

# Rural and Regional Affairs and Transport References Committee

## Inquiry into Water Policy Initiatives

Submission by the Murray-Darling Basin Commission

30 November 2005

### 1. Purpose and functions of the Murray-Darling Basin Commission

The Murray-Darling Basin Commission (MDBC) is the Executive arm of the Murray-Darling Basin Ministerial Council. The Council is the partnership of six governments – New South Wales, Victoria, South Australia, Queensland, the Australian Capital Territory and the Australian Government. The partnership is enabled by the *Murray-Darling Basin Agreement 1992* (the Agreement).

The purpose of the partnership, as stated in the Agreement, is to:

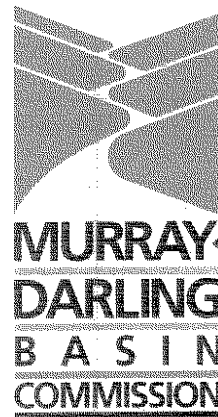
**'promote and coordinate effective planning and management for the equitable, efficient and sustainable use of the water, land and other environmental resources of the Murray-Darling Basin.'**

The Agreement states that the functions of the Commission are to:

- advise the Ministerial Council in relation to the planning, development and management of the water, land and other environmental resources of the Murray-Darling Basin;
- assist the Ministerial Council in developing measures for the equitable, efficient and sustainable use of water, land and other environmental resources of the Murray-Darling Basin;
- coordinate the implementation of or, where the Ministerial Council so requires, to implement any measures authorised by the Ministerial Council;
- give effect to any policy or decision of the Ministerial Council, which the Ministerial Council requires the Commission to implement.

### 2. The Commission partnership

The Commission, as a partnership of the six Basin governments (including the Australian Government), exists to achieve the best integrated catchment management outcomes for the shared resources of the Basin. Primary responsibility for managing land and water resources lies with individual State and Territory governments. The Commission concentrates on



In reply please quote MDBC: 05/22765

Your reference:

29 November 2005

Ms Roxane Le Guen  
The Secretary  
Senate Rural and Regional Affairs and Transport References Committee  
SG.62  
Parliament House  
Canberra  
ACT 2600

Dear Ms Le Guen

Thank you for your invitation to make a submission to the Senate Rural and Regional Affairs and Transport References Committee Inquiry into Water Policy Initiatives.

Please find enclosed a response from the Murray-Darling Basin Commission to the terms of reference, together with supporting publications and documents.

Further information about MDBC programs is available from the MDBC website ([www.mdbc.gov.au](http://www.mdbc.gov.au)). Additional MDBC publications can also be requested, in many instances downloaded, from this website. Alternatively, please contact Bob Douglas, Director of Water Policy Coordination on 02 6279 0117 or email [bob.douglas@mdbc.gov.au](mailto:bob.douglas@mdbc.gov.au).

Yours sincerely,

A handwritten signature in black ink, appearing to read "Wendy Craik". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Wendy Craik  
Chief Executive  
Murray-Darling Basin Commission

Basin-wide issues that require the joint action of partners to deliver the best outcomes for the Basin's communities, industries and natural resource base – particularly related to its shared water resources.

### 3. MDBC submission to the Senate inquiry into water policy initiatives

The following is a response from the MDBC to the Rural and Regional Affairs and Transport References Committee Inquiry into Water Policy Initiatives, the terms of reference being:

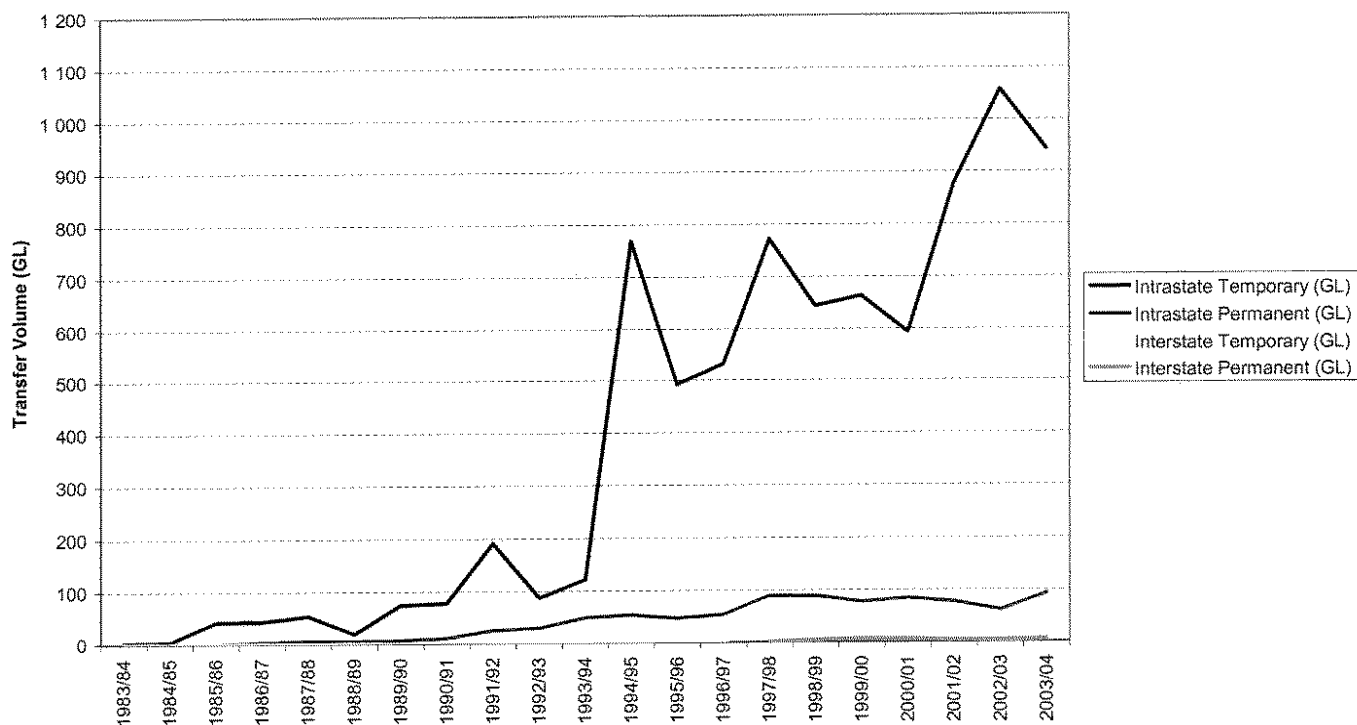
- (a) the development of water property titles
- (b) methods of protection for rivers and aquifers
- (c) farming innovation
- (d) monitoring drought and predicting farm water demand; and
- (e) the implications for agriculture of predicted changes in patterns of precipitation and temperature.

#### 3.1 Response to (a) the development of water property rights

The MDBC pilot **Interstate Water Trading Project** which was established as part of the 1994 COAG reforms aims to allow irrigators and the environment to maximise the returns gained from available water in the River Murray System.

The overarching objective of the COAG 1994 agreement was that 'water be used to maximise its contribution to national income and welfare'. Trade in annual allocations ('temporary' trade – the 'dividend' within a year on a water access entitlement, the 'share') allows the use of water by the highest value economic use. Importantly, trade in annual allocation reveals the opportunity cost of water. Irrigators now have the opportunity to trade their annual allocations when the expected return from the trade, plus alternate land uses, exceeds the expected benefits of their continued use of water within the balance of the water year (subject to any carryover provisions that exist). Trade in annual allocations is more common than in entitlements (as indicated below).

Murray-Darling Basin Water Entitlement Transfers - 1983/84 to 2003/04



Trade in annual allocations was an important factor in ameliorating the effects of relatively low rainfall in recent years. Irrigators who could have faced large economic losses because of reduced water allocations (such as those with perennial horticultural plantations) could trade with irrigators with more flexible production systems.

An evaluation of the Interstate Water Trading Pilot Project which was completed in 2004 (**Attachment 1 – please note, this evaluation is provided as ‘commercial in confidence’ and is not to be cited**), concluded that the Pilot Project was successful and that a further expansion of interstate trade was possible. The MDBC is currently working with the Australian Government to further expand water trade in the Murray-Darling Basin.

### 3.2 Response to (b) methods of protection for rivers and aquifers

The Murray-Darling Basin Commission has a number of programs and activities that contribute towards the protection of rivers and aquifers, using various methods. These include:

#### 3.2.1 The Living Murray Program

In mid-2002, the Murray-Darling Basin Ministerial Council established the ‘Living Murray’ initiative in response to substantial evidence that the health of the River Murray system is in decline. The Council’s concern was that the decline would threaten the Basin’s industries, communities, and natural and cultural values.

In November 2003, the Council decided on a ‘First Step’ for the ‘Living Murray’, with a focus on achieving environmental benefits for six significant ecological assets. These are:

- Barmah-Millewa Forest
- Gunbower and Koondrook-Perricoota Forests
- Hattah Lakes
- Chowilla Floodplain (including Lindsay-Wallpolla)
- Murray Mouth, Coorong and Lower Lakes
- River Murray Channel.

Implementation for this ‘First Step’ is provided for through an Intergovernmental Agreement signed by New South Wales, Victoria, South Australia, the Australian Capital Territory and the Australian Government on 25 June 2004. The Intergovernmental Agreement gives a commitment of \$500 million over five years for actions outlined in the Living Murray Business Plan (**Attachment 2**), which will combine with:

- \$150 million provided by the Murray-Darling Basin Ministerial Council for the Environmental Works and Measures Program, and
- \$75 million committed to recovering water for the River Murray through the Snowy Water Inquiry Outcomes Implementation Deed.

Actions being taken as part of the First Step include:

- Water recovery: including through infrastructure improvements and rationalisation, on-farm initiatives, efficiency gains, and market based approaches and purchase of water from willing sellers. A list of projects funded in the first and second round of the Infrastructure Projects program is attached (**Attachment 3**).
- Environmental Delivery: for example, each of the significant ecological assets has an Asset Environmental Management Plan that explores the ecological objectives for the asset and identifies the volume and timing of environmental water and structural works needed to achieve those objectives
- Environmental works and measures: this program aims to provide the required operational flexibility to deliver and manage environmental flow allocations throughout the River Murray System (further details are provided in **Attachment 4**).

- Indigenous Partnerships
- Community Consultation.

Further information on the Living Murray Program is available on its website <http://www.thelivingmurray.mdbc.gov.au>.

### 3.2.2 Cap on surface water diversions

In June 1995, in response to an audit of water use in the Murray-Darling Basin, the Murray-Darling Basin Ministerial Council agreed to cap water use within the Basin. An Independent Audit Group (IAG) was appointed to report on the level at which diversions should be capped. They agreed that:

- For New South Wales and Victoria, the Cap is the volume of water that would have been diverted under 1993/94 levels of development plus allowances in the Border Rivers for Pindari Dam (NSW) and in the Goulburn/Broken/Loddon system for Lake Mokoan (Victoria);
- For South Australia, highland irrigation diversions were capped at 440.6 GL. This represents a small increase in diversions over 1993/94 levels of development; and
- The Cap for Queensland would be determined after the independently audited Water Allocation and Management Planning (WAMP) and Water Management Planning processes had been completed.
- Subsequently, the Australian Capital Territory joined the *Murray-Darling Basin Initiative* under a Memorandum of Understanding (MoU) and agreed to participate in the Cap following the completion of discussions with the Murray-Darling Basin Commission, the IAG and other jurisdictions.

The Cap is being managed on a designated River Valley basis in accordance with a set of formal rules in the form of Schedule F to the *Murray-Darling Basin Agreement*. The IAG conducts an annual audit of the diversion in every designated Cap valley of the Basin in October in each year, comparing observed diversion against annual targets determined by the valley Cap models that have been developed. If the cumulative difference since 1997-98 between the annual diversion Cap target and observed diversion for a valley exceeds 20% of the long term Cap, the IAG conducts a Special Audit. In a Special Audit, the IAG may consider additional information such as crop areas, on-farm storage, volumes, operational rules and the result of computer models. If, following the Special Audit, the IAG has so determined in its annual Review of Cap Implementation Report, the Commission will declare that valley in breach of the Cap, and advises the Ministerial Council. In the case of a breach of the Cap in any Cap valley, the relevant State Government is required to report to every Council meeting subsequent to the declaration of the breach of Cap on:

- (a) the reasons why the breach occurred
- (b) the actions taken, or proposed to be taken by the State to ensure that diversions are brought back into balance with the Cap
- (c) the period within which diversions will be brought back into balance with the Cap.

In addition to the annual IAG report on Cap implementation, the Commission also publishes an annual Water Audit and Monitoring (WAM) Report on Cap implementation to provide a broader picture of the water use, water availability through allocations, off-allocations and water trading, storages positions and groundwater use. A summary Cap Register is also published as the appendices to the WAM Report. The summary Cap Register provides details for every designated Cap valley and for every reporting year since 1997-98 of annual Cap adjustments for trade, trade adjusted annual Cap targets, annual diversions, annual Cap credits and cumulative Cap credits since 1997-98. As the WAM Report is published later than the IAG Report, diversion figures for the water year in the WAM report are more recent and considered to be more accurate.

The latest Cap IAG and WAM reports (2003-04) are provided at **Attachment 5 & 6**. Previous IAG and WAM reports are available on request or available on the MDBC website ([www.mdbc.gov.au](http://www.mdbc.gov.au)).

### **3.2.3 Basin Salinity Management Strategy 2001-2015**

The Basin Salinity Management Strategy (BSMS) 2001–2015 (**Attachment 7**) provides a comprehensive and strategic approach to addressing a challenging environmental issue facing the Basin, consistent with the Integrated Catchment Management Policy (ICM Policy). Targets established for river salinity in each tributary valley and the Murray-Darling system itself reflect shared responsibility for action 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.

Under the BSMS, partner governments have agreed over the next 15 years to:

- develop capacity to implement the BSMS
- identify values and assets at risk
- set salinity targets
- manage trade-offs with the available within-valley options
- implement salinity and catchment management plans
- redesign farming systems
- target reforestation and vegetation management
- construct salt interception works
- ensure Basin-wide accountability through monitoring, evaluating and reporting.

#### ***Basin salinity target***

Salinity levels during 2004–05 were well below the Basin salinity target (below 800 EC for 95 per cent of the time at Morgan in South Australia), due to the low groundwater levels associated with the drought. This was in contrast with salinity levels in other areas, including lakes Albert and Alexandrina, which rose to high levels due to a lack of flushing flows, and large volumes of salt continue to accumulate in the floodplains of the lower reaches of the river.

#### ***Salinity Performance assessments and achievements***

The Independent Audit Group for Salinity (IAG–Salinity) undertook its second audit during November 2004. It identified significant progress in

- establishing baseline conditions
- setting end-of-valley targets
- accreditation of models to evaluate salt loads in streams
- developing approaches to evaluating the impacts of water trade
- establishing Salinity Registers A and B.

The IAG–Salinity had concerns about delays in implementing some of the rolling five-year reviews of the valleys; the limited capacity and skills available for identifying and evaluating within-valley trade-offs when making investment decisions in regional plans; delays in implementing within-valley management actions; lack of progress in setting up monitoring systems appropriate to the targets set within-valleys; and the problems associated with longer-term maintenance of the systems, data management and information generation.

In response to the IAG–Salinity findings and in planning for the implementation of core elements of the strategy, a priority work plan has been developed and agreed to by Commission. The plan encompasses key implementation themes including assessment of

irrigation impacts, salt interception works, in-stream salinity management, catchment planning and implementation and ensuring basin-wide accountability.

The *BSMS Implementation Report 2003–04* was endorsed by Commission in March 2005 (**Attachment 8**). Ministerial Council agreed to publicly release the *Report of the Independent Audit Group for Salinity 2003–04* (**Attachment 9**) and a non-technical summary brochure in April 2005 (**Attachment 10**).

#### ***Joint works program for salt interception schemes***

During 2004–05 significant progress was made with the approval and construction of several joint salt interception schemes including the Pyramid Creek, Buronga, Bookpurnong and Loxton Salt Interception Schemes.

#### **3.2.4 Sustainable Rivers Audit**

The Sustainable Rivers Audit (SRA) is a river health assessment program that started in July 2004 after successful trials over the previous three years. It aims to provide consistent, Basin-wide information on the health of the Basin's rivers in order to promote sustainable land and water management. To achieve this, the program has now developed indicators and methods for river health assessment that are robust and consistent across catchments (and jurisdictions) and will be used repeatedly over time.

The program has initiated monitoring of three indicator themes across the Basin during 2004–05. These are the field sampling for fish and invertebrates and modelling for hydrology. The SRA program, through the partner agencies, undertakes data collection across the Basin and then reports using a standard set of indicators. The program also has three indicator themes to be further developed: physical form, riparian vegetation and floodplain health.

With the program design finalised and governance structures put in place, a joint monitoring effort, using consistent methods, started across Queensland, New South Wales, Victoria, South Australia and the Australian Capital Territory.

The first full year of monitoring was completed in June 2005, with some 500 sites across the Basin sampled for macroinvertebrates and fish.

Information is now being assembled to enable the first SRA Implementation Report to be prepared by the Independent Sustainable Rivers Audit Group and tabled at the Commission in December 2005. This report will build towards the first audit of the Basin river health which will be tabled at Ministerial Council in 2007–08.

#### ***Sustainable Rivers Audit Achievements***

The Sustainable Rivers Audit Implementation Working Group (SRAIWG) has representation from partner governments and the MDBC Community Advisory Committee. The SRAIWG is responsible for overseeing the implementation of the SRA. Four meetings were held during 2004–05 and one year of implementation has been effectively supervised through this group.

The Independent Sustainable Rivers Audit Group has provided direction for the new themes and development and ecological advice to the implementation themes over the first year of the audit. It has also formalised its schedule for audit reporting and the processes for providing advice to the SRAIWG. Financial service agreements were established between the MDBC and each partner government to formalise the cost-sharing arrangements for the audit.

Mapping of stream networks and site selection was completed for 16 of the 23 valleys in the Basin. Fish and macroinvertebrate sampling was completed to schedule, covering nearly half the Basin. Technical reference groups have been established to support current sampling for

each theme (fish and macroinvertebrates) and the three new themes under development over the next three years (physical form, floodplain health and riparian vegetation).

A communication plan and a program evaluation plan (covering conceptual development, risk management, program design review and quality assurance) have been developed.

*Theme audit technical reports for fish; hydrology; macroinvertebrates; water processes and physical habitat are available on request from the MDBC or are available on the MDBC website [www.mdbc.gov.au](http://www.mdbc.gov.au).*

### **3.2.5 Native Fish Strategy**

The Native Fish Strategy (**Attachment 11**) aims to restore native fish communities in the Basin to 60 per cent of their pre-European levels after 50 years. It provides the framework for community involvement, interstate coordination of management actions and policies, as well as conducting research, monitoring and reporting management activity.

#### ***Sea to Hume Dam fish passage program***

During the past year, fishways were completed at Lock 7, Lock 9, and at Tauwitchere Barrage.

A total of 59 821 fish were sampled from the Lock 1–3 sites between Sept 2001 and Feb 2005. So far 4747 fish have had Passive Integrated Transponder tags inserted as part of the Murray River Fishways Assessment Program; 2266 downstream of Locks 1–3 and 2481 in the vicinity of Lock 7 and 8. Golden perch and common carp were the most abundant tagged species recorded at the Lock 7 and 8 fishways followed by Silver perch, Murray cod and Bony herring.

Investigative work continued on a number of innovative projects designed to improve the effectiveness and cost efficiency of future fishways, including:

- trials with a dual-frequency sonar technology
- experimenting with 'resistivity' counters
- installation of Passive Integrated Transponder readers
- designing and testing a prototype pump fishway
- radio-tagging fish to determine their movement after exiting the fish lock at Yarrawonga
- trialling modifications of the current 'vertical slot' fishway design.

#### ***Murray cod reference group***

Following a recommendation from the successful workshop on the management and conservation of Murray cod in June 2004, a Murray cod reference group was formed to advise on key issues such as:

- the identity, size, structure and dynamics of cod populations
- the level of fishing catches from cod populations
- community liaison and involvement in the management of Murray cod
- the adequacy of current management arrangements
- measures to further promote Murray cod as an icon species.

#### ***Native Fish Strategy Implementation***

The Native Fish Strategy 2003-2004 Annual Implementation Report is attached (**Attachment 12**). This reports on the first year of implementation of the Native Fish Strategy and provides a framework for reporting on progress at both State and Basin level. Future reports will continue to track progress in implementing the NFS by partner governments and by the Commission.



A range of native fish publications were also developed to raise awareness on issues such as the role of large woody debris as fish habitat, fish tagging technology, and the concept of demonstration reaches. These publications are available on request from the MDBC, or from the MDBC website [www.mdbc.gov.au](http://www.mdbc.gov.au).

### 3.2.6 Strategic Investigations and Education

#### *Riverine environments*

The Murray-Darling Basin Commission supports the Murray-Darling Freshwater Research Centre enabling laboratories at Mildura, Albury and Goondiwindi to undertake projects to investigate the importance of river-floodplain interactions, environmental flows and the ecology of wetlands. The northern laboratory of the Cooperative Research Centre for Fresh Water Ecology based at Goondiwindi closed on 30 June 05.

One particular study completed during the year investigated the ecology of Menindee Lakes and their response to flooding. It provided critical information for the management of these lake systems and resulted in the production of a set of management guidelines for ephemeral deflation-basin lakes. These guidelines provide a reference for managers, containing advice on the duration, depth, rate, frequency, timing and variability of flood events in these lakes.

The National River Contaminants Program, an MDBC partnership with Land and Water Australia, showed excellent results in its final year of funding, with a series of projects providing:

- predictions of the loss of biodiversity induced by increasing salinity
- improvements in the management and application of fertilisers
- measurements of endocrine-disrupting chemicals in river environments
- insights into sediment and nutrient fluxes following bushfires.

In addition to these projects, a major study into physical and biological responses to flow continued at Narran Lakes and a number of studies were also conducted into factors affecting communities and habitats of native fish.

Seventy four projects since 1989 have been supported as part of the MDBC Strategic Investigations and Education Program's Riverine Program, and a summary of each of these projects, and a number of 'theme reports' have been developed, these are:

- Managing wetlands
- Managing fish
- Managing catchments
- Managing rivers
- Understanding the Basin.

This information package is provided at **Attachment 13**.

#### *Irrigated Regions Program*

Over fifty projects (listed at **Attachment 14**) were undertaken as part of the Strategic Investigation and Education Irrigated Regions Program since 1992, with an estimated investment of over \$40 million by the MDBC and other organisations. Some of these projects will inform methods for protecting rivers and aquifers.

Actions to disseminate information on the Irrigated Regions Program include the collation of project summaries and the production of 'theme reports' that are intended to communicate the key findings of work undertaken by the program to a variety of audiences, including the Commission and Ministerial Council, and others involved in water management and policy development.

The following theme reports are currently in production and are due for completion in early 2006. Theme reports that are relevant to this terms of reference include:

- overview of the MDBC irrigation activities and integration with ICM
- improved water management
- channel seepage
- groundwater use and management.

### ***Dryland regions program***

A number of key reports have been published from projects funded under the MDBC Strategic Investigations and Education Dryland Regions Program including:

- The *Groundwater Status Report 1990-2000 (Attachment 15)* is an information package made up of a summary report, and a number of CD-ROM that contain 23 catchment reports, a technical report, a GIS tool, and a summary brochure. This work assessed the status of groundwater resources in the Basin using groundwater data collated from more than 1200 observation bores across the Basin. This information provides a baseline picture of the groundwater resources in the Basin which will allow the evaluation of trends in groundwater levels and condition in the future. This report assesses these trends in groundwater extent and condition over a ten year period from 1990-2000.
- *Projections of groundwater extraction rates and implications for future demand and competition for surface water (Attachment 16).*
- *Groundwater flow systems framework: essential tools for planning salinity management (Attachment 17).*
- *Dryland and urban salinity costs across the Murray-Darling Basin: an overview & guidelines for identifying and valuing the impacts (Attachment 18).*
- *Settlement, erosion and muddy waters: lessons from the past (Attachment 19)* this publication gives a summary account of the cause and effect of soil erosion in the Basin over the last 200 years.
- The publication *Sediments and nutrients in the Rivers of the Murray-Darling Basin: targeting the future* is due for completion in December 2005 and will be available on request from the MDBC.

The MDBC was also a partner of the ***National Dryland Salinity Program (NDSP)***. Information and links to a number of publications produced through the MDBC Dryland Regions program, are provided in the NDSP communication products. The NDSP interactive reports CD-ROM that includes all NDSP reports and links to other publications and is provided at **Attachment 20**.

### ***River Murray Water Quality Monitoring Program***

The long-term Water Quality Monitoring Program underwent the third and final stage of a review which was completed in 2005, which has substantially improved and updated the program. Revised objectives have given a more targeted focus to the monitoring. New physico-chemical parameters have been included in some sites and other parameters now seen as redundant have been removed from other sites. Further analyses have been identified for the macroinvertebrate and phytoplankton sampling which will allow these results to better complement the physico-chemical data. The review included a useful history of the program and explained the background to this statutory requirement. The new monitoring arrangements were introduced in July 2005. The review is documented in the report *Review of the River Murray Water Quality Monitoring Program (Attachment 21)*.

The program provides the baseline information on the current status and trends in water quality in the River Murray, with all research and investigations relating to the river relying

on this foundation knowledge. Data from the program, at 35 locations along the Murray valley going back to 1978, is available from the Commission.

### **3.2.7 Risks to the Shared Water Resources Program**

The Murray-Darling Basin Ministerial Council has noted the potential impact of six key processes which, if not addressed, could cause the flow and quality of water in the Murray-Darling Basin to decrease. These six processes are: increased groundwater extraction; bushfires; climate change; farm dams; reforestation and return flows from irrigation. The Risks to the Shared Water Resources Program has been established, recognising that to date, at a Basin-wide scale, the identification and management of these Risks have largely been considered independently of each other, and that an overall integrated approach is needed to assist in prioritising actions by governments, industries and communities.

The MDBC is currently developing a policy framework for the Risks to Shared Water Resources which will detail the integrated assessment and management responses for the range of risks to water quantity and quality.

### **3.2.8 River Murray Water management activities**

#### ***Hume-Yarrawonga Waterway Management Plan***

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

Implementation of the plan through the business plan of River Murray Water (RMW) is conducted in consultation with the advisory group.

Programs under the Waterway Management Plan include physical works under the Priority Reach Program and the Whole-of-Reach Program. In addition, the Land Management Review considered flood easements for regulated flows. By the end of 2004-05, condition assessments and conceptual designs had been completed for eight of the 14 reaches.

The on-ground works that were completed last year included erosions control measures, snag realignment, willow control and revegetation on specific sites along the Murray and its anabranches.

### **3.3 Response to (c) farming innovation**

The Murray-Darling Basin Commission has invested in a number of research projects that aim to assess and/or inform innovation in farming systems. This investment has been mainly through the MDBC Strategic Investigation and Education Irrigated Region and Dryland Programs outlined in section 3.2.6 above.

#### ***Landmark***

One significant project is the Landmark research project, which began in 1999, focussing on sustainable land use in dryland agricultural regions of the Murray-Darling Basin. Landmark aims to identify, assess and map current land use and current recommended management practices for dryland agriculture (broadacre cropping and grazing) against a range of sustainability criteria.

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

As part of this project, the publication *Current recommended practice: a directory for broadacre dryland agriculture* has been produced (**Attachment 22**). The 'Landmark logic' was then applied to three representative farming areas to determine whether or not these current recommended practices are environmentally, economically and socially sustainable. The outcomes of the Landmark project, including its methodology, are due for publication in early 2006.

#### **Other projects**

- *Hill Country Native Grasslands: better management for healthy catchments* (**Attachment 23**) summarises the outcomes of the MDBC project *Productive sustainable grazed native pastures* that aimed to highlight how better management of grazed native grasslands in hill country can lead to improved catchment health, and to provide insights into the role of government and communities in enabling improved native grassland management so that potential improvements in catchment health are realised.
- A number of the Irrigated Regions projects mentioned in section 3.2.6 above are relevant to this term of reference. Reports synthesising Irrigated Regions Program project outcomes under the following relevant themes are currently in production and are due for completion in early 2006:
  - Farming systems and best management practices
  - Approach to adoption
  - Environmental stewardship
  - Information management.
- A number of projects completed under the Dryland Program outlined in section 3.2.6 above are relevant to this term of reference. These projects include:
  - Tools for improved management of dryland salinity in the *Murray-Darling Basin – Salinity Information Package* (available on the NDSP CD at **Attachment 20**).
  - Afforestation in a catchment context: understanding the impacts on water yield and salinity (this publication is currently in production and is due for completion in early 2006).

#### **3.4 Response to (d) monitoring drought and predicting farm water demand**

The Murray-Darling Basin Commission does not currently monitor drought or predict farm water demand.

#### **3.5 Response to (e) the implications for agriculture of predicted changes in patterns of precipitation and temperature**

As part of the Risks to the Shared Water Resources program, the MDBC will be a partner in the South Eastern Australian Climate (SEAC) Initiative, which is a research initiative involving seven collaborative partners bringing together government, industry, scientists, and water managers to deliver a more holistic and better integrated understanding of climate change and variability across south eastern Australia of which the Murray-Darling Basin is a major component.

SEAC will invest almost \$7 million over the next three years to improve short and long term planning for water (and other natural resources) and agricultural systems. The research will identify and possibly reduce the uncertainty surrounding climate change and variability in south eastern Australia.

#### 4. Further information

Further information about MDBC programs and publications, is available from the MDBC website [www.mdbc.gov.au](http://www.mdbc.gov.au). MDBC annual reports for 2004-05 (**Attachment 24**), 2003-04 (**Attachment 25**), and 2002-03 (**Attachment 26**) have been provided for information, and other annual reports for previous years are available on request. For further information from the MDBC, please contact Bob Douglas, Director of Water Policy Coordination on 02 6279 0117 or email [bob.douglas@mdbc.gov.au](mailto:bob.douglas@mdbc.gov.au).