
20	NSW land and water management plans	NSW	Feb 1996	5.0	438
21	*Boort West of Loddon Salinity Management Plan*	VIC	Feb 1996	0.1	11
22	Irrigation development due to trade	SA	Sep 2000	TBA	TBA

* microseimens per centimetre

\# provision entry – assessed on a pro rata basis

Salinity credits ($'000)			Salinity credits (Equivalent EC*)			Comments
New South Wales	Victoria	South Australia	New South Wales	Victoria	South Australia	
575	575	–	7.2	7.2	–	–
57	57	–	0.7	0.7	–	–
0	323	–	0.0	4.0	–	SDAWG meeting 15
0	-151	–	0.0	-1.9	–	Victorian Government commitment
0	-411	–	0.0	-5.1	–	Needs to be reviewed urgently within next 12 months
101	101	–	1.3	1.3	–	MDBC meeting 54
-40	0	–	-0.5	0.0	–	Original assessment factored down to 16 000 ha
0	-103	–	0.0	-1.3	–	Expected eight-year work program
-6	0	–	-0.1	0.0	–	NSW debited for half other half to Qld's impact
193	193	–	2.4	2.4	–	Stage 1 only
0	-454	–	0.0	-5.7	–	Includes sale of Dartmouth entitlement
0	-114	–	0.0	-1.4	–	Surface drainage 0.45 EC and Lake Charm flushing 0.4
0	-43	–	0.0	-0.5	–	Current Government approval
242	242	–	3.0	3.0	–	Assessment to be reviewed
-210	0	–	-2.6	0.0	–	–
-8	-8	–	-0.1	-0.1	–	MDBC meeting 45
-65	-65	–	-0.8	-0.8	–	MDBC meeting 45
0	60	–	0.0	0.7	–	SDAWG meeting 15
0	-11	–	0.0	-0.1	–	SDAWG meeting 15
-438	0	–	-5.5	0.0	–	NSW allocations (SDAWG meeting no. 15)
0	-11	–	0.0	-0.1	–	–
–	–	TBA	–	–	TBA	The salinity impact of new irrigation development due to trade has been assessed as 30 EC increase in average salinity at Morgan. The salinity impact from conditions placed on development and from other works, is under assessment with a preliminary estimate of 20–25 EC improvement at Morgan. Other actions have also been taken which have not been assessed. SA has committed to finalise these evaluations and bring its accountability into balance within two years

Table 9. Draft register of salinity credits and debits at January 2001 (continued).

Scheme details

Number& title	Type	Date effective	Salinity effect (EC)	Salinity cost effect ($'000)
A Current schemes				
24 Permanent interstate water trade	NSW	Nov 2000	-0.2	-13
25 Sunrise 21#	VIC	Aug 2002	0.6	47
B Temporary schemes				
Net			**-54.8**	**-4242**
Sum of initial joint works			**-72.7**	**-5832**
Balance in equivalent salinity units (EC)*				
C Schemes assessed but currently found to be insignificant				
Goulburn Dryland Salinity Management Plan	VIC	Mar 1991		
Wakool Licencing Policy	NSW	Mar 1991		
Permanent interstate trade in water	VIC	Nov 2000		

Salinity effect – increase in average salinity at Morgan in EC.

Salinity cost effect – increase in average salinity costs in $'000 (March 1988 values).

Salinity credits – unit of account of *S&D Strategy* (= negative of salinity cost effect).

Current schemes includes schemes where a commitment has been given to provide a salinity credit (e.g. salinity management plans).

* microseimens per centimetre

\# provision entry – assessed on a pro rata basis

Salinity credits ($'000)			Salinity credits (Equivalent EC*)			Comments
New South Wales	Victoria	South Australia	New South Wales	Victoria	South Australia	
13	0	–	0.2	0.0	–	
-47	0	–	-0.6	0.0	–	

Summary	NSW	Victoria	South Australia
Credits from joint schemes	14.5	14.5	0
Debits from joint schemes	-0.9	-0.9	0
State salt interception schemes	0.2	4.8	0
Total drainage impact	-8.6	-16.2	TBA
Current balance	**5.1**	**2.2**	**TBA**

1093	**1093**	**–**	**13.6**	**13.6**	**0.0**	
			4.6	**2.2**	**TBA**	**unassigned impacts** **0.0**

West Hume drainage	NSW Oct 1992
Wagga Wagga Council trial	NSW July 1997
Discharge of effluent by Norse Scog paper mills Albury	NSW Oct 2000

KPA 6 Land and water management—**land and floodplain management**

Performance assessments and achievements

Floodplain management

Following extensive consultation with partner governments, the *Floodplain Management Strategy* was submitted to Ministerial Council for approval in March 2002.

The strategy defines principles for floodplain management that have application across the Basin. Further, the strategy recognises that while the physical relationship between a river system and its floodplain is unique, better understanding of interdependence are required to improve the management of flood events for environmental, economic and social outcomes.

Throughout the year, the MDBC has provided support to:

- develop a management plan for the Yarrawonga to Echuca reach of the River Murray, drawing on initiatives from the New South Wales and Victorian governments;
- lead a consortium of government and private sector organisations to develop a comprehensive elevation data set for 1.7 million hectares in the mid-Murray region. This data is being used to support the development of a flood management strategy for the Goulburn River and other regional planning decisions; and
- finalise the *Swan Hill Regional Flood Strategy* with strong input from regional communities and coordination from the Murray Darling Association

KPA 6 Land and water management—**biodiversity/nature conservation**

Performance assessments and achievements

Release of the draft Native Fish Strategy *(NFS)*

It is estimated that native fish populations are now at 10% of pre-European levels and likely to decline to 5% 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 could be an icon in the overall program to achieving a sustainable level of river ecosystem health.

The draft NFS for the Basin has been developed over two years. Its aim is to restore native fish communities in the Basin to 60% 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 in the Basin. The NFS will feed into broader initiatives such as the *ICM Policy* and the SRA.

At its meeting on 12 April 2002 the Ministerial Council:

- endorsed the release of the NFS;
- agreed to release the NFS for public comment over a period of six months;
- noted the implementation plan that engages jurisdictions and catchment management bodies; and
- noted that the NFS is an important and complementary component of the River Murray environmental flows and water quality initiative.

Driving actions of the NFS

- Rehabilitating fish habitat
- Protecting fish habitat
- Managing riverine structures
- Controlling alien fish species
- Protecting threatened native fish species
- Managing fish translocation and stocking

Significant progress by the Fish Passage Reference Group

The MDBC has allocated $17 million over the next five years to build fish ladders on all MDBC locks and weirs on the Murray River. Along with improvements at existing structures such as at Yarrawonga and Torrumbarry, the building program will result in effective fish passage from Lake Hume to the sea. Concurrently, a Basin-wide program for fish passage is being progressed under the umbrella of the NFS and 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 coordinate and oversee this work. Fishways at Locks 7 and 8 will be constructed in the 2002/03 year, and design of Locks 9 and 10 has already commenced.

The MDBC has also produced a database to provide critical location and other technical details for the approximately 4000 dams, weirs, culverts and other structures that impede the migration of native fish within the Basin.

Nature conservation management is integrated within agricultural land use systems in dryland and irrigation regions

During 2001/02 the MDBC has undertaken a number of actions to continue to develop a better understanding of methods to integrate biodiversity into an agricultural landscape. They include:

- support for a CAC–MDBC World Wide Fund for Nature (WWF) workshop on biodiversity values, with input from a wide range of stakeholders;
- partnerships in the Joint Venture Agroforestry Program with Rural Industries Research and Development Corporation (RIRDC);
- partnership in the Native Vegetation Research and Development Program with Land and Water Australia;
- establishment of a project with the Rice Growers Association of Australia to further develop understanding and techniques to improve biodiversity within a rice production system, at both a farm and catchment scale; and
- appointment of a manager for a priority project to develop vegetation management targets within the construct of the MDBC's *ICM Policy*.

KPA 6 Land and water management—**cultural heritage**

Performance assessments and achievements

Cultural heritage places on land managed for the MDBC protected as agreed

The MDBC is managing Lake Victoria to protect natural and cultural heritage values while continuing to operate the lake as water storage.

In May 2002 the New South Wales Minister for the Environment allowed the MDBC's appeal against a number of provisions in the 1998 Section 90 Consent, originally issued by the Director-General of New South Wales National Parks and Wildlife Service. Subsequently the Director-General revised the Section 90 Consent and approved the *Lake Victoria Cultural Landscape Plan of Management* incorporating the agreed *Lake Victoria Operating Strategy*. The plan of management now provides the basis for future management of Lake Victoria.

Continued vegetation and erosion surveys carried out under the plan of management have indicated a positive response to the lake operations since 1998. Significant improvements in vegetation cover and resulting protection of Indigenous burial sites have occurred in the Frenchmans Islands stock exclusion zone.

Monitoring of existing burial protection works continued under the direction of the Lake Victoria Cultural Heritage Manager. A maintenance program for existing and newly discovered sites is being implemented. The local Barkindji Aboriginal Community has been involved in management decisions throughout the year by their continued activity in the Lake Victoria Advisory Committee, the Barkindji Elders Committee and regular inspections of the lake and environs.

The MDBC, as part of a long range salinity management strategy has purchased one property and is negotiating for a second property adjacent to Lake Victoria. This will result in management without stock impacts of a significant length of the total lake shore. It is expected that adjacent erosion and sediment run-off will then begin to reduce through improvements to the environment.

The MDBC is a major partner in funding local area rangelands management action planning. This planning will assist nearby landholders to manage for salinisation impacts the lake may have on the rangelands. It is also concerned with agricultural land use effects on the lake and protection of Indigenous and non-Indigenous cultural heritage on properties. The first major initiative is being undertaken by the owner of Moorna Station involving a comprehensive approach together with Indigenous elders. They are working together to pre-plan for a whole-of-community, multi-agency cooperative approach to property planning.

Improved consideration of cultural heritage in relevant MDBC projects

During the year the MDBC commenced the Indigenous Scoping Study aimed at identifying key cultural heritage and natural resource management issues of Basin Indigenous communities relevant to the MDBC's work. The study also considers current impediments to Indigenous communities being involved in the *Initiative* and mechanisms to help address these impediments. Community and government consultations were undertaken as part of this study and the final report and recommendations will be available in 2002/03. The study was overseen by a Department of Land and Water Conservation Aboriginal Natural Resource Officer seconded to the MDBC for 12 months and an Indigenous support group comprised of Indigenous people with relevant skills and knowledge from throughout the Basin.

The MDBC and its partner governments participated in regular meetings with the Murray and Lower Darling Indigenous nations, providing presentations and updates on a range of activities relevant to Indigenous communities. Discussions to develop a memorandum of understanding between the MDBC and Murray and Lower Darling Indigenous nations were undertaken with a view to providing guidelines for consultation with the nations about land and water management issues of common interest. These discussions are continuing.

KPA 7. Supporting on-ground implementation

Sub-output

Investment programs for, and frameworks for directing, on-ground works and measures.

Performance assessments and achievements

Projects funded under the 85% threshold component of Murray-Darling 2001 Program (MD2001) meet MD2001 objectives and are consistent with Basin Salinity Program objectives

MD2001 is a multi-partner program to improve the health of the Basin's river systems through ICM of its land and water resources. It is delivered through the NHT. The Commonwealth contributes 50% of funding and this is matched by State governments. Financial year 2001/02 is the final year of this program. The investment shares between the States and between the components of the program partly reflect final year needs for individual projects as well as investment priorities.

MD2001 aims to:

- improve water quality;
- restore riparian land systems, wetlands and floodplains;
- improve the health of key river systems; and
- encourage ecologically and economically sustainable land use.

During 2001/02, in accordance with previous practice, 85% of these funds (the threshold component) were allocated to States (Table 10).

Table 10. Allocation of State share of MD2001 funds (%).

New South Wales	50.9
Victoria	37.3
South Australia	6.1
Queensland	5.5
Australian Capital Territory	0.3

Targeted and irrigation water use efficiency components of MD2001 address agreed priorities and outcomes

In 2001/02, $0.6 million was allocated to projects for irrigation water use efficiency and in 2001/02, $6.0 million was allocated for use of targeted priorities to deliver Basin outcomes in salinity and algal management. Targeted component funds were directed to key catchments on the basis of the Basin Salinity Audit and the *Algal Management Strategy*. Projects included:

- large-scale landscape change through revegetation and changes to farming practices in the New South Wales and Victorian catchments that are major contributors to salt and nutrient loads;
- improved groundwater monitoring that will ultimately assist in the setting of salinity targets in Queensland;
- preliminary design of a groundwater control scheme to redress degradation due to saline groundwater of the Chowilla floodplain, a Ramsar-listed wetlands.

Decision-support tools in place to help direct MDBC and other investments

A number of tools to support investment decisions are being developed in Basin jurisdictions. The MDBC has yet to determine how it can add value to this work and how best to inform decisions on the balance of effort across the Basin.

MDBC on-ground investment from 2001/02 directed to achieving targets under new ICM policy.

As 2001/02 is the final year of funding for MD2001, future Commonwealth funding will be delivered through the NAP and the NHT Extension. Management of programs will be set out under bilateral partnership agreements between the Commonwealth and individual States. The MDBC will play no role in their delivery, as there will be no specific funding program for achieving Basin outcomes. However, catchment plans in the Basin seeking funding under the NAP are required to be consistent with MDBC policies and strategies.

KPA 8. 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

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 resource management investment needs*

Over the next decade, *ICM Policy* will provide a robust system for tracking the health of the Basin's catchments and the Basin itself. During 2002/03, work will continue on developing a framework to bring together reporting to MDBC and the Ministerial Council on a range of issues for the Basin, including reporting associated with the BSMS, the Cap, the SRA, and the River Murray Environmental Flows and Water Quality Objectives Project. The development of a fully integrated monitoring and reporting framework will take the best part of a decade, with the *ICM Policy* indicating that by 2008 the Ministerial Council will have a system for reporting core signals of catchment health for each of the major catchments of the Basin.

Under the *ICM Policy*, the MDBC will coordinate monitoring, evaluation and reporting on catchment health targets, economic and social impacts of actions to achieve targets, the ICM approach, and Basin investment.

MDBC policies and priorities for on-ground action take account of reports on Basin health, investment outcomes and future investment needs

Catchment health

Catchment health includes water quality (in-stream salinity, nutrients/other aspects affecting algal blooms), water sharing of both surface water and groundwater, riverine ecosystem health and terrestrial biodiversity.

Interim in-stream salinity targets have been set for Morgan on the Lower Murray River 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 salinity levels at Morgan for 2015 at their current levels or lower.

Work is progressing under the SRA to inform the development of water sharing and riverine ecosystem targets, and a project carried out in conjunction with CSIRO Sustainable Ecosystems is exploring methods for setting targets for terrestrial biodiversity. Some questions have arisen on the feasibility of meeting the timetable for setting water quality targets in the Basin by 2003, and further work is being undertaken.

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

Economic and social impacts

At this stage, no progress has been made in developing a monitoring, evaluation and reporting system for economic and social impacts of actions.

The ICM approach

The MDBC is developing a baseline study on regional implementation of the ICM approach. This study will provide an initial view of how different catchment management organisations of the Basin are:

- operating within the institutional systems in place for natural resources management;
- applying their knowledge of the biophysical, social and economic aspects of their regions;
- planning for sustainable management of the natural resource base;
- engaging their stakeholders; and
- implementing their catchment plans.

The study is intended to form the basis for ongoing reporting of progress in implementing ICM and its effectiveness, and acknowledging the differing needs and circumstances of each of the Basin's catchments. From the study, catchment groups and governments can compare various approaches and learn from the experiences of others.

Basin investment

Reporting on Basin investments will supplement the ICM approach study. Annual reporting of investment in catchment strategies has not occurred consistently across the Basin in 2001/02, due to the pressures associated with introducing the NAP. It is expected that this reporting will be reactivated alongside reporting under the ICM approach study.

5

PARTNER RELATIONS

Output

Effective inter-governmental and government–community partnerships which lead to strong commitment to the *Initiative* and well-informed Ministerial Council decisions.

5.1 Program support and administrative structures

Overview

During 2001/02 the MDBC was advised by a number of policy committees, technical working groups, representatives from the CAC, the Community Reference Panel and project boards.

These advisory groups include commissioners, deputy commissioners, executive and staff from the MDBC, CAC members, and representatives from the Basin community with specific technical expertise. Membership of all advisory groups are shown in *Appendices A–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 four governments that have an active interest in the management of the River Murray system. The board has an independent business expert and is chaired by the MDBC's President.

During 2001/02 the advisory board approved a new *Strategic Plan for River Murray Water* and continued to provide strategic direction on water allocation, improvement to structures along the River Murray and operational protocols.

Natural Resource Business

Financial year 2001/02 was a period of transition and change in relation to program support and administrative systems.

The ICM Policy Committee that was established in 2001 oversaw the development of an investment plan for knowledge generation in the Basin. This three-year plan ensures that the investment made by the MDBC will support development and implementation of the *ICM Policy*. The policy provides an agreed framework for catchment management across the Basin for at least the next ten years.

Review of current investment in SI&E resulted in MDBC agreement to a restructure—the former Dryland, Riverine and Irrigation working groups were replaced with Rivers, Landscapes and Industries, and Human Dimension knowledge committees.

These committees are chaired by a commissioner or deputy commissioner and are structured to enhance links from the creation of knowledge to policy creation and implementation. The knowledge committees will commence operation on 1 July 2002.

A number of specific natural resource issues were addressed by specific projects that are coordinated by a project board reporting directly to the MDBC. This ensures a focus on a current and specific natural resource issue within a prescribed time frame and allocation of resources. The combination of project boards (dealing with specific, high priority, Basin-wide issues) and knowledge committees (long-term knowledge generation investment) is ensuring that the MDBC is able to be proactive in managing current issues while concurrently investing in long-term strategic knowledge generation.

Business administration

All areas of investment made by the MDBC are vetted by the Finance Committee. During 2001/02, this committee continued to provide advice on budgetary and other financial issues, corporate planning and corporate governance.

Emphasis was placed on streamlining administrative processes within the MDBC in 2001/02 resulting in a substantial improvement in expenditure, particularly in the area of SI&E funding.

During 2001/02 substantial planning was undertaken on the improvement of information technology services within the Commission Office entailing an upgrade of operating systems and hardware to be implemented in July 2002. Concurrent work was also commenced on a revised document control and financial management system.

5.2 Performance reports

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 during the 2001/02 year with one of these a joint meeting with the MDBC. The CAC Chairman attended all Ministerial Council and MDBC meetings during the year, and CAC members participated in many of the meetings and workshops associated with MDBC activities enabling community participation and provision of a grounded community perspective in the development of programs and projects. The CAC considers these arrangements an outstanding example of true commitment to inclusive community–government partnerships.

During the year, members of the CAC participated on:

- the Water Policy Committee, the Finance Committee and the Integrated Catchment Management Policy Committee;
- seven working groups—Basin Sustainability Plan, Dryland Issues, Irrigation Issues, Riverine Issues, Human Dimension Group, River Murray Environmental Flows and Water Quality Objectives Project; and Communication and Human Dimension Issues;
- the Integrated Catchment Management and Basin Salinity Management Task Forces; and
- project boards for River Murray Environmental Flows and Water Quality Objectives Project and Interstate Water Trade.

CAC members are also the community representatives on a number of steering committees and reference panels for specific SI&E projects.

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

The main mechanism for effective participation by partner governments is through their representation on various committees and other groups advising the MDBC. Each partner government is represented on almost every committee, working group and taskforce. Project boards are usually made up of three members who are commissioners or deputy commissioners selected by the MDBC to fill the board roles of 'executive', 'user' and 'supplier'. Most committees and boards meet at least three to four times each year and often more frequently.

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

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

CAC involvement is a key mechanism for community input to MDBC activities. However, additional opportunities are provided for other stakeholders to be involved in key MDBC projects. During 2001/02 special processes continued or were put in place to allow wider stakeholder participation in key projects and activities carried out as part of the MDBC's Water Business and Natural Resource Business.

Many investigation projects carried out under the MDBC's SI&E funding program involve extensive consultation with key stakeholders.

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 Commission 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 paperwork associated with obtaining out-of-session decisions. The Ministerial Council meets at least once each year. When a decision is required outside of the meeting time frames, an out-of-session protocol is used.

In 2001/02 five out-of-session decisions were taken by the Council and two meetings were held. The Commission Office continued to provide an effective secretarial role to the Ministerial Council. Of particular interest to the provision of services to the Ministerial Council, however, is the timeliness of the distribution of agenda papers as Ministerial involvement requires more effort and resources. In addition, the Commission Office is aware of the CoAG requirements that Ministerial Council agenda papers must be generally circulated at least three weeks prior to a meeting, In some cases, due to the relationship between an MDBC meeting and the subsequent Ministerial Council meeting, this requirement has been difficult to achieve.

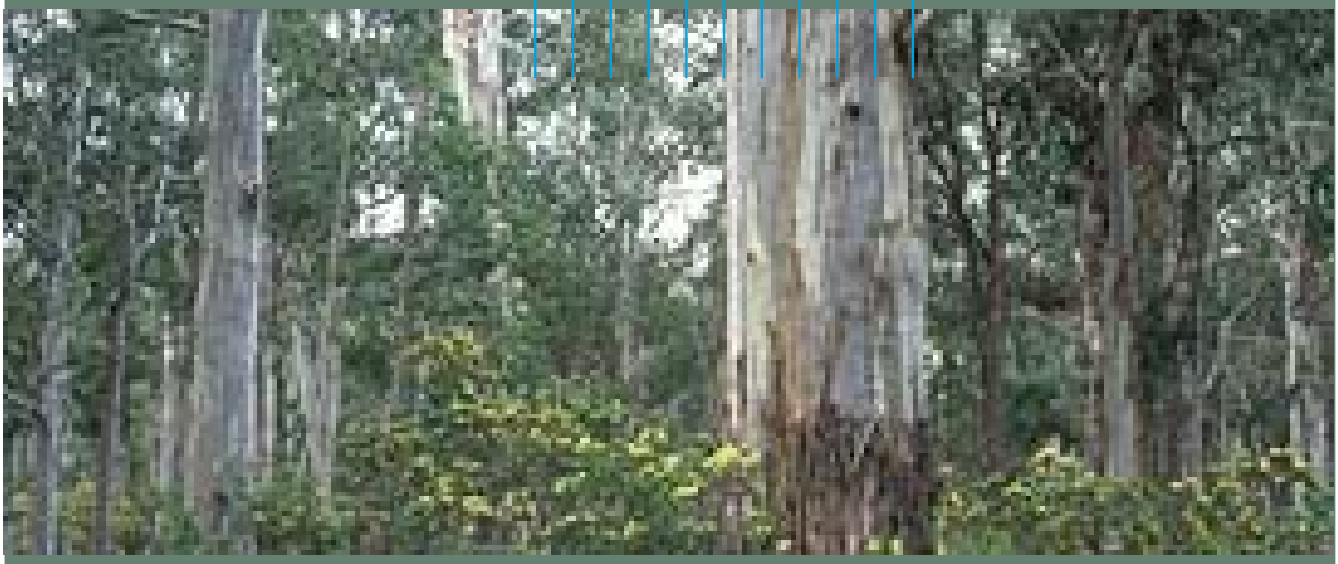
President

Considerable improvement has occurred in the preparation for and conduct of MDBC meetings, with resulting satisfaction in the outcomes. This improvement has also been reflected in Ministerial Council meetings in which decisions of critical importance to the future wellbeing of the River Murray and its communities have been reached in a constructive and cooperative manner.

The Commission Office continued to provide support to the President of the MDBC, Dr Roy Green. Interviews with Dr Green indicated that during the 2001/02 period considerable improvement was made in the efficiency and effectiveness of programs and performance to budget. Rationalisation of structures has reduced the number and length of meetings. The restructure of the Natural Resources Program instigated and overseen by the President, and the review of investment priorities by the MDBC resulted in a realignment of strategic intent to project management and knowledge generation and a tighter focus on value-added business within the MDBC.

6

BUSINESS ADMINISTRATION



Output

An MDBC office where staff are valued and motivated through job satisfaction and sharing the ideals of the MDBC, with the best practice administrative and knowledge management systems which provide transparency and accountability and support staff in their work.

6.1 2001/02 Budget

The Ministerial Council approved a budget of $68.1 million for 2001/02 (see Table 11).

Table 11. Composition of 2001/02 Budget approved by Ministerial Council.

	$ million
River Murray Water	43.6
Natural Resource Business	19.4
Partner Relations	0.6
Business Administration	4.5
Total	**68.1**

Table 12. Contributions of contracting governments and other funding sources.

Source	**$ million**
Commonwealth	11.4
New South Wales	19.2
Victoria	17.7
South Australia	13.4
Queensland	0.6
Australian Capital Territory	0.3
Total contracting governments	62.6
Other income (other services)	5.5
Total MDBC funding	**68.1**

6.2 Financial statements

The Australian National Audit Office 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 105–130.

6.3 2002–2003 Budget

In April 2002, the Ministerial Council approved a budget of $79.9 million for 2002/03 (see Table 13).

Table 13. Composition of 2002/03 Budget approved by Ministerial Council.

	$ million
River Murray Water	47.4
Natural Resource Business	26.3
Partner Relations	0.6
Business Administration	5.6
Total	**79.9**

6.4 Staff

The Commission Office is staffed with highly professional and competent people, who provide policy advice, investigation services and program coordination.

Employment conditions are covered by the *Commission Certified Agreement* with staff engaged in continuing, fixed-term, secondment, part-time and casual categories. Secondments are mainly from partner agencies.

With the increasing number of projects in the Basin, additional staff have been employed taking the total to 84 as at 3 June 2002.

Table 14. Staff structure.

	Male	Female	Total
Senior Executive	6	1	7
All other classifications	35	42	77
Total	**41**	**43**	**84**

The skills base of the Commission Office (Table 15) reflects the strategic role of the MDBC in the formulation, coordination and implementation of policies and in the application of sound management and business procedures.

Table 15. Academic qualifications.

Summary qualifications	Total	Science	Engineering	Business/Arts/ Commerce
Doctorate	3	2	1	–
Masters	9	4	4	1
Bachelor	54	27	11	16
Other tertiary	18	–	–	18
Total	**84**	**33**	**16**	**35**

6.5 Performance reports

KPA 11. People management

Sub-output

Human resource management policies and procedures that are consistent with agreed values and behaviours.

Performance assessments and achievements

Workplace agreement

A new workplace agreement was certified on May 4 2001 and remains in effects until September 2003. Employee development and performance management are features of this agreement.

Under the Chief Executive's direction, a competency profile was established for the senior managers and a training and development plan developed.

Performance management and development system in place and linked with training team

The Performance Management and Development System was introduced during 2000/01. Additional measures have been implemented to ensure it meets its objectives.

The first group, comprising 14 staff, were selected from program managers and project leaders and commenced an in-house series of workshops and assessments.

A pilot program was also trialled for a professional development series. This series will provide development opportunities for all staff. A self-paced skills analysis and career planning guide has also been released.

A review of the work value assessment system commenced and was nearing completion at year end.

Best practice standards are also being introduced to the recruitment process. This includes selection testing for various positions.

The human resources manual was reviewed to update all entitlement values and to make the manual more user-friendly.

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 safeguard the interests of the MDBC and provide accurate, relevant and timely information to support decision making

Following completion of reviews of the records management system during 2000/01, work commenced on an upgrade of the MDBC's records management system. A statement of requirements for an improved record keeping system was developed. It was based on information gathered from a number of sources including:

- internal consultation with stakeholders;
- recommendations from the reviews of the current records management systems;
- the Australian Standard on Records Management;
- *Designing and Implementing Record Keeping Systems (DIRKS) – A Strategic Approach to Managing Business Information* published by the National Archives of Australia as part of its e-Permanence program; and
- *Model Requirements for the Management of Electronic Records* prepared for the Interchange of Data between Administrations (IDA) Programme of the European Commission (March 2001).

A request for tender was issued in late 2001 and following extensive analysis, consultation and evaluation of responses a contract to replace the current records management software was entered into in June 2002. It is expected that the new system will provide a robust environment for the management of electronic and paper documents and records within the MDBC. Work previously undertaken in preparation for the improved records management system will facilitate the implementation of the new system. This work will form the foundation of a knowledge sharing and collaborative environment within the MDBC. The new records management system will contribute to improving the efficiency and effectiveness of MDBC staff in responding to internal and external requests for information.

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

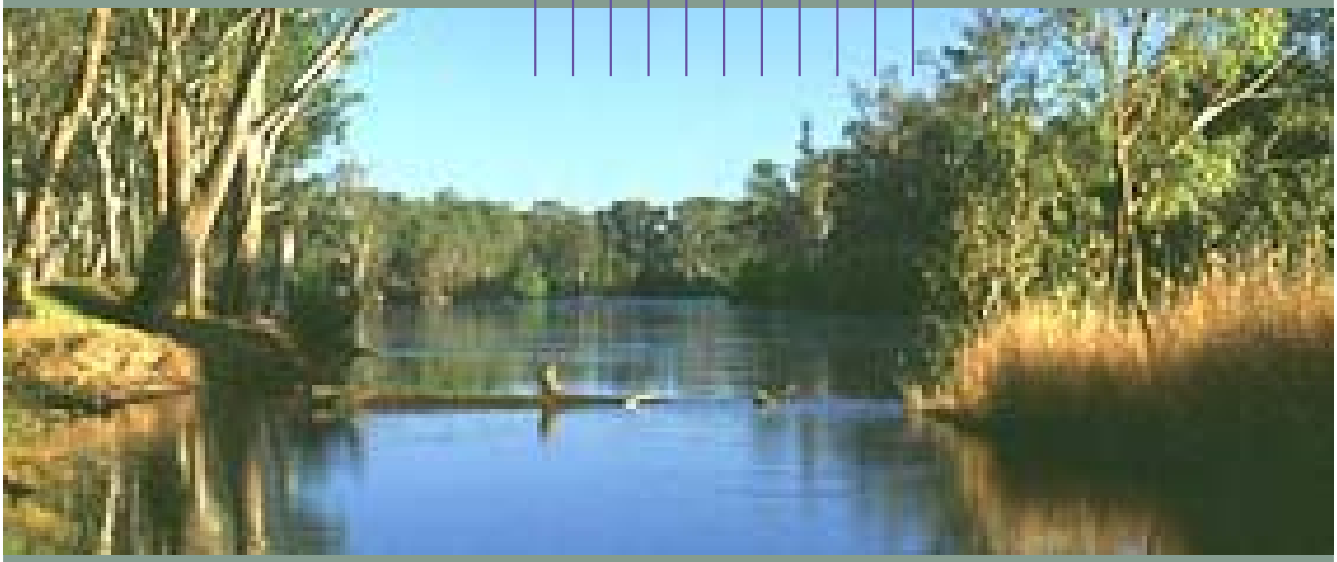
The key milestone is to establish IT infrastructure to support knowledge management initiatives by December 2002.

Upgrades to financial management and information systems and document management systems, together with research into other systems capable of enhancing knowledge management have resulted in the Infrastructure Migration Project. The aim of the project is to put in place an infrastructure architecture which can support existing systems but at the same time open access to other systems that support knowledge sharing and collaboration.

The Infrastructure Migration Project will result in the establishment of new servers based on Windows 2000 and Exchange 2000 and a standard desktop environment based upon Windows XP and Office XP.

Once this project is complete, a review of the knowledge required to meet organisation needs will be carried out, and an assessment made of knowledge sharing and collaboration products capable of supporting these needs.

FINANCIAL STATEMENTS



Australian National
Audit Office

INDEPENDENT AUDIT REPORT

To the President of the Murray-Darling Basin Ministerial Council

Scope

I have audited the financial statements of the Murray-Darling Basin Commission for the year ended 30 June 2002. The financial statements comprise:

- Statement by the President and the Chief Executive Officer 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.

The President and the Chief Executive Officer of the Commission are responsible for the preparation and presentation of the financial statements and the information they contain. I have conducted an independent audit of the financial statements in order to express an opinion on them to you.

The audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statements are free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Accounting Standards and other mandatory professional reporting requirements in Australia and statutory requirements so as to present a view which is consistent with my understanding of the Commission's financial position, its financial performance and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

GPO Box 707 CANBERRA ACT 2601
Centenary House 19 National Circuit
BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

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 2002, and its financial performance and cash flows for the year then ended.

Australian National Audit Office

Mashelle Parrett

Mashelle Parrett
Executive Director

Delegate of the Auditor-General

Canberra
9 December 2002

Statement on Behalf of the Commission

In our opinion, the attached financial statements give a true and fair view of the financial position and transactions of the Murray-Darling Basin Commission for the year ended 30 June 2002

R M Green AO
President

D J Blackmore
Chief Executive

STATEMENT OF FINANCIAL PERFORMANCE

as at 30 June 2002

	Note	**2002 $'000**	2001 $'000
Revenue			
Revenue from governments	2A	**63 061**	60 048
Sale of goods and services	2B	**1 062**	1 372
Interest	2C	**1 864**	1 932
Revenue on recognition of infrastructure assets	1.6, 2D	**1 582 012**	–
Net gain from sale of assets	3E	**–**	3
Total revenue		**1 647 999**	63 355
Expenses			
Employees	3A	**5 755**	4 948
Suppliers	3B	**63 021**	51 733
Depreciation and amortisation	3C	**7 809**	322
Interest on finance lease	3D	**31**	36
Net loss from sale of assets	3E	**12**	–
Total expenses		**76 628**	57 039
Net surplus (deficit)		**1 571 371**	6 316

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

STATEMENT OF FINANCIAL POSITION

as at 30 June 2002

	Note	2002 $'000	2001 $'000
ASSETS			
Financial assets			
Cash	4A	**7 093**	19 643
Receivables	4B	**2 792**	2 511
Investments	4C	**32 000**	15 000
Other	4D	**888**	888
Total financial assets		**42 773**	38 042
Non-financial assets			
Infrastructure Assets	1.6, 5A	**1 574 509**	–
Property, plant and equipment	5A	**860**	653
Inventories	5B	**1**	6
Fitout	5C	**283**	343
Other	5D	**1 161**	152
Total non-financial assets		**1 576 814**	1 154
Total assets		**1 619 587**	39 196
LIABILITIES			
Interest bearing liabilities			
Leases	6A	**328**	383
Total interest bearing liabilities		**328**	383
Provisions and payables			
Employees	7A	**1 240**	1 042
Suppliers	7B	**19 603**	10 320
Total provisions and payables		**20 843**	11 362
Revenue in advance	7C	**14 617**	15 583
Total revenue in advance		**14 617**	15 583
Total liabilities		**35 788**	27 328
Net Assets		**1 583 799**	11 868
EQUITY			
Accumulated surplus	8	**1 581 768**	10 397
Contributions by Contracting Governments for purchase of assets	8	**2 031**	1 471
Total equity		**1 583 799**	11 868
Current liabilities		**34 931**	26 475
Non-current liabilities		**857**	853
Current assets		**43 935**	38 200
Non-current assets		**1 575 652**	996

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

STATEMENT OF CASH FLOWS

for the year ended 30 June 2002

	Note	2002 $'000	2001 $'000
OPERATING ACTIVITIES			
Cash received			
Contributions by Governments		**62 151**	61 077
Sale of goods and services		**1 601**	521
Interest		**1 815**	1 908
GST recovered from ATO		**4 687**	3 543
Total cash received		**70 254**	67 049
Cash used			
Employees		**(5 556)**	(4 960)
Suppliers		**(60 257)**	(54 758)
Interest on finance lease		**(31)**	(36)
Total cash used		**(65 844)**	(59 754)
Net cash from operating activities	19	**4 410**	7 295
INVESTING ACTIVITIES			
Cash received			
Proceeds from sale of property, plant and equipment		**95**	82
Contributions by Contracting Governments for purchase of assets		**560**	377
Investments		**–**	1 000
Total cash received		**655**	1 459
Cash used			
Purchase of property, plant and equipment		**(560)**	(378)
Investments		**(17 000)**	–
Total cash used		**(17 560)**	(378)
Net cash from/(used by) investing activities		**(16 905)**	1 081
FINANCING ACTIVITIES			
Cash used			
Repayments of lease debt		**(55)**	(50)
Total cash used		**(55)**	(50)
Net cash from/(used by) financing activities		**(55)**	(50)
Net increase/(decrease) in cash held		**(12 550)**	8 326
Cash at beginning of reporting period		**19 643**	11 317
Cash at end of reporting period		**7 093**	19 643

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

SCHEDULE OF COMMITMENTS

as at 30 June 2002

	Note	2002 $'000	2001 $'000
BY TYPE			
CAPITAL COMMITMENTS			
Total capital commitments		–	–
OTHER COMMITMENTS			
Operating leases		**2 748**	2 985
Other Commitments		**19 595**	–
Total commitments payable		**22 343**	2 985
BY MATURITY			
All net commitments			
One year or less		**10 503**	499
From one to five years		**11 840**	2 105
Over five years		**–**	381
Net commitments		**22 343**	2 985
Operating lease commitments			
One year or less		**591**	499
From one to five years		**2 157**	2 105
Over five years		**–**	381
Total operating lease commitments		**2 748**	2 985

Commitments are GST inclusive where relevant.

The Commission has entered into an agreement to lease office accommodation at 15 Moore Street, Canberra City, that expires on 28 February 2007. At balance date operating leases existed for photocopier and plotter equipment.

As at 30 June 2002, other commitments comprise amounts payable under contracts in respect of which the recipient is yet to provide the Services required to meet the contractual conditions.

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

SCHEDULE OF CONTINGENCIES

as at 30 June 2002

	Note	**2002 $'000**	2001 $'000
CONTINGENT LOSSES		**353**	–
CONTINGENT GAINS		**–**	–
Net contingencies		**353**	–

A major contractor has withdrawn from a salinity mitigation project. Claims for expenses in the order of $353 000 have been served on the Commission. The Commission has legal advice asserting there is no contractural or other basis to support the claim.

SCHEDULE OF UNQUANTIFIABLE CONTINGENCIES

As at 30 June 2002, 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.

In October 2002, a landowner commenced proceedings against the Commission and former Commissioners in the Supreme Court of New South Wales in relation to a release of water from Hume Dam in 1996. At the time of preparation of these statements the claim has not been quantified. The Commission is defending the action.

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

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

1 Summary of significant accounting policies

1.1 Basis of accounting

The financial statements are a general purpose financial report on the financial position and transactions of the Commission. As indicated in Note 1.6, these statements incorporate infrastructure assets considered to be held in trust by State Constructing Authorities on behalf of the Commission.

The financial statements have been prepared in accordance with

- Australian Accounting Standards and Accounting Guidance Releases issued by the Australian Accounting Research Foundation,
- Consensus Views of the Urgent Issues Group and having regard to Statements of Accounting Concepts.

The financial statements have been prepared on an accrual basis in accordance with historical cost conventions, except for infrastructure assets, which as noted, are at valuation. No allowance is made for the effect of changing prices on the results or financial position.

1.2 Changes in accounting policy

The accounting policies used in the preparation of these financial statements are consistent with those used in 2000/2001.

1.3 Taxation

Throughout the year under review, the Commission was exempt from all forms of taxation except fringe benefits tax and goods and services tax. Where applicable, appropriate provisions for goods and services tax have been included.

1.4 Inventories held for sale

Inventories comprise publications and videos held for sale or free distribution as part of the Commission's communications program. Inventories are stated at the lower of cost and net realisable value.

1.5 Property plant and equipment held by the Commission

All property plant and equipment with a cost equal to or in excess of $600 is capitalised in the year of acquisition and is reported at cost value. All depreciable non-current assets are written off to their estimated realisable value over their estimated useful lives using the straight line method of depreciation. Approximately 70% of the value of these items (excluding

infrastructure assets) is in computer equipment and motor vehicles which are generally disposed of within three years.

The following useful lives and depreciation rates have been assumed for each category of asset.

	2002		2001	
Motor Vehicles	**6.67 years**	**(15% p.a.)**	6.67 years	(15% p.a.)
Computers and IT equipment	**3.00 years**	**(33.3% p.a.)**	3.00 years	(33.3% p.a.)
Office Equipment	**5.88 years**	**(17% p.a.)**	5.88 years	(17% p.a.)
Furniture, Fixtures and Fittings	**7.69 years**	**(13% p.a.)**	7.69 years	(13% p.a.)
Infrastructure assets	**Various – based on assessment of future economic life.**		–	

Leasehold improvements are amortised over the estimated life of the improvements or the unexpired portion of the lease whichever is the lesser.

Under the provisions of the Murray-Darling Basin Agreement, Contracting Governments are required to contribute to the operating and capital expenditure of the Commission on an annual basis.

Contributions by Contracting Governments for the purchase of assets are treated as a contribution of equity.

Recoverable amount test

The carrying amount of each item of property plant and equipment has been reviewed to determine whether it is in excess of the asset's recoverable amount. No write down to recoverable amounts has been made in 2001–2002.

1.6 Assets held by Constructing Authorities but 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.

Revenue from ordinary activities for 2002 included an amount of $1.582 billion for the recognition of Infrastructure Assets. The revenue amount represents the inclusion of the carrying value of infrastructure assets for the first time.

Infrastructure Assets have been recognised following a decision of the Murray-Darling Basin Commission on 12 March 2002. The Commission determined that requirements for control as specified in the Accounting Standards had been met and that it was now appropriate to recognise these assets.

The financial effect of this treatment is to include revenue of $1.582 billion with a corresponding increase in Infrastructure Assets in the Statement of Financial Position.

In addition, depreciation of $7.503 million has been recognised for the period from 12 March to 30 June 2002

The above amount was derived from a 'directors valuation' of these assets completed in 2000 by officers of the Commission with the assistance of external consultants qualified to undertake assignments of this nature.

The Murray-Darling Basin Agreement requires each Contracting Government 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 (see Note 1.5) and each of the State Constructing Authorities is required by the Commission to prepare an asset register which is to be made available to the Commission on request. The Commission has developed registers of all assets acquired with funds provided by the Commission.

1.7 Employee Entitlements

All vesting employee entitlements (including salaries, employer superannuation contributions, recreation leave, and long service leave) are recognised as liabilities. Liabilities for recreation leave, employer superannuation contributions, and salaries are measured at current remuneration rates at 30 June 2002 (nominal value). The provision for long service leave at 30 June 2002 is measured at the present value of estimated cash outflows attaching to the nominal value at 30 June 2002.

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 recreation and long service leave liabilities into current and non-current is based on the past history of payments. No provision has been made for sick or personal circumstances and support leave as all such leave is non-vesting and the average leave taken by employees for these purposes is less than the annual entitlement for these forms of leave.

1.8 Leases

A distinction is made between finance leases which effectively transfer from the lessor to the lessee substantially all the risks and benefits incidental to the ownership of leased assets and operating leases under which the lessor effectively retains all such risks and benefits. Operating lease payments are expended on a basis which is representative of the pattern of benefits derived from the leased assets.

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 inception of the lease and a liability recognised for the same amount. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

1.9 Lease Incentives

Lease incentives are recognised as liabilities on receipt of the incentive. The amount of liability is reduced by allocating lease payments between rental expense and reduction of liability.

The lease incentive is based on the first 3 months of occupying the premises being free.

1.10 Revenue received in advance

In accordance with accrual accounting principles expenditures during the year are matched with revenues provided by governments and others to fund them. 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 clause 75 of the Murray-Darling Basin Agreement are treated as revenue received in advance.

1.11 Cash

For the purpose of the statement of cash flows, cash includes cash on hand and on call at the bank.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

1.12 Rounding

Amounts, including totals and sub-totals are rounded to the nearest $1,000 except in relation to:

- remuneration of officers
- remuneration of commissioners
- remuneration of auditors

Rounding may give rise to apparent minor discrepancies in additions.

1.13 Resources received free of charge

The Commission receives no resources free of charge.

1.14 Comparative Figures

Comparative figures have been adjusted to conform to changes in presentation in these financial statements where required.

	2002 $'000	2001 $'000
2 Revenue		
2A Revenue from governments		
Contributions by contracting governments:		
Commonwealth	**11 395**	11 027
New South Wales	**19 176**	18 800
Victoria	**17 741**	17 409
South Australia	**13 436**	13 239
Queensland	**682**	732
Australian Capital Territory	**281**	246
Add revenue in advance in 2000–2001	**14 668**	13 782
Add Contributions paid in 2000–2001	**142**	–
Less contributions paid for 2002–2003 in advance	**(250)**	(142)
Less revenue carried forward to 2002–2003	**(13 650)**	(14 668)
Less equity contribution for purchase of assets	**(560)**	(377)
	63 061	60 048
2B Sale of goods and services		
Hydro generation and land and cottage rents	**1 041**	1 359
Sale of publications and videos	**12**	1
Other	**9**	12
	1 062	1 372

	2002 $'000	2001 $'000
2C Interest		
Interest from bank and investments	**1 864**	1 932
	1 864	1 932
2D Revenue on recognition of infrastructure assets		
Recognition of infrastructure assets at 30 June 2002	**1 582 012**	–
	1 582 012	–

3 Expenses

3A Employee expenses		
Remuneration	**5 737**	4 876
Separation and redundancy	**18**	72
	5 755	4 948
3B Supplier expenses		
Expenditure by State Constructing Authorities	**42 090**	34 531
Project expenditure	**18 542**	15 136
Supply of goods and services	**1 821**	1 547
Operating lease rentals	**568**	519
	63 021	51 733
3C Depreciation		
Depreciation of motor vehicles	**21**	26
Depreciation of office equipment	**65**	63
Depreciation of computers	**148**	157
Depreciation of furniture, fixtures and fittings	**12**	15
Depreciation of infrastructure assets	**7 503**	–
Amortisation of fitout costs	**60**	61
	7 809	322
3D Interest		
Interest on finance lease	**31**	36
	31	36
3E Proceeds from disposal of assets		
Revenue (Proceeds) from sale	**95**	82
Expenses from sale	**(107)**	(79)
	(12)	3

	2002 $'000	2001 $'000
4 Financial assets		
4A Cash		
Cash on call at bank	**7 088**	19 640
Cash on hand	**5**	3
	7 093	19 643
4B Receivables		
Interest	**208**	159
Other debtors	**399**	937
GST receivable	**2 185**	1 415
	2 792	2 511
4C Investments		
Term deposits	**32 000**	15 000
	32 000	15 000
4D Other financial assets		
Advances to Constructing Authorities	**888**	888
	888	888

5 Non-financial assets ($'000)

	Balance 01/07/01	Retirements	Acquisitions	Recognised Assets	Balance 30/06/02	Balance 30/06/01
5A Property plant and equipment						
Motor vehicles (cost)	165	**120**	**197**		**242**	165
Accumulated depreciation	(30)				**(32)**	(30)
	135				**210**	135
Office equipment (cost)	450	**13**	**94**		**531**	450
Accumulated depreciation	(231)				**(290)**	(231)
	219				**241**	219
Furniture, fixtures and fittings (cost)	169		**5**		**174**	169
Accumulated depreciation	(127)				**(138)**	(127)
	42				**36**	42
Computers and IT equipment (cost)	1 028		**264**		**1 292**	1 028
Accumulated depreciation	(771)				**(919)**	(771)
	257				**373**	257
Infrastructure	–			**1 582 012**	**1 582 012**	–
Accumulated depreciation	–			**(7 503)**	**(7 503)**	–
	–			**1 574 509**	**1 574 509**	–
Net property plant and equipment	653			**1 575 369**	653	
Total retirements / acquisitions		**133**	**560**	**1 574 509**		

	2002 $'000	2001 $'000
5B Inventories		
Inventory of publications & videos held for sale and distribution	**1**	6
	1	6
5C Fitout cost		
Fitout	**439**	439
Accumulated amortisation	**(156)**	(96)
	283	343
5D Other		
Prepaid contracts	**1 161**	152
	1 161	152

6 Interest bearing liabilities

6A Leases		
Finance Lease Commitments		
Payable		
Within one year	**86**	86
In one to five years	**315**	344
In more than five years	**–**	57
Minimum lease payments	**401**	487
Deduct – future finance charges	**73**	104
Lease liability	**328**	383
Lease liability is represented by:		
Current	**60**	55
Non-current	**268**	328
	328	383

Finance lease comprises fitout of offices at 15 Moore Street.

	2002 $'000	2001 $'000

7 Provisions and payables

7A Employee provisions		
Salaries and wages	**140**	145
Annual leave	**511**	372
Long service leave	**589**	525
	1 240	1 042
Current	**651**	517
Non-current	**589**	525
	1 240	1 042

7B Suppliers		
Project expenditure payable	**4 856**	1 594
Constructing Authority claims payable	**14 287**	8 396
Other creditors	**460**	330
	19 603	10 320

7C Revenue received in advance		
Queensland 2002–2003 contributions received in advance	**250**	142
Carry-over of 2001–2002 contributions to 2002–2003	**13 650**	14 668
Unamortised balance of lease incentive	**66**	80
Externally funded projects	**651**	693
	14 617	15 583

8 Equity

Item	Accumulated Results		Contribution to Assets		Recognition of I/S Assets		TOTAL EQUITY	
	2002 $'000	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000
Balance 1 July 2001	**10 397**	4 081	**1 471**	1 094	**–**	–	**11 868**	5 175
Operating Results	**(3 138)**	6 316	**–**	–	**1 574 509**	–	**1 571 371**	6 316
Equity Contributions	**–**	–	**560**	377	**–**	–	**560**	377
Balance 30 June 2002	**7 259**	10 397	**2 031**	1 471	**1 574 509**	**1 583 799**	11 868	

9 Unrecognised Liabilities

The Commission is not aware of any significant unrecognised liabilities at 30 June 2002 other than those recorded in the schedule of commitments.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

10 Liabilities assumed by governments

Except as indicated by these statements no liabilities have been assumed by governments.

	2002	2001
	$'000	$'000

11 Remuneration of Officers

Income received or due and receivable by Officers	**940 593**	834 765

The number of officers included in these figures are shown below in the relevant income bands

	Number	Number
$100,000 – $109,999	**–**	1
$110,000 – $119,999	**–**	1
$120,000 – $129,999	**1**	1
$130,000 – $139,999	**2**	–
$140,000 – $149,999	**–**	2
$160,000 – $169,999	**1**	–
$170,000 – $179,999	**1**	–
$190,000 – $199,999	**–**	1
$200,000 – $209,999	**1**	–

'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 2001–2002 for officers concerned with the management of the Office of the Commission where the total paid in respect of an individual exceeded $100,000.

12 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.

	2002	2001
	$	$

13 Auditors' Remuneration

Remuneration to be paid to Australian National Audit Office for auditing financial statements for the reporting period.

No other services were provided by the ANAO.	**24 930**	24 930
Remuneration paid for internal auditing services during the reporting period.	**5 600**	13 250

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

14 Related Party Disclosures

Members of the Commission

Members of the Commission during 2001–2002 were:

Dr. R.M. Green AO	(President)
Dr. M. Cooper	(From 28 September 2001)
Ms. O. Crimp	(From 19 July 2001 to 19 December 2001)
Mr. D. Flett	
Ms. E. Fowler	(Acting to 27 September 2001)
Dr. G. Gentle	(From 19 July 2001)
Mr. J. Hallion	(From 20 June 2002)
Mr. A. Holmes	(From 20 June 2002)
Mr. S. Hunter	
Dr. I. McPhail	(From 20 December 2001)
Ms. C. Munro	
Mr. D. Mutton	(To 31 December 2001)
Dr. K. Sheridan AO	
Dr. R. Smith	
Mr. S. Spencer	(To 19 July 2001)
Mr. R. Thomas	(To 12 March 2002)
Mr. B. Wonder	

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.

15 Economic Dependency

The Commission is dependent on contributions by Contracting Governments to carry out its normal activities.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

16 Location of Business

With the exception of assistance provided to the Mekong River Commission under AusAID funding the Commission operates solely in Australia.

17 Subsequent Events

The Commission is aware of no events subsequent to 30 June 2002 that may affect these financial statements.

18 Grants

The Commission is responsible for administering a number of grant programs on behalf of Commonwealth and state governments. Funding for these programs and responsibility for the programs rests with the various individual government bodies, consequently no disclosures have been made in relation to grant programs.

Grants received during the year were for the Mekong Delta, Fish Rehabilitation and LIDAR (mapping the southern area of the Murray-Darling Basin) projects. Details of revenue and expenditure in relation to grant programs are as follows:

	2002 $'000	2001 $'000
Grants Program		
Cash available, 1 July 2001	**693**	199
Contributions by Government agencies	**611**	866
Total receipts	**1 304**	1 065
Payments	**653**	372
Cash available, 30 June 2002	**651**	693

19 Cash Flow Reconciliation

Reconciliation of Operating Surplus to Net Cash from Operating Activities		
Operating surplus / (deficit)	**1 571 371**	6 316
Depreciation and amortisation	**7 809**	322
(Profit) / Loss on sale of assets	**12**	(3)
Assets recognised for the first time	**(1 582 012)**	–
Changes in assets and liabilities		
(Increase)/decrease in receivables	**(281)**	(2 292)
(Increase)/decrease in other assets	**(1 009)**	(53)
(Increase)/decrease in inventories	**5**	(1)
Increase/(decrease) in revenue in advance	**(966)**	1 707
Increase/(decrease) in liability to suppliers	**9 283**	1 311
Increase/(decrease) in employee provisions	**198**	(12)
Net Cash from Operating Activities	**4 410**	7 295

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

20 Financial Instruments

a) 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	4A	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.
Receivables for goods & services	4B	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.	Credit terms are net 30 days (2001: 30 days)
Investments	4C	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	4D	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	6A	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.
Suppliers	7B	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 services have been received (and irrespective of having been invoiced).	Settlement is usually made net 30 days.

b) 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:

Financial Instrument	Note	Floating Interest Rate		Fixed Interest Rate 1 year or less		Fixed Interest Rate 2 to 5 years		Fixed Interest Rate > 5 years		Non-Interest Bearing		Total		Weighted Average Effective Interest Rate	
		2002 $'000	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000	**2002 $'000**	2001 $'000	**2002 %**	2001 %
Financial Assets															
Cash at bank	4A	**7 088**	19 640	**–**	–	**–**	–	**–**	–	**–**	–	**7 088**	19 640	**4.26**	4.77
Cash on hand	4A	**–**	–	**–**	–	**–**	–	**–**	–	**5**	3	**5**	3	**n/a**	n/a
Receivables	4B	**–**	–	**–**	–	**–**	–	**–**	–	**2 792**	2 511	**2 792**	2 511	**n/a**	n/a
Investments	4C	**–**	–	**32 000**	15 000	**–**	–	**–**	–	**–**	–	**32 000**	15 000	**4.41**	5.93
Advance to Constructing Authorities	4D	**–**	–	**–**	–	**–**	–	**–**	–	**888**	888	**888**	888	**n/a**	n/a
TOTAL		**7 088**	19 640	**32 000**	15 000	**–**	–	**–**	–	**3 685**	3 402	**42 773**	38 042		
Total Assets												**1 619 587**	39 196		
Financial Liabilities															
Finance lease	6A	**–**	–	**60**	55	**268**	273	**–**	55	**–**	–	**328**	383	**8.75**	8.75
Accounts payable	7B	**–**	–	**–**	–	**–**	–	**–**	–	**19 603**	10 320	**19 603**	10 320	**n/a**	n/a
TOTAL		**–**	–	**60**	55	**268**	273	**–**	55	**19 603**	10 320	**19 931**	10 703		
Total Liabilities												**35 788**	27 328		

c) 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 theCommission 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.

d) Net Fair Values of Financial 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 financial 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 and in the notes to and forming part of the financial statements.

	Note	**2002 $'000**		2001 $'000	
		Total carrying amount	**Average net fair value**	Total carrying amount	Average net fair value
Financial assets					
Cash at bank	4A	**7 088**	**7 088**	19 640	19 640
Cash on hand	4A	**5**	**5**	3	3
Receivables for goods and services	4B	**2 792**	**2 792**	2 511	2 511
Investments	4C	**32 000**	**32 000**	15 000	15 000
Advances to Constructing Authorities	4D	**888**	**888**	888	888
Total financial assets		**42 773**	**42 773**	38 042	38 042
Financial liabilities					
Finance lease	6A	**328**	**328**	383	383
Accounts payable	7B	**19 603**	**19 603**	10 320	10 320
Total financial liabilities		**19 931**	**19 931**	10 703	10 703

APPENDICES

To meet its responsibilities, the Murray-Darling Basin Commission brings together representatives from many agencies and communities in its six jurisdictions.

An indication of the range of representation is provided in the following appendices.

APPENDIX A.
Membership of the Ministerial Council

Members from 1 July 2001 to 30 June 2002

Commonwealth	
The Hon. Warren Truss, MP	Minister for Agriculture, Fisheries and Forestry (Chairman)
Senator the Hon. Robert Hill	Minister for the Environment and Heritage (to 10 November 2001)
The Hon. Wilson Tuckey, MP	Minister for Forestry and Conservation (to 10 November 2001)
The Hon. Dr David Kemp, MP	Minister for the Environment and Heritage (from 26 November 2001)
Senator the Hon. Ian Macdonald	Minister for Forestry and Conservation (from 26 November 2001)
New South Wales	
The Hon. John Aquilina MLA	Minister for Land and Water Conservation and Minister for Fair Trading (from 21 November 2001)
The Hon. Richard Amery, MLA	Minister for Agriculture and Minister for Land and Water Conservation, Minister for Agriculture
The Hon. Bob Debus, MLA	Minister for the Environment
Victoria	
The Hon. Sherryl Garbutt, MLA	Minister for Environment and Conservation
The Hon. Keith Hamilton, MLA	Minister for Agriculture and Minister for Aboriginal Affairs

South Australia

The Hon. John Hill, MP	Minister for the River Murray Minister for Environment and Conservation (from 5 April 2002)
The Hon. Paul Holloway, MP	Minister for Agriculture, Food and Fisheries (from 5 April 2002)
The Hon. Mark Brindal, MP	Minister for Water Resources, Minister for Employment and Training, Minister for Youth (to February 2002)
The Hon. Rob Kerin, MP	Minister for Primary Industries, Natural Resources and Regional Development (to 5 March 2002)
The Hon. Iain Evans, MP	Minister for Environment and Heritage, Minister for Recreation, Sport and Racing (to 5 March 2002)

Queensland

The Hon. Stephen Robertson MLA	Minister for Natural Resources and Mines (from 20 March 2001)
The Hon. Dean Wells, MLA	Minister for Environment (from 20 March 2001)
The Hon. Rod Welford, MLA	Minister for Environment and Heritage, Minister for Natural Resources (to 20 March 2001)

Australian Capital Territory* (non-voting member)

Mr Bill Wood, MLA	Minister for Urban Services, Minister for the Arts
Mr Brendan Smyth, MLA	Minister for Urban Services

* ACT participation is through a memorandum of understanding, 27 March 1998.

APPENDIX B.
Membership of the Community Advisory Committee

Members from 1 July 2001 to 30 June 2002

Chairman

Ms Leith Boully

Regional representatives

Member	Catchment
New South Wales	
Mr Les Boland	Gwydir
Mrs Karen Hindmarsh	Border Rivers (NSW)
Mr Clive Johnson	Lachlan
Mr Jim McDonald	Namoi
Mr Daryl McGregor	Murray
Mrs Jenny McLellan	Western
Mr Peter Milliken	Murrumbidgee
Mr Ian Rogan	Central West
Mr Angus Whyte	Lower Murray-Darling
Victoria	
Mr Drew English	North Central
Mr Rodney Hayden	Mallee
Mr Athol McDonald	Goulburn-Broken
Mr Lance Netherway	Wimmera
Ms Sarah Nicholas	North East

Member	Catchment
South Australia	
Mr John Berger	Lower Mallee
Mr Leon Broster	Adelaide
Mrs Joanne Pfeiffer	Lower Murray
Mr David Ingerson (Tony Sharley – elect)	Riverland
Queensland	
Mrs Bobbie Brazil	Condamine
Mr Dugald Cameron (elect)	Warrego/Paroo
Mr Lloyd Harth	Maranoa/Balonne
Mr Clarrie Hillard	Border Rivers (Qld)
Australian Capital Territory	
Professor 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

APPENDIX C.
Membership of the MDBC

Members from 1 July 2001 to 30 June 2002

Dr Roy Green AO	Independent President
Commonwealth	
Mr Bernard Wonder	Executive Director, Competitiveness and Sustainability Group, Department of Agriculture, Fisheries and Forestry
Mr Stephen Hunter	Head, Biodiversity Group, Environment Australia
New South Wales	
Dr Bob Smith	Director-General, Department of Land and Water Conservation (reappointed to 21 January 2007)
Mr David Hariss	Regional Director, Murray Region, Department of Land and Water Conservation (reappointed to 30 September 2007
Dr Kevin Sheridan	Director-General, NSW Agriculture (resigned in July 2002)
Dr David Leece	Executive Director, EPA (resigned in July 2002)
Victoria	
Ms Chloe Munro	Secretary, Department of Natural Resources and Environment
Mr Denis Flett	Chief Executive Officer, Goulburn-Murray Water

South Australia

Mr James Hallion	Chief Executive, Primary Industries and Resources (from 20 June 2002)
Mr Allan Holmes	Chief Executive, Department for Environment and Heritage (from 20 June 2002)
Mr Dennis Mutton	Chief Executive, Department of Primary Industries & Resources SA (to 20 June 2002)
Mr Robert Thomas	Chief Executive, Department for Water Resources (to 20 June 2002)

Queensland

Dr Geraldine Gentle	Deputy Director-General, Department of Natural Resources and Mines (from 19 July 2001)
Dr Ian McPhail	Deputy Director General, Environment Protection Agency (from 20 December 2001)
Mr Scott Spencer	Executive Director Resource Management, Department of Natural Resources (to 18 July 2001)
Ms Olwyn Crimp	Deputy Director General, Environment Protection Agency (19 July 2001 to 19 December 2001)

Australian Capital Territory (non-voting member)

Dr Maxine Cooper	Executive Director, Environment Protection, Environment ACT, Department of Urban Services (ACT representative from 28 September 2001)
Ms Elizabeth Fowler	Director, Environment Protection, Environment ACT, Department of Urban Services (Acting ACT representative to 27 September 2001)

APPENDIX D.
Membership of project boards

1 Lake Victoria Cultural Heritage

Chair: Harriss (DepComm)

Members: Flett (Comm); Harvey (DWLBC) Interstate Water Trading Pilot; O'Connell (DepComm)

MDBC Senior Officers: Blackmore

2 Interstate Water Trading Pilot

Chair: Flett (Comm)

Members: Thomas (Comm)/Hallion (Comm); Thompson (DepComm)

Harriss (DepComm)

MDBC Senior Officers: Keyworth

3 Native Fish Management

Chair: Thompson (DepComm)

Members: Gentle (Comm-elect)

Goss

4 River Murray Environmental Flows and Water Quality Objectives Project

Chair: Hoey (DepComm)

Members: Leece (DepComm); Fitzpatrick (DepComm)

Hunter (Comm); Boully (CAC)

MDBC Senior Officers: Blackmore

5 Basin Salinity Management Strategy

Chair: Smith (Comm)

Members: Sutherland (DepComm)

Hoey (DepComm)

MDBC Senior Officers: Goss

6 Floodplain Management

Chair: Hunter (Comm)

Members: Harriss (DepComm)

Fitzpatrick (Dep Comm)

MDBC Senior Officers: Keyworth

Comm = Commissioner

DepComm = Deputy Commissioner

CAC = Community Advisory Committee

APPENDIX E.
Committees and working groups 2001/02

Asset Management Advisory Panel

Ad-Hoc Technical Working Group on Salt Interception

Advisory Group on Hume to Yarrawonga Waterway Management

Basin Salinity Technical Panel

Basin Salinity Strategy TaskForce

Basin Salinity Management Strategy Implementation Working Group

Basin Sustainability Plan Working Group

Communication and Human Dimension Issues Working Group

Community Reference Panel for Environmental Flows & Water Quality Projects

Dryland Issues Working Group

Finance Committee

Fish Passage Reference Group

Fish Working Group

Floodplain Working Group

Groundwater Technical Reference Group

High Level Working Group on Salt Interception

Human Dimension Group

Hume-Dartmouth Technical Review Committee

Integrated Catchment Management TaskForce

Integrated Catchment Management Policy Committee

Irrigated Infrastructure GIS Working Group

Irrigation Issues Working Group

River Murray Water Advisory Board

Riverine Issues Working Group

Salinity and Drainage Strategy Assessment Working Group

Snowy Management Committee

Snowy Technical Working Group

Sustainable Rivers Audit Taskforce

Water Audit Working Group

Water Liaison Committee

Water Market Reform Working Group

Water Policy Committee

Water Quality and River Health Working Group

APPENDIX F.
Information available from the MDBC

A full list of MDBC publications can be viewed on the MDBC website at < www.mdbc.gov.au/education/publications/order.htm > . The following publications were produced during the 2001–2002 financial year.

Basin Salinity Management Strategy 2001-2015, August 2001, Murray-Darling Basin Ministerial Council.

Basin Salinity Management Strategy 2001-2015, August 2001, Murray-Darling Basin Ministerial Council.

Environmental Challenges in the Murray Darling Basin, March 2002, Murray-Darling Basin Ministerial Council.

Murray Darling Basin - 100 Years, April 2002, Murray-Darling Basin Ministerial Council.

Expected Investment in the Murray Darling Basin 2001-2004, Murray-Darling Basin Ministerial Council.

Review of the Cap Implementation 2000/01 (Report of the Independent Audit Group), March 2002, Murray-Darling Basin Commission.

Basin Investment Report; Guidelines for Preparation 2000/2001, September 2001, Murray-Darling Basin Commission.

Basin Investment Plan; Guidelines for Preparation 2002-03 to 2004-05, September 2001, Murray-Darling Basin Commission.

Snapshot of the Murray-Darling Basin River Condition, November 2001, Murray-Darling Basin Commission.

Environmental Flow & Water Quality Objectives for the River Murray Project: Stakeholder Profiling Study, August 2001, Murray-Darling Basin Commission.

Water Audit Monitoring Report 1999/00, October 2001, Murray-Darling Basin Commission.

Ranking Areas for Action: A guide for Carp Management Groups, 2000, Murray-Darling Basin Commission.

Future Directions for Research Into Carp, 2000, Murray-Darling Basin Commission.

National Management Strategy for Carp Control 2000-2005, 2000, Murray-Darling Basin Commission.

River Murray Barrages Environment Flows. An evaluation of environmental flow needs in the Lower Lakes and Coorong, June 2000, Murray-Darling Basin Commission.

Report of the River Murray Scientific Panel on Environmental Flows, River Murray - Dartmouth to Wellington and the Lower Darling River, June 2000, Murray-Darling Basin Commission.

Factsheets

Basin Salinity Management Strategy 2001-2015

Integrated Catchment Management In The Murray-Darling Basin

BSMS 1 - Redesigning Farming System

BSMS 2 - Meeting Targets with Catchment / Land and Water Management Plans

BSMS 3 - Salt Interception Schemes

BSMS 5 - Salinity Credits and Debits Monitoring

People As An Integral Part Of The Initiative

Measuring River Health -The Sustainable Rivers Audit

Lake Victoria Cultural Heritage Project

Interstate Water Trading Pilot

Draft Native Fish Strategy

APPENDIX G.
River Murray Water – assets as at 30 June 2002

Dartmouth Dam	
Hume Dam	
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
Forest regulators (various)	
Hydrometric and Water Quality Monitoring Network	
Berri Depot and Floating Plant	

GLOSSARY

2001/02
: The financial year from 1 July 2001 to 30 June 2002. See also *water year*.

Agreement
: See *Murray-Darling Basin Agreement*.

anabranch
: A branch of a river that leaves the main stream and rejoins it further downstream.

Basin
: When shown with an initial capital, refers to the Murray-Darling Basin.

Basin States
: The four States in which the Murray-Darling Basin is located—New South Wales, Victoria, South Australia and Queensland The Australian Capital Territory is also in the Basin.

blue–green algae
: See *cyanobacteria*

Basin Sustainability Plan
: The framework for planning, evaluating and reporting on natural resources management in the Basin (see *Section 4.2*).

CAC
: Community Advisory Committee.

constructing authorities
: See *State constructing authorities.*

contracting governments
: The contracting governments to the *Murray-Darling Basin Agreement 1992*. They include the Commonwealth Government, and the 'State contracting governments' of New South Wales, Victoria, South Australia and Queensland.

  As the Australian Capital Territory's participation in the *Murray-Darling Basin Initiative* is by memorandum of understanding (see *Section 1.1*) it is not a contracting government (see *partner governments*).

cyanobacteria
: A group of bacteria containing photosynthetic pigments, often forming problematic toxic blooms. Commonly referred to as 'blue–green algae'.

during the year
: During the financial year 2001-2002 (i.e. between 1 July 2001 and 30 June 2002).

EC (unit)
: Electrical conductivity unit commonly used to indicate the salinity of water (1 EC = 1 microsiemen per centimetre, measured at 25°C).

ecologically sustainable
: Related to using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life—now and in the future—can be increased.

entitlement flows
: Minimum monthly River Murray flows to South Australia, as detailed in the *Agreement*.

gigalitre (GL)
: One thousand million or 10^9 litres.

groundwater
: The water in the saturated pores of soil or rock below the watertable.

Initiative
: See *Murray-Darling Basin Initiative.*

integrated catchment management
: A philosophy that considers the total long-term effect of land management practices on the soils, water, plants and animals of an entire catchment, from production and environmental viewpoints.

irrigation season
: The period in which major irrigation diversions occur, usually starting in August/September and ending in April/May.

Ministerial Council, the
: See *Murray-Darling Basin Ministerial Council*.

Murray-Darling 2001
: A multi-partner funding program delivered through the Natural Heritage Trust (see p. 86).

megalitre (ML)
: One million or 10^6 litres (about half the volume of an Olympic-sized swimming pool).

Murray-Darling Basin Agreement(Agreement)
: The agreement between the contracting governments (see *Introduction* to *Section 1*). The current *Agreement* is known as the 1992 *Agreement*.

Murray-Darling Basin Initiative (*Initiative*)
: Partnership of governments and community formed to enhance the environmental resources of the Murray-Darling Basin (see *Introduction* to *Section 1*).

Murray-Darling Basin Ministerial Council (Ministerial Council)
: Ministers holding land, water and environment portfolios in each contracting government. A minister of the Australian Capital Territory Government also participates under the terms of a memorandum of understanding described in *Section 1.1*.

Natural Heritage Trust
: The Commonwealth Government established the Natural Heritage Trust in 1997 to fund environmental protection, sustainable agriculture and natural resource management.

Natural Resource Management Strategy
: The over-arching strategy of the *Murray-Darling Basin Initiative* (see *Section 4.2*).

off-allocation
: Use, or a period of use, of water by irrigators when the use is not counted against an irrigator's allocation. Periods of off- allocation for a given reach of a waterway are sometimes declared by a regional water authority when unregulated tributary flows or spills from storages produce a flow that is above the total downstream requirements for that reach.

out-of-balance
: Used in tables to describe water held in storage by Victoria and New South Wales. It describes the difference in the volumes of water held in reserve in MDBC storages for later use by those two States.

  Traditionally, because of Victoria's greater involvement in irrigation activities such as horticulture and dairying—as opposed to annual crops—Victoria has held more water in reserve than New South Wales.

overdraw
: Borrowing next season's water from reserves, for use during the current season.

partner governments
: The governments involved in the *Murray-Darling Basin Initiative*. They are the governments of the Commonwealth, New South Wales, Victoria, South Australia, Queensland and the Australian Capital Territory (see also *contracting governments*).

rain-rejection flows
: Increased downstream flows caused when water is ordered by an irrigator but not used due to rain falling between time of release of water from storage and its arrival at the point of use.

riparian
: Of, inhabiting or situated on the bank and floodplain of a river.

River Murray system
: The river system defined in *Section 3.2*.

River Murray Water
: An internal business unit of the MDBC responsible by specific delegation for exercising the MDBC's functions for water management and asset management.

salinity
: The concentration of dissolved salts in groundwater or river water, usually expressed in EC units or milligrams of total dissolved solids per litre. The conversion factor is 0.6 milligrams per litre = 1 EC (but variable).

sales water
: An allocation of water beyond the basic water allocation (or water right), that is available at a different price from the basic water allocation.

salinity credits
: Accounting units for the *Salinity and Drainage Strategy*. Credits are obtained through measures that reduce the salinity of the River Murray.

Strategic Investigations and Education Program (SI&E)
: The MDBC's funding program to support knowledge generation (see *Sections 4.2.2* and *4.3*).

sleeper licence
: An allocation of water to a user that has not been used in the past.

State constructing authorities
: The New South Wales Department of Land and Water Conservation, Goulburn-Murray Water, and the South Australian Water Corporation.

surcharge
: Water in a lake or reservoir above the nominal full supply level of the storage.

water right
: The basic water entitlement or allocation to an individual water user.

watertable
: The surface below which the pores and fissures of the soil or rock are saturated with water.

water year
: In relation to the Snowy Mountains Scheme, the 12 months from 1 May to 30 April. In relation to the River Murray system, the 12 months from 1 June to 31 May.

INDEX

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

R

S

T

U

V

W

Y