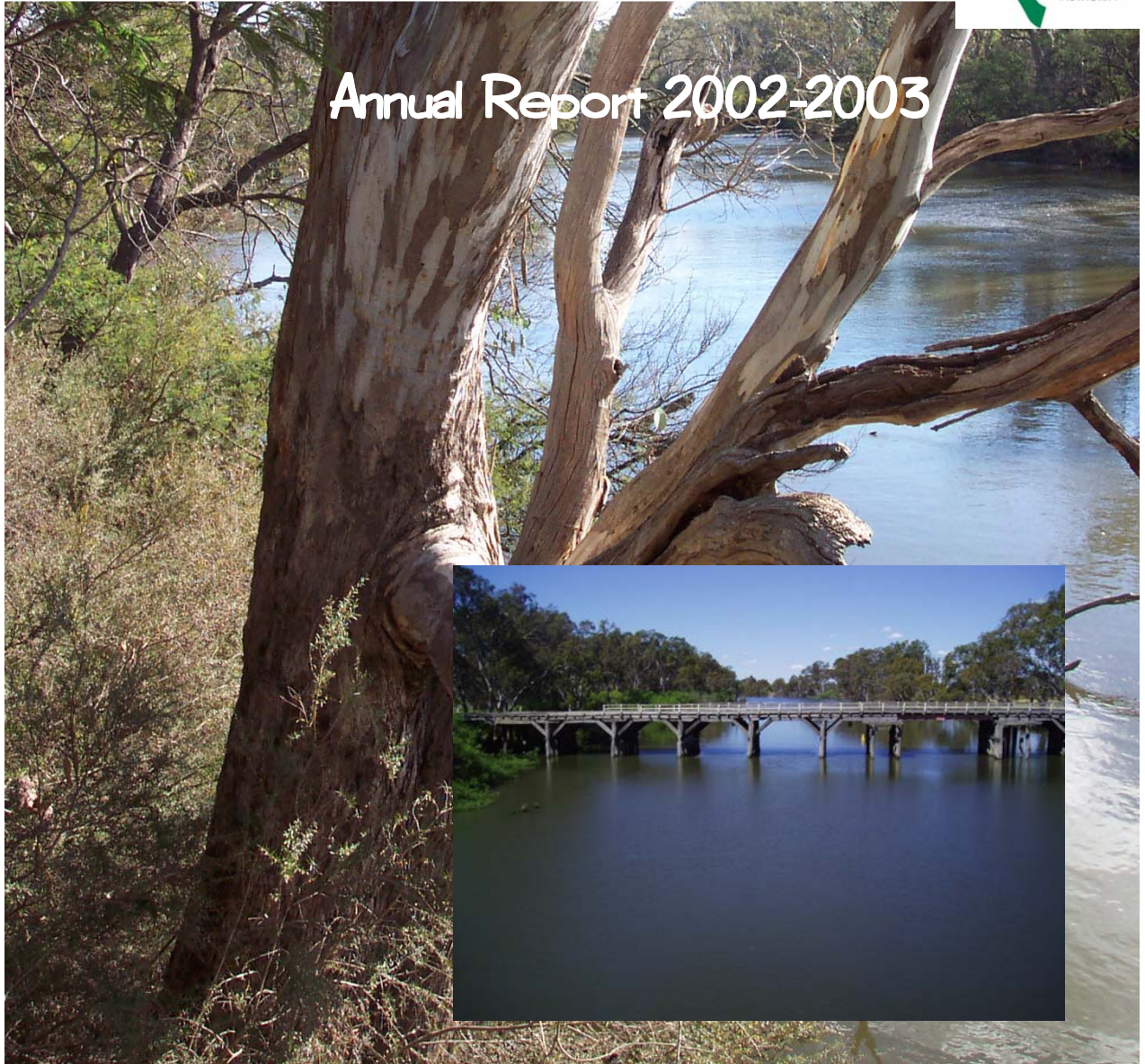




# River Health & Water Quality



Annual Report 2002-2003







## ***Healthy Rivers, Healthy Communities***

***“.....Healthy rivers, streams, wetlands, floodplains and adjacent land that support a vibrant range and abundance of natural environments, provides water for human use, sustains our native flora & fauna and provides for our social, economic and cultural values.....”***

# River Health & Water Quality Annual Report 2002-2003

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# River Health & Water Quality Annual Report 2002-2003

## Chairs Report

The River Health & Water Quality (RH&WQC) & Waterways Working Groups (WWG) are pleased to present the 2002-2003 Annual Report. We would like to take this opportunity to thank all of the community committee members for their dedication and input over the last twelve months. The RH&WQC is the strategic arm of the waterways business overseeing the development of strategies, research and development of best management practices relating to river health and water quality in the Goulburn Broken Catchment. The Waterway Working Groups (of which there are three) are the key conduits to the community and provide valuable linkages into and feedback from the communities which then assist the three Implementation Committee's and staff in the development of their annual works program.

Funding from both Federal and State Governments in the 2002/2003 financial year was a lot lower than other years, but has allowed the waterways team to implement the works programs and still complete a high level of both strategic, research and on-ground works as outlined in this document.

We would like to thank the waterways management team for their achievements throughout the year. The waterways management team of the Authority are responsible for overseeing coordination of the waterway works program, administering waterway permits, developing new and ongoing work projects and funding bids for projects and dealing with emerging issues that impact on river health. A strong emphasis is put on engaging the community and promoting the message of stream health by working with community groups and stakeholders. We would also like to congratulate the waterways team for the high standard of outputs it has achieved in a challenging year. The recent drought has highlighted and promoted waterway health issues into the community at a level that hasn't been seen in the past.

The Authority has maintained its commitment to support and fund research activities which lead to greater understanding of our river systems and improves the way in which they are managed and monitored.

A major task of the waterways team has been assessing applications for works on waterways throughout the Catchment. These assessments ensure that the works do not impact on the stability and health of the waterway or the quality of water within the adjacent stream system. The works on waterways process has required a greater emphasis on engagement between the community and CMA staff.

Acknowledgement also needs to be given to the construction and vegetation management contractors who played a significant role in delivering our works program for this year. Their willingness and ability to assist in developing cost effective technology to improve the health of our waterways is much appreciated.

Recognition should also be given to the landholders and our partners Goulburn-Murray Water, DPI and DSE, Local Government, Goulburn Valley Water, North East Regional Water Authority and landcare groups participating in our programs. They trust our judgment and allow all the hard work and strategic planning to be implemented, which is what we are all about.

In closing, we feel very positive about our achievements and believe that there is a definite strengthening in the support of the community toward good waterway and whole of catchment management.

We commend this report to you.



Suzanna Sheed  
Chairperson  
River Health & Water  
Quality Committee



Russell Pell  
Chairperson  
Shepparton Irrigation  
Region Waterway  
Working Group



Sally Simson  
Chairperson  
Mid Goulburn Broken  
Waterway Working  
Group



Mike Dalmau  
Chairperson  
Upper Goulburn  
Waterway Working  
Group

# River Health & Water Quality Annual Report 2002-2003

## River Health & Water Quality Coordinating Committee Members

### The River Health and Water Quality Committee has been established to:

- develop Catchment-wide policies and strategies on single issues listed in the Regional Catchment Strategy
- develop processes for the initial stages of implementation, including monitoring and integrating implementation into broader activities within Catchment through Implementation Committees
- aggregate the initial Implementation Committee reports into a Catchment Report

**The purpose of the Committee is to oversee:** Research, development of best management practices, proactive in setting benchmarks and monitoring and preparation and review of existing and new strategies.

### Community Members

Suzanna Sheed - Chairperson  
Brian Greed  
Craig Kappes  
Royce Dickson  
Hubert Miller  
Jill Breadon  
Russell Pell  
Murray Chapman  
Peter Howarth  
David Laurie  
Ann Jelinek

### Agency Representatives

Pat Feehan Goulburn Murray Water  
Andrea Smith Goulburn Broken CMA  
Bruce Radford Department of Primary Industries  
David Burrow Department of Sustainability & Environment  
Elita Humphries Environment Protection Authority  
Neville Fowler Fisheries - Department of Sustainability & Environment  
Allen Gale Goulburn Valley Water  
John Anderson Goulburn Valley Water  
Ken Sampson Goulburn Broken CMA/DPI

## Waterway Working Groups

The Waterway Working Groups roles are to:

- provide input to assist in the preparation of the annual waterway management program.
- provide balanced comment on community issues and ideas.
- provide a conduit to the community to assist in monitoring community attitudes and priorities to improve the progress and impact of the waterway program
- identify research proposals related to waterway management for referral to the River Health and Water Quality Committee.

### Upper Goulburn WWG

#### Community Members

Mike Dalmau Alexandra (Chairperson)  
Peter Howarth Mansfield  
George Vasey Larnoo  
Susan Sleight Euroa  
David Wakefield Strath Creek

#### Agency Members

Andrew Strange Goulburn Murray Water  
John Cooper Fisheries - DPI  
Kerry Goschnick DPI  
Rod Drew Field & Game Australia Inc.

### Mid Goulburn Broken WWG

Sally Simson Shepparton East (Chairperson)  
Kathy Beattie St. James  
Arthur Frost Euroa  
Ken Whan Benalla  
David Ritchie Mansfield  
Kevin Mitchell Devenish

Peter Burns DSE  
Steve McMonigle DSE  
Chris Meek Goulburn Murray Water

### Shepparton Irrigation Region WWG

Russell Pell Kyabram (Chairperson)  
Ron Pearce Picola  
Alan Sutherland Shepparton  
Bill Probst Kialla  
Tate Hamilton Corop  
Nick Roberts Shepparton

Bruce Cumming DPI  
David Trickey DSE  
Silvio Fontana Goulburn Murray Water  
Melva Ryan DPI  
Ken Sampson Shepparton Irrigation Region IC/DPI

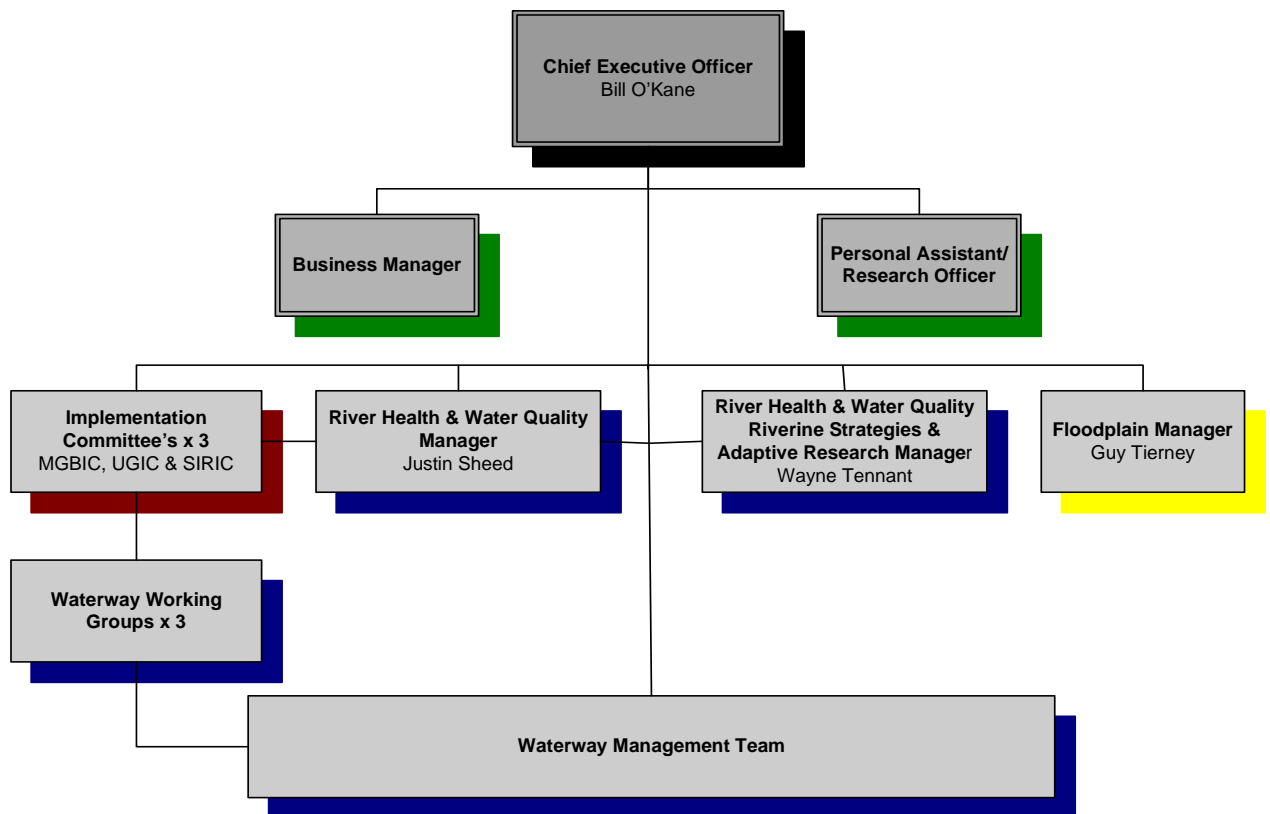
DSE - Department of Sustainability & Environment.

DPI - Department of Primary Industries

# River Health & Water Quality Annual Report 2002-2003



**Goulburn Broken CMA  
Organisational Chart**





# River Health & Water Quality Annual Report 2002-2003

## River Health & Water Quality Management Staff



*From back left: Steve Collins, Tom O'Dwyer, Collin Tate, Keith Yates, Wayne Tennant, Jim Castles, Geoff Brennan, Dustin Lavery, Joanne Gaudion, Max Colliver. Front: Richard Warburton, Christine Sagona, Tony Kubeil, Meegan Davies, Justin Sheed & Rebecca Nicoll. Absent: Fleur Jaques, Gordon O'Brien*

### Staff Member

### Position Title

Christine Sagona	Waterway Vegetation Officer – Upper Goulburn
Collin Tate	Waterway Works Officer – Upper Goulburn
Dustin Lavery	Waterway Vegetation Officer – Shepparton Irrigation Region
Fleur Jaques	Waterways Executive Assistant
Geoff Brennan	Waterway Works Supervisor – Mid Goulburn
Gordon O'Brien	Waterway Environmental Engineer
Jim Castles	Grassy Ecosystems Project Officer
Justin Sheed	River Health & Water Quality Manager
Keith Yates	Waterway Works Officer – Upper Goulburn
Max Colliver	Waterway Works Officer – Mid Goulburn
Meegan Davies	Water Quality & Works on Waterways Coordinator
Rebecca Nicoll	Waterway Vegetation Officer – Mid Goulburn
Richard Warburton	Waterway Works Supervisor – Shepparton Irrigation Region
Steven Collins	Waterway Works Officer – Mid Goulburn
Tom O'Dwyer	Waterway Team Leader – Mid/Upper Goulburn
Tony Kubeil	Broken Boosey Nine Mile Conservation Management Network Coordinator
Wayne Tennant	Manager-Riverine Strategies/Adaptive Research

# River Health & Water Quality Annual Report 2002-2003

## Monitoring, Strategies & Research

### Monitoring

- The monitoring of stream conditions continues to be a key component of the River Health and Water Quality Program.
- The success of the river health program is monitored through both "snapshot" and "targeted" monitoring programs.
- Baseline monitoring to assess the overall condition of the region's waterways employs the statewide "Index of Stream Condition". This index reflects the various aspects of river health, including condition of vegetation within the riparian zone, channel condition, stream habitat, water quality and flow.
- Targeted monitoring is designed to assess the performance of individual projects against project goals.
- Example of monitoring through the waterway health program include;
  - **Snapshot:** Site assessments (application of components of the ISC).
  - **Trout cod habitat:** Hypothesis testing; increased abundance of target species; increased diversity of species, and overall improvement in stream health.
  - **Recreational Experience:** Visitor Numbers.
  - **Exotic Vegetation (Lake Benalla):** Area of weed coverage from baseline monitoring.

### Research and Evaluation

- A wide range of research and evaluation projects continued to be supported within the catchment with a range of partners.
- Key Projects included:
  - Social research: Understanding landholder management of riparian zones in the Goulburn Broken Catchment by Andrea Wilson (Charles Sturt University).
  - This project investigated the relationship between landholder management practices and riparian condition in the Goulburn Broken Catchment.
  - Interviews were held with a number of landholders and an assessment of the ecological condition of frontages was undertaken.

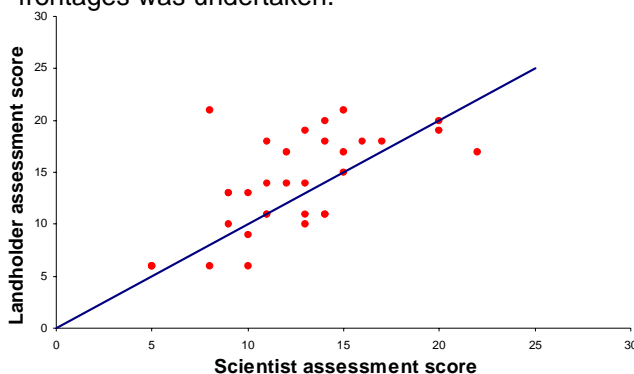


Figure showing strong correlation between landholder & scientist assessments: source Wilson A (2003) *Understanding Landholder Management of Riparian Zones, Proceedings of the Workshop on: River & Catchment Health - Presenting current research in the Goulburn Broken Catchment, Dookie*

The aim was to improve our understanding of landholder knowledge of riparian zones and to compare landholder and scientist assessments of ecological condition in riparian zones on private properties. The project sought the involvement of the Upper Goulburn Waterway Working Group in the design of the landholder questionnaire.

### **Increasing fishing opportunity through Access and Habitat Enhancement (Goulburn Broken CMA – works, Marine and Freshwater Resource Institute – monitoring).**

Currently the Catchment Management Authority has an important role to play, in association with fisheries managers, in creating improved habitat for aquatic systems, benefiting recreational fisheries (both native and exotic). Funding has been provided to assist with improving stream condition for recreational benefits.

The onground works were monitored to assess if improved recreational experience resulted.

### **Seven Creeks - Enhancing Trout Cod Habitat**

Following the completion of Phase One works and activities, to protect high quality Trout Cod Habitat, detail monitoring of the response of the works was conducted.

Further monitoring will be initiated in 2003/2004 concluding with a report.

Guidelines to assist other agencies and the community are an important component of this project. This will present a series of recommendations for the design, monitoring and implementation of actions to improve habitat diversity (as well as overall stream health).



Field Days on Seven Creeks (Trout Cod project funded by Agriculture, Fisheries and Forestry – Australia): source R Nicoll

This project was funded by Agriculture Fisheries and Forestry – Australia with matching funding from the State's Waterway Health Program.





# River Health & Water Quality Annual Report 2002-2003

## **Decision Support Tool for Waterway Health**

The authority has provided ongoing input to the development of a "Statewide" Decision Support Tool for Waterway Health Programs. This project has been funded from the State Government's Frontage Management and Stream Health Initiatives.

## **Assessment of reductions in suspended sediment and Nutrient loads as a consequence of riparian rehabilitation in the Goulburn-Broken Catchment.**

The Goulburn Broken catchment, together with the Mary River (Qld) were chosen as the focus catchments to test, refine and demonstrate the use of the National Land & Water Resources Audit (NLWRA) sediment and nutrient modeling techniques to meet regional planning needs. Following the completion of this project a more detailed evaluation of sediment and nutrient movement was commissioned.

CSIRO has investigated a range of future scenarios using the SedNet modeling framework to determine the relative reductions in suspended sediment and Total P loads that could be expected in the Goulburn-Broken catchment as a result of targeted riparian rehabilitation. This information may well assist in the establishment of priority areas.

## **Ecological risk Assessment (Salinity)**

The Authority with support from the National Action Plan for Salinity and Water Quality is developing an Ecological Risk Assessment (ERA) framework to aid the prioritisation of salinity programs and the risk to aquatic ecosystems. Work proceeded during 2002/2003 with the support of Monash University / Water Study Centre. This project will conclude in 2003/2004.

## **Strategies / Strategic Planning**

To provide direction for both planning and implementation of a number of strategic and implementation plans have been developed or are currently underway.

- Goulbourn Broken Riverine Health Strategy (commenced)
- Nine Mile Creek Rehabilitation Plan
- Willow and Riparian Management Strategy (commenced)
- Priority Barriers to Fish Migration (Priority Report) to the Department of Natural Resources and Environment
- Detail Stream Investigations on the lower Jamieson River, Doolams Creek, Tallangalook Creek and Bryants Creek.



*Caseys Weir a priority for modification to facilitate fish movement. Aim: enhance native fish populations throughout the catchment.*

## **Project Support**

Representatives from the Catchment Management Authority continued to provide support to projects affecting the health of the region's waterways. Often these projects are initiated by other agencies and the community. Key projects include:

## **Goulburn River Environmental Flow Study**

Goulburn River Environmental Flow Project aims to provide scientific advice on the environmental water requirements of the Goulburn River system as part of *The Living Murray* process.



In part, this will be achieved through the identification of the environmental values associated with the Goulburn River system, scientific determination of the water requirements of these values and the development of environmental flow recommendations.

Monitoring,  
Strategies &  
Research

# River Health & Water Quality Annual Report 2002-2003

## Monitoring, Strategies & Research

### **Major Storages (GMW) Water Quality Reference Committee**

Goulburn-Murray Water (G-MW) manages a large number of water storages across northern Victoria with the water from these storages supporting a productive rural economy. The economy and the streams alike are dependent upon the quantity and quality of water from these storages.

Concern has been expressed that land management and development practices in water supply catchments is adversely impacting on storage water quality and quantity, and that the management of these activities needs to be improved.

This project, undertaken by GMW, investigates these issues in depth by utilising catchment and storage models for the prediction of potential impacts on water quality and water yield. Scientists working with the Cooperative Research Centre for Catchment Hydrology (CRCCH) are developing a catchment modelling 'toolkit' to predict the impacts. Representatives from the Catchment Management Authority are participating in this program.

### **North East Regional Water Monitoring Partnership**

The North East and Goulburn Broken CMAs are working with DSE to develop the North East Regional Water Monitoring Partnership. The process involves all parties conducting water resource monitoring and coming together to agree on a monitoring network which meets the needs of the region. Cost sharing arrangements will be negotiated and the monitoring network taken to competitive tender, resulting in a single, well specified and cost-effective arrangement for monitoring of water resources in North East Victoria.

It is expected that the regional monitoring network will begin operation on 01 July 2004.

### **Goulburn Eildon Fisheries Management Plan Steering Committee**

This Partnership Committee is responsible for overseeing the implementation of the Management Plan. Key actions within the plan include waterway management actions which aim to improve angler access and instream habitat for fish. This committee links funding, onground works, research and enforcement.

Representation have also contributed to the following workshops and forums:

- Broken Creek Operations Review
- Cooperative Research Centre Freshwater Ecology - Program B.
- Broken Creek Water Quality Monitoring
- Advisory Committee, Restoration Ecology.
- Boosey Creek - Tungamah Master Plan
- Trout Cod Recovery Team.
- Casey's Weir Majors Creek W&MC pipeline Environmental Focus Study
- Victorian Waterway Managers Forum.
- Honeysuckle Creek Weir Decommissioning
- Development of an economic methodology to analyse investments in river health - "preservation versus restoration" being undertaken by Department of Sustainability & Environment.

### **SedNet Modelling of Sediments and Nutrients**

The SedNet model has been used in the Goulburn Broken catchment as a case study to refine the model. The model provides spatial mapping of sediment and nutrient sources in each river basin: sheetwash erosion, gully erosion, riverbank erosion, sediment bound nutrients, diffuse dissolved nutrients, and major point sources of nutrients. The pattern of sources together with modelling of deposition and nutrient transformation processes were used to predict spatial patterns of mean annual sediment and nutrient loads under current land use conditions. Predictions were also made of sediment and nutrient loads under natural conditions to assess the magnitude of increase of current loads to natural conditions

A full report documenting the results of this modelling can be available by contacting the Water Quality Coordinator of the Goulburn Broken Catchment Management Authority.

### **Sediment Priorities Upstream of Eildon**

This project involved waterways assessments of four stream upstream of Eildon to identify areas of high priority for sediment input and water quality improvement works. These were Jamieson River, Bryant Creek, Doolams Creek and Tallanglook Creek. The waterway assessments identified approximately 34 sites for potential erosion control works and 20km of revegetation and fencing works. These works will be implanted through the Goulburn Broken CMAs waterway implementation program.

# River Health & Water Quality Annual Report 2002-2003

## Goulburn Broken Water Quality Program

Overall objectives of the Goulburn Broken water quality program as outlined in the catchment's Water Quality Strategy (2002) are listed below:

- Minimise the risk of blue green algae outbreaks within the Goulburn Broken catchment thereby protecting aquatic ecosystems, public health, industry and water users;
- Minimise nutrient contributions to the Murray River (and reduce the risk that nutrients from our catchment will cause or contribute to algal blooms downstream);
- Foster regional development (by ensuring the quality of water to industry, agriculture and the community);
- Enhance the riverine environment; and
- Minimise/optimise water treatment costs

A review of the 1996 Water Quality Strategy (WQS) was carried out in 2002 as part of the five year review of strategies throughout the Goulburn Broken catchment. The 2002 review has retained much of the technical information as this is still regarded as sound and based on best available scientific and technical information.

The revised WQS was completed in late 2002 after a 2 month period for public comment. There were approximately 10 submissions from this period which were discussed by the technical steering committee overseeing the review of the Strategy. These comments were incorporated into the document where appropriate. Additional work was also carried out on the economic evaluation of the costs and benefits of the Strategy.

Once comments were incorporated and work completed on the WQS the Goulburn Broken River Health and Water Quality Coordinating Committee signed off on the document. The 2002 WQS was then submitted to the CMA Board who also signed off the document. The Goulburn Broken 2002 Water Quality Strategy was submitted to the state government in early 2003 for endorsement. This process is taking longer than expected with delays happening at a state government agency level that requires high input negotiations. This has slowed down the process of state endorsement of the document.

However, implementation of the strategy has a twenty year time frame, beginning with the original WQS in 1996 and finishing in 2016. Thus, the Goulburn Broken WQS has been implemented for the past 6 years and will continue to do so throughout the Goulburn Broken catchment.

The following highlights are from the Water Quality program in the Goulburn Broken catchment.

## Urban Stormwater

### Background

In 2002/2003, the Goulburn Broken Catchment received funding from the Victorian Stormwater Action Program (VSAP) to implement a two year stormwater awareness and education project. The funding enabled the appointment of a Catchment Stormwater Project Officer to raise community awareness about stormwater quality issues and its impacts on waterways in the catchment. The VSAP funding has been matched by a combination of CMA, GVW, most councils throughout the catchment, Regional Waste Management Group and G-MW. The target audience for this education and awareness project includes local government, industry (especially the building/construction industry), the general community and schools.

### Council and Industry

#### **Storms Self Management System**

A self management system called "Storms Self Management System (SSMS)" has been developed to aid councils in monitoring and incorporating best management practices into their maintenance and construction activities. This system educates council staff in stormwater best practice and audits council operations to measure their compliance with best practice. The City of Greater Shepparton have incorporated SSMS into their environmental management plan and Benalla City Council are trialling the system. Many other councils throughout the catchment have also shown an interest in the SSMS.

EPA through the Victorian Stormwater Action Program (VSAP) has recognised the potential of this system and has provided further funding through a strategic grant to roll the system out on a statewide basis. The GB catchment stormwater education officer will be involved in the roll out of this program across the state in conjunction with MAV.

#### **Concrete "BMP" Pamphlet**

In conjunction with the City of Greater Shepparton a pamphlet has been developed to raise awareness and educate industry in best practice principles for the use of concrete. Transport of concrete and wash down practices have been recognised across many municipal Stormwater Management Plans as an activity with high potential to affect stormwater quality.

Water  
Quality



# River Health & Water Quality Annual Report 2002-2003

## Water Quality

The pamphlet is being distributed to concrete batch operators to hand out among staff to promote awareness of issues relating to concrete wash down procedures and transport of mud and sediments onto roadways.

### Schools and Community Education

#### ***“The Yellow Fish Road”***

Stormwater was the theme for last years Water Week. A pantomime was developed by Waterwatch and Goulburn Valley Water, to highlight the potential impacts that urban stormwater can have on our environment. The pantomime was aimed at primary school students and was titled “The Yellow Fish Road”. There were 4,000 students from 24 schools that attended the pantomime.



#### **Water Quality Testing**

In 2002-03 water quality tests were performed on Lake Victoria. The testing looks at a range of water quality parameters, such as nitrogen, phosphorous, total suspended solids, Electrical Conductivity and E-coli. The testing is proving to be a valuable tool in monitoring the performance of the Lake and assessing the effects of stormwater during major rain events. The Greater Shepparton City Council have helped fund this activity. Future testing in Tatura (Lake Bartlett) and Numurkah (Kinnairds wetland) are being investigated.



#### ***“Drains are Just for Rain”***

Drains are Just for Rain banners have been designed, developed and were circulated around the catchment. The street banners are displayed in each town for approximately 4 weeks. A community day is held in each town to coincide with the placement of the banners. The Regional Waste Management Group supports the community day by supplying the EcoVan (a painted van full of educational information and activities designed for school children). The day is designed to provide information to the general public in both stormwater and waste management issues. It will take approximately 18 months to display the banners across the catchment.

The Goulburn Valley Regional Waste Management Group and Representatives of Green Corp have stenciled “The Drain is Just for Rain” extensively across the catchment. Schools also get involved, with many primary school students hitting the streets and stenciling their towns.

#### **Council On ground Stormwater Activities**

#### ***Greater Shepparton City Council (COGS)***

With the burgeoning development rates in the Shepparton Council stormwater management and Water Sensitive Urban Design are becoming more and more important. COGS have been involved with the Goulburn Broken Stormwater Education Project developing the Self Management System and Standard Drawings for sediment control on construction sites.

COGS has placed Water Sensitive Urban Design and Gross Pollutant Trap conditions on planning permits. Kialla Lakes Estate and Forsyth Estate in Mooropna have incorporated WSUD principles into the drainage design treatment. Kialla Lakes Estate has also included the construction of the Lowanna Waters Wetland.

Something to explore in the future is the monitoring and enforcement of building and construction sites. With the explosive development rates around the area there have been some compromises in these activities that continue to have a major impact on the degradation of stormwater quality from transporting mud onto roads.

# River Health & Water Quality Annual Report 2002-2003

## Irrigation Drain Program of Water Quality Strategy

The Irrigation Drain Program (IDP) is a component of the Goulburn Broken Water Quality Strategy and aims to reduce the adverse impacts of irrigation drainage on receiving waters. The program has been jointly funded by G-MW, NHT (Commonwealth Government) and HWI (Victorian Government) since 1997.

Drainage resource assessments were completed for the 20 existing main drain catchments. Drain Diversion Plans have been completed for all but one of these catchments, allowing allocation of additional drainage diversion licences to proceed.

Metering of drain diversions continued and allocation of additional diversion agreements was undertaken in Murray Valley and Shepparton. Two new drain flow monitoring installations were completed (MV drain 13 and Shepparton drain 4).

Phosphorus loads exported from irrigation drains continued to show substantial decline, with the 5 year rolling average now below the target value for 50% reduction.

A review of the process for dealing with dairy effluent discharges to drains was undertaken and changes recommended. Complementary farm extension and incentive programs continued to contribute to reducing the impacts of drainage (whole farm planning, reuse systems, dairy effluent and nutrient management).

### **Drainage diversion**

Drainage diversion has been identified as one means of reducing irrigation drain outfall. In October 2000 the *Drainage Diversion Strategy* was completed following several rounds of consultation with key stakeholders. The purpose of this strategy is to set the framework to manage drainage diversion.

Implementation of the Drain Diversion Strategy will be via Drain Management Plans. Drain Diversion Plans will form a significant component of Drain Management Plans.

### **Drain Management Plans**

Drain Management Plans (DMPs) are intended to be a single reference point for all issues relating to the management of a drainage system. As well as containing Drain Diversion Plans, DMPs will include sections on catchment characteristics, drain design principles, operation and maintenance aspects, emergency response measures, management

arrangements, and monitoring and reporting programs.

Work commenced on a drain management plan for Murray Valley Drain 6, including intensive field inspections of all sections of the drain. Investigation into options for a wetland treatment system on Murray Valley Drain 13 has been undertaken.

### **Drain Diversion Plans**

Drain Diversion Plans (DDPs) will provide drain managers with a tool for assessing applications for drain diversion permits and determining progress against diversion targets. DDPs are being formulated following priorities based on known water quality impacts on waterways and resource management considerations. DDPs are based on resource assessments that have been undertaken based on a standard (benchmark) period of years.

Resource assessments have now been completed for all 20 existing main drain catchments, with Mosquito Depression the final one completed in 2002. Those completed cover Murray Valley drains 3, 5, 6, 13, 18, 19 and 20, Shepparton drains 2 to 16, Deakin, Warrigal Creek (Wyuna, Coram, Tongala), Rodney-Ardmona and Lockington-Bamawm. Drain Diversion Plans have been completed for all but Mosquito.

The GB WQS recognises that drain diversion is not the sole activity to achieving the goals of the Strategy. It is recognised that both drain diversion and on farm activities such as installation of reuse systems and implementation of best practices will lead to reduced drain flows and nutrient export.

### **Metering of diversion pumps**

The installation of drainage diversion meters is an integral part of the implementation of DMPs. In the 2002/03 financial year this program contributed to the purchase of numerous flow meters for both the Central Goulburn and Murray Valley. Management of drainage diversion also includes calibration of indirect meters, reading meters and liaison with diverters.



*Flow meter on pump discharge line*

Water Quality

# River Health & Water Quality Annual Report 2002-2003

## Water Quality

Drainage Officers in each of the Irrigation Areas conduct regular field inspections and monitoring of drainage systems and diversion pump installations.

### Investigating the quality of drainage water

#### Pathogens

Follow up work scheduled for 2002/03 targeting MV drains 6 and 13 was deferred due to a lack of water in the drains to enable sampling.

#### Low level rock weirs

Low level rock weirs are arrangements of rocks across the drain profile that enhance opportunities for drainage diversion and improve sediment trapping to improve the water quality of receiving waterways. A weir was constructed on Shepparton Drain 4.

#### Potential drain nutrient discharges

Dairy farm effluent discharge management process has been reviewed with relevant agencies (GMW, EPA, DPI, GBCMA) and changes recommended. Isolated breaches of G-MW's environmental guidelines have been followed up with the discharger, with intervention from third parties (eg. EPA) when required.

#### Drain Monitoring

Monitoring of drain flows and water quality parameters at 14 sites continued with funding from the SIRLWSMP and G-MW. Analysis of the 2001/02 data showed that;

- Murray Valley drain 6 discharged the largest load of TP, TN and suspended sediment (in previous years Deakin drain has had the highest loads);

- Murray Valley drain 6 continues to have the highest nutrient generation rate (kg/ha/yr);

- Most drain generation rates were substantially reduced;

- Overall, nutrient export loads have decreased since 2000/01;

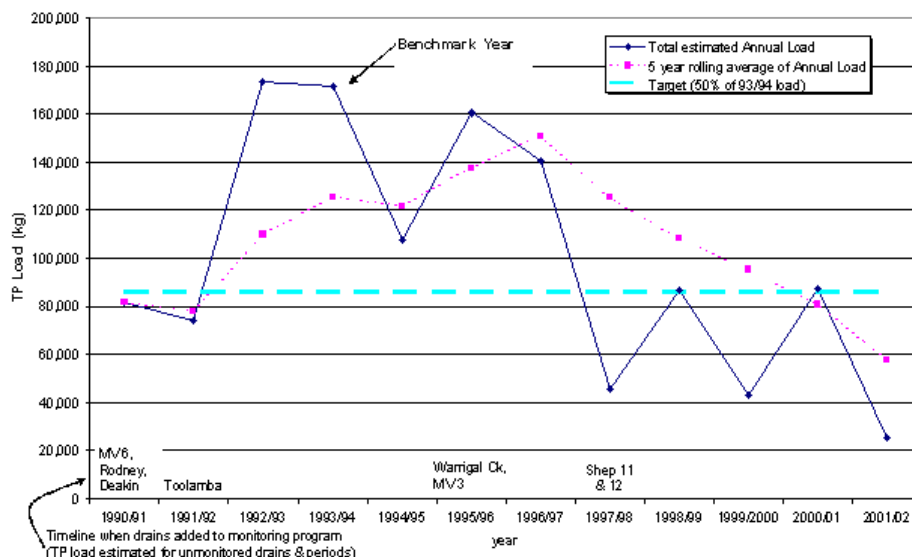
- The 5-year rolling average TP load continued to show substantial decline and is now below the target value for reduction of nutrient loads from irrigation drains (see figure). Based on preliminary estimates, the inclusion of 2002/03 loads will see a further substantial decline.

Two new drain flow monitoring installations were completed (MV drain 13 and Shepparton drain 4) and another site was relocated downstream to improve accuracy (Shepparton drain 11). These provide real time access to flow data, which will improve day to day management of diverters, and increase our knowledge of water availability, patterns, trends, etc.

From the perspective of nutrient generation the trend continues in the right direction. However a wet year, or series of wet years, could see the trend rising again and emphasises the need to continue with the irrigation drain nutrient management programs.

Quarterly reporting of phosphorus loads exported to rivers via drains was initiated during 2002/03 and compared to the Water Quality Strategy targets. Exports were very low due to the dry conditions and low water allocations.

Estimated TP Loads from all Irrigation Drains in Goulburn-Broken catchment



Estimated TP loads from irrigation drains





# River Health & Water Quality Annual Report 2002-2003

## Increasing Water Use Efficiency through strategic water harvesting (Drainage Nutrient Removal Incentive Scheme)

The Drainage Nutrient Removal Incentive Scheme was introduced in April of 1998 to encourage landowners to construct strategically located storages to collect and use regional high flow drainage water as a means of removing nutrients from drains. The water and nutrients collected can be used productively, and are not lost to areas of the catchment where they may cause problems such as blue green algae blooms. These storages can increase the volume of water available to the irrigator and reduce the amount of nutrient rich water entering our catchments.

**Long term** targets of the project are to:

1. Increase the amount of nutrient-rich water diverted from regional drains and used productively on farm by 25%.
2. Capture 10,000 ML of water savings from regional and farm drainage to be used for maximum public benefit.
3. Improve irrigation management across 50% of the newly drained SIR in the next 5 years.
4. Contribute significantly to the Goulburn Broken Water Quality Strategy goal of reducing phosphorous and nitrogen drain loads by 50% by 2016 through decreasing the amount of poor quality (high nutrient/salt) water leaving the catchment and flowing into environmentally sensitive waterways.

**Short term** project targets are to:

1. Construct 6 storages per year providing a storage capacity of approximately 3,600 ML.
2. Divert 7,200 ML of water from the regional drainage system to prevent flows into the River Murray and improve water use efficiency on 4,500 ha of irrigated land.
3. Retain 3.5 tonne of phosphorous and 14.0 tonne of nitrogen within the catchment.
4. Improve water use efficiency on individual properties, save irrigation water for other uses such as environmental flows and protect the catchment from poor quality drainage water

For the past couple of years the SIR has suffered dry conditions with the low rainfall and irrigation water allocations resulting in a reduced occurrence of high flow conditions in drains.

However, even with such conditions, 6 storages were constructed this year which was a record number of storages constructed in one year through the incentive scheme.

The largest storage built through the scheme was constructed this year. This was a 500 ML storage at Wunghnu which is also incorporating an aquaculture enterprise within the storage.

The other storages were built in Bearii (400 ML and a 250 ML storage), Invergordon (150 ML), Numurkah (60ML) and at Tallygaroopna (60ML).

Since the beginning of the scheme the total number of high flow storages built with assistance from the scheme is 21 with a storage capacity of 4,043 ML.

During July 2003, all landholders with systems constructed were contacted to determine the volumes of water collected and used for irrigation. Samples of the water were taken and tested for salinity and phosphorous levels.

Water Service Area	ML Capacity Constructed	Volume Diverted (ML)	Phosphorous Saved (kg)	Salt Saved (kg)
Central Goulburn	1,658	945	630	123
Murray Valley	1115	1130	581	133.8
City of Greater Shepparton	1120	1310	580	118.1
Rochester (GBCMA Section)	150	0	0	0
<b>Total</b>	<b>4043</b>	<b>3385</b>	<b>1791</b>	<b>375</b>

# River Health & Water Quality Annual Report 2002-2003

## Water Quality

Due to a very dry year and low rainfall the volume of water diverted was quite low compared to previous years but relatively the same as 2001/2002.

Only 16 out of 21 storages were able to divert and store water in the storage during 2002/2003. The majority of the storages have water stored in them going into the 2003/2004 season due to the rain that fell during July 2003.

With a lower volume of water stored, the phosphorous and salt loads saved are down on previous years totals.

### Other Works Carried out by the Project Team:

- Project staff were involved in the organisation and running of the DPI site at Stanhope field days informing landowners of incentives available in the SIR.

- Project staff undertook a short presentation to Murray irrigation staff on our programs/incentives.

- Project staff drafted an abstract to be presented at ANCID conference to be held in October 2003.

Despite the drought and resulting conditions ie, low water allocations, low rainfall, construction of storages in 2002/2003 was a record year.



*A 400ML storage built 2001/2002 at Bearii.*

## GBCMA Nutrient Project (DPI)

The last twelve months has seen the Goulburn Broken Nutrient/Effluent project achieve many milestones assisting 140 dairy farmers across the catchment, providing training to 120 service providers and industry representatives and strengthening its relationship with several key stakeholders.

Nutrient monitoring on the Cross and Read properties (North Murchison/Toolamba sub catchment study), concluded at the end of September 2002, followed by a collaboration of data and progression towards

a more detailed report submitted to the Implementation Committee in February 2003. The project team has also utilised the results and extensive data collected from the North Murchison/Toolamba project to develop a nutrient management manual for dairy farmers highlighting best management practices. The manual (currently in draft format for technical review) will be published and distributed to dairy farmers within the Goulburn Broken Catchment in the next 6 months and with an aim to progress towards nutrient best management practices, and ultimately improve water quality within the GBCMA.

With the conclusion of monitoring on the above properties a new focus for the Goulburn Broken Nutrients/Effluent project was needed.

Despite the drought conditions, effluent and nutrient management on farm continues to be a priority for farmers and communities within the catchment. This was evident in the development of Local Area Plans from the Nathalia and Invergordon planning groups where effluent management was highlighted as a priority in both plans.

After discussions at PISC the redirection of the nutrient project focused on response to drought conditions with the nutrient team assisting farmers manage on farm nutrient hotspots from an increased level of development for intensive feeding areas. Members of the nutrient team have also met with Mawson Quarry's to develop a feedpad cost analysis due to the increasing numbers of intensive feeding areas throughout the catchment.

The project has also redirected resources into developing project strategies, identifying extension deliverable's and industry partnerships necessary to reduce nutrient loads to waterways and drainage within the Goulburn Broken Catchment, and a particular focus on Murray Valley Drain 13 (MV D13). The nutrient team has met with and secured support from the Nathalia Local Area Planning Group to target MV D13. DPI has also developed a joint approach on this focus drainage area with G-MW in order to share resources and strategies (media, data analysis and extension approaches) in targeting MV D13 for nutrient management and reduction.

These partnerships with other key agencies and community groups will be fundamental when the nutrient team commences extension activities in the MV D13 catchment later this year.

# River Health & Water Quality Annual Report 2002-2003

Further, a significant achievement over the last twelve months has been the development of a joint organisational framework between Department of Primary Industries (DPI) and Goulburn Murray Water (G-MW) in relation to dealing with non compliant dairy effluent discharges into drains. The new relationship will see a more proactive approach by DPI initiating farmer contact and the completion of follow up inquiries to ensure compliance with legislation. The new framework also involves an improved working relationship with the EPA to manage non compliant landowners and ensure a quick response

The recent, and continued, strengthening of links and partnerships with other agencies, community groups and stakeholders is necessary to improve water quality in the GBCMA.

The nutrient team have also built partnerships with the Goulburn Murray Landcare Network for encouragement and development of community drain monitoring groups.

A negative impact of the poor season resulted in the nutrient team restricting farmer contact due to financial constraints and the need for dairy farms to focus spending on feed and water resources. Overall one to one consultancies on farm to design and implement effluent systems were down 50%. The significant increase in feedpads and intensive feeding areas also complicated the management of existing effluent systems as farmers increased manure loadings to ponds. The concentrations of nutrient on intensive feeding areas will also require an education program for farmers to ensure they productively manage these areas in the future.

The coming year will also be a challenge with the slowing of momentum in the implementation of dairy effluent systems until farmers are able to recovery financially.



*Nutrient Extension Officer Scott McDonald talking to a group of farmers in Toolamba about best management practices for effluent and feedpad management*

## Community Monitoring Networks

Networks of community water monitors have been established along many of the major waterways in our catchment. These groups regularly monitor a number of water quality parameters at over 250 sites across the region.

A revamped "Drainwatch" project is operating in the large irrigation areas from Cobram to Kyabram. "Drainwatch" encourages farmers to manage their fertilizing and irrigation activities to minimize the export of nutrients such as phosphorus from their farms. Waterwatch monitoring of drain water continued, although dry conditions caused low drain flows that restricted sampling opportunities.

## Water Week

The major theme for National Water Week in 2002 was stormwater, which coincided with the appointment of the catchment Stormwater Project Officer. Over 3,900 primary school students had the opportunity to learn more about stormwater issues by attending a pantomime developed by Waterwatch.

The pantomime called "Follow the Yellow Fish Road", educated students and teachers in ways to reduce the amount of pollution ending up in stormwater drains. Following the pantomime, grades 5 and 6 students from each school worked with council employees to stencil drains in each town with the stormwater message *The Drain is Just for Rain*.

## Water Quality Monitoring Project

The GBCMA are overseeing a review of existing water quality monitoring sites throughout the catchment. The aim of the project is to review the purpose, locality, and frequency of existing monitoring to ensure the aims of the WQS can be monitored and met. If the aims of the WQS can not be monitored by the existing water quality monitoring in the catchment suggested needs will be recommended. The information from this review can also be used as a tool for prioritising implementation and monitoring of water quality activities throughout the Goulburn Broken catchment.

This project will provide good information for the rationalisation of water quality monitoring throughout the Goulburn Broken catchment and will work in conjunction with DSE Melbourne who are looking at reviewing all water quality monitoring partnerships statewide.

Water  
Quality



# River Health & Water Quality Annual Report 2002-2003

## Water Quality



### Waterwatch Activities – 2002/2003

Waterwatch has now been operating in the Goulburn Broken Catchment for 10 years. The Waterwatch Program assists schools and community groups to monitor water quality in their area. The Project employs a Catchment Coordinator, one full time and three part time regional coordinators including a "Drainwatch" Project Officer.

It combines a range of activities to promote awareness of catchment water quality issues with extensive data collection and interpretation.

In 2002/2003:

- Over 250 sites have been monitored at least once by Waterwatch monitors. Many of these sites are monitored weekly;
- Waterwatch facilitators presented information on water issues to over 6,500 students.

Waterwatch is, more than ever, being viewed as a method to monitor improvements in local water quality following onground actions by the community.

### Catchment Capers

"Catchment Capers" is an integrated catchment wide collaborative project directed at upper primary and lower secondary students. It is based on the Waterwatch Program, but contains additional activities that deal with water, land and catchment flora and fauna issues. The content of the program has been designed primarily for the Goulburn Broken catchment.

Thirty schools from all parts of our region are taking part in Catchment Capers in 2003. The students monitor a waterbody near the school on a monthly basis and participate in a series of activities that complement their monitoring program. The following website has been developed for participating schools: [www.gvwater.vic.gov.au/catchmentcapers](http://www.gvwater.vic.gov.au/catchmentcapers)

A "State of the Catchment" symposium for Catchment Capers schools was held in 2002 at which students presented their findings to a gathering of participating schools.

Catchment Capers 2003 was launched by Deputy Premier Thwaites on the Goulburn River in Shepparton in March 2003.

### Schools

Waterwatch Coordinators, with help from Landcare and agency facilitators, conducted a special salinity awareness day for primary students called "A Matter of Salt". Over 150 students from nine schools attended the successful day at Dookie College.



*Minister Thwaites Launches Catchment Capers*



*Testing Turbidity in the Goulburn River*



*Testing for Salinity at "A Matter of Salt" Day*

# River Health & Water Quality Annual Report 2002-2003

## Works and Activities on Designated Waterways

## Works on Waterways

The Goulburn Broken CMA is the responsible Authority for determining and issuing permits for works and activities on waterways since March 2001 under By Law No 1 pertaining to Section 160, 161 and 219 of the *Water Act, 1989*. The aim of the CMA's role in issuing permits for such works or activities is to minimise degradation of waterway flora, fauna habitat and overall waterway health and to help ensure long term stability of waterways and any permitted works or activities.

An example of works requiring permits include:

Bridges, Culverts, Fords, Pipe/cable crossings, Drainage outlets, Extraction activities, Bed and bank stabilisation, Access tracks, Vegetation management and other works.

In 2002-03, 127 applications were received catchment wide with 63 applications being approved. The majority of applications received were for either private bridge and culvert works or for the installation of telecommunications cables or upgrading of wastewater treatment facilities. Other works that have been issued works permits include sand extraction, fords, outlet structures, access tracks and bank stabilisation works.

An information brochure was developed detailing requirements for Works on Waterways. The brochure was distributed within the local newspapers and local municipalities.

Numbers of unauthorised works and activities are also frequently reported to the CMA or picked up by CMA field staff. These issues are dealt with in an appropriate manner depending on the type and standard of unauthorised works.

### Examples of Works



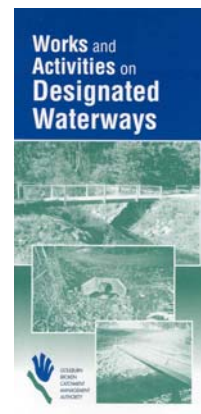
*Extraction site on Hughes Creek*



*Site for bank stabilisation works - Stevenson River*



*Location for bridge replacement - Prices Creek, Willowmavin*



*Works on Waterways information brochure*

# River Health & Water Quality Annual Report 2002-2003

## Floodplain Management / OH&S

### Floodplain Management

From 1 January 1998, the Goulburn Broken CMA has carried out floodplain management functions under section 2002 of the Water Act, 1989.

Guy Tierney is the Floodplain Manager for the Goulburn Broken CMA and manages floodplain management activities across the Goulburn, Broken and part of the Murray River basins.

The CMA is responsible for statutory floodplain management advice under section 55 of the Planning and Environment Act, 1987. Under the Water Act, 1989 the CMA provides advice to the public when requested. The CMA is frequently approached for advice from the community, consultants and developers before formal applications are made to municipalities.

About 1,000 referrals including requests for advice were processed this financial year with the majority from the SIR. Referrals included the assessment of subdivisions, whole farm plans, dwellings, extensions and general flood information.

### Occupational Health & Safety

This year the new Occupational Health & Safety Manual was endorsed by the Goulburn Broken CMA Board. The aim of the manual is to provide all staff of the Authority information on health and safety. The Goulburn Broken CMA recognises its moral and legal responsibility to provide a safe and healthy work environment for employees, contractors, customers and visitors. This commitment extends to ensuring that the organisations operations do not place the local community at risk of injury, illness or property damage.

OH&S committee members

Justin Sheed – Manager

Richard Warburton – Acting Manager, Health & Safety Representative

Tom O'Dwyer - Team Leader

Fleur Jaques - employee representative

Marion Howell - employee representative

Keith Yates - Health & Safety Representative

Poppe Davis - employee representative

Geoff Brennan - Health & Safety Representative

Gordon O'Brien (past member)



# River Health & Water Quality Annual Report 2002-2003

## Catchment Summary of River Health Works 2002-03

Several new initiatives were delivered as part of the river health program to reduce sediment loads and nutrients entering rivers: stabilise bed and bank erosion: control stock access: protect and enhance indigenous native riparian vegetation; and manage exotic vegetation.

Most work sites include stock access controls (fencing and alternative stock watering) and revegetation works undertaken through the Waterway Grants scheme. The scheme engages landowners in protecting the works from stock damage and delivers long term stability, water quality and aquatic habitat benefits. This year 213 grants were issued to landowners agreeing to fence out 193.15 km of waterway and plant 80,680 seedlings.

Landowners will be assisted to install off-stream stock dams and/or troughs for stock watering. Subject to funds being available, the works will be undertaken over the coming year.

This year through some 68km of riparian fencing, 51 alternative watering sites installed and 39,000 indigenous seedlings of local provenance were planted – a record for this type of work in this catchment.

Of those fences, 64% had minimum buffer widths of between 10-20 metres, 22 per cent between 20-40 metres, and some 14% with buffer widths exceeding 40 metres from the bank of the waterway.

The year 2002/03 saw the establishment of three Waterway Working Groups. Although only new and settling to its role they have already provided a broad two way communication to the community on this important program.

Major initiatives include:

-Fish Habitat Enhancement Project along the Goulburn River, installation of Luncker structures on the Acheron River. Undertaken as a cooperative project with the MaFRI at Snobs Creek, this is the first application of this technique in Australia.

Willow expert, Kurt Cremer conducted an in-house workshop on Willows. This provided the impetus for an extensive willow-poisoning program targeting invasive willow species such as the Wild Pussy and Black Willow, species that primarily spread by seed.

Detailed river health plans were completed for several priority streams including the Lower Howqua River, Ford/Doolams Creek, Home Creek/Middle Creek, Yea River, Sunday Creek and Delatite River. These plans will provide the basis and tools for implementing accelerated strategic works programs as funding becomes available under the NAP.

Additional work was undertaken in Seven Creeks to extend the available habitat for the endangered (Bluenose) Trout Cod



Fishway, Melville Street Numurkah



Gilmores Bridge (Goulburn River) Habitat Works

## Works Summary

## Funding Summary 2002-2003

Programs	Mid Goulburn Broken IC Income 2002-2003	Shepparton Irrigation Region IC Income 2002-2003	Upper Goulburn IC Income 2002-2003	Catchment Wide Income 2002-2003
<b>State</b>	\$742,500	\$1,425,418	\$708,500	\$170,000
<b>Natural Heritage Trust</b>	\$100,000	\$100,000	\$113,000	\$70,125
<b>National Action Plan</b>	\$448,000	\$450,000	\$601,000	
<b>Living Murray</b>		\$66,364		
<b>Total</b>	<b>\$1,290,500</b>	<b>\$2,041,782</b>	<b>\$3,332,282</b>	<b>\$240,125</b>

Funding for the implementation of waterway health programs is provided by local (in-kind), State and Federal Sources.

# River Health & Water Quality Annual Report 2002-2003

## Upper Goulburn IC Region

# River Health & Water Quality Annual Report 2002-2003

## Delatite River – River Rock Quarry Rehabilitation

Sinclair Knight Mertz was commissioned in the year 2002 to carry out a study on a section of the Delatite River known as the River Rock Quarry. The quarry is managed by Bells Earthmoving. The quarry is located on the property known as Gundamane.

Tim is currently using the land for Beef/Grazing. Tim is very keen to have the GBCMA take an active interest in rehabilitation works in conjunction with himself, quarry managers and future fish and marine science under the guidance of Paul Brown.

The study referred to eight zones of concern in the river. Starting with zone one downstream and concluding with zone eight upstream. After many consultations zone eight was considered and selected to start the primary rehabilitation works.

### Rehabilitation Recommendations



(The rehabilitation options outlined below fall into four categories)

- Channel Forming (river training & reinforcement)
- Channel Diversification
- Vegetation Management
- Fencing

### Benefits of Works

- Enhancement of fish habitat
- Encouragement for fish migration
- Restoration of native vegetation to area
- Creation of bed diversity
- Minimization of rising water temperatures through summer
- Minimize stock access to the riparian zone
- Control of lateral erosion

### Works allocations

- A plan was devised and agreed to by all parties concerned.
- Paul Brown supplied a team to electro fish to the zone at no cost.
- GBCMA manage the construction zone and have valuable input into the structural design.

- GBCMA financially responsible for rock cartage to the site
- Tim Robert Thompson financially responsible for payment of rock
- Bells Earthmoving, supplied all machinery required for the construction works
- Fencing and revegetation was made possible via a grant from Future Fish
- Erection of the fenced area to be completed by Tim Robert Thompson's farm manger

### Plans & Actions

Designs were drawn up for four rock structures to be built in stream to narrow and deepen summer flows. Bed seeding was also added to the design to create fish habitat and channel diversity. Willow and other non native species of vegetation were eradicated by spraying and stem injection.

Approximately 800 tonne of rock has been carted from Mansfield to the site, where the excavator logged 68 hours of machinery hire to complete the first stage of construction.

Currently fencing is being erected ready for the revegetation to begin

The total costing of this project will be approximately \$25,000.00 on completion of the fencing and revegetation.



### Outcome

All parties that have had valuable input have worked toward the same goals in this project. – To repair a River that was under stress – The cost sharing exercise has worked out very evenly (although - GBCMA has agreed to cover any out of pocket expenses incurred by either party).

We will look forward to the continuing repairs in the zones further downstream that have been identified in the original study. This river is like all other rivers and is of utmost importance to all users.

## Case Study



# River Health & Water Quality Annual Report 2002-2003

## Case Study

## Glen Creek Project

A Field inspection was undertaken with the landowners along whole reach of Glen Creek.

The following issues were identified within the stream;

- bed erosion
- headward erosion
- seeding willow infestation
- damage from stock access.

Strategies recommended for the above issues were;

- to construct a series of rock chute to control erosion, and to develop a willow management program and landowner support for fencing & revegetation.

The outcome of the works are reduced sedimentation, control instability, stop the spread of seeding willows throughout the reach, improve water quality and restoration of riparian flora / fauna.

The works have been funded by GBCMA waterway health program and is still ongoing with 4 rock chutes constructed at a cost of \$41,201 and 3km of willow management works completed at a cost of \$13,500.

Upper Goulburn Region



Rock chute constructed on Geoff Alford property April 2003



Willow control works on John Pennington property May 2003 this area will be fence and revegetated

## Summary Completed Works Inspected in 2002-03

**Total no. of grants involved 141**

<b>Fencing</b>	
Length of Fencing (kms)	128.55
<b>Off Stream Water</b>	
Total No. of OSW projects	46
No of projects (Dams)	22
Total No. of Dams	34
No. of Projects (Reticulated)	26
Total No. of troughs	48
<b>Revegetation</b>	
Area Protected (remnant) - Ha	38.65
Area Protected & enhanced -Ha	43.2
Area Revegetated - Ha	15
Total Area - Ha	96.85
Total No. of plants (overstorey & understorey)	26990
Native grasses	5800

<b>Structural Works &amp; Activities</b>	
Fish ladders/ways	0
Bed and bank stabilisation	4.5
Grade control sites	2.1
Riparian frontages woody weed control	17
Riverine/aquatic weed control	0

## Fencing & Revegetation Programs



# River Health & Water Quality Annual Report 2002-2003

## Upper Goulburn Waterway Working Group

Since its conception in December 2001 the Upper Goulburn Waterways Working Group has held nine meetings across the Upper Goulburn Catchment addressing many issues important to the local communities.

Local community groups have been invited to meetings to discuss waterway management issues. This gives them the opportunity to raise local issues to the WWG forum for discussion and resolution. This practice will continue as the WWG has found this a very valuable means of communication with the local community and community groups. Groups that have attended in the past include:

- Strath Creek Landcare Group
- Taggerty VFF representatives
- Yea VFF representatives
- Yea River Landcare Group
- Waterwatch participants
- Hughes Creek Landcare Group
- Hughes Creek local landowners
- Native Fish Australia

On-ground actions to come out of the Upper Goulburn Waterway Working Group to date include:

- Bungle Boorie Camping Ground – organised and facilitated a meeting to discuss development of a management plan
- Development of the Platypus Brochure in conjunction with the Australian Platypus Conservancy
- Broad engagement of the community on general waterway issues



**Committee Members 2002-03**

### **Community Members**

Mike Dalmau	Alexandra (Chairperson)
Peter Howarth	Mansfield
George Vasey	Larnoo
Susan Sleigh	Euroa
David Wakefield	Strath Creek

### **Agency Members**

Andrew Strange	Goulburn Murray Water
John Cooper	Fisheries
Kerry Goschnick	Department of Primary Industries
Rod Drew	Field & Game Australia Inc.

Waterway Working Group

Upper Goulburn Region

## Mid Goulburn Broken IC Region



# River Health & Water Quality Annual Report 2002-2003

## McLaughlins Weir Project

McLaughlin's Weir is located at Waggarandall on the Broken Creek. Its purpose was to retain water levels for stock and domestic diversions by Goulburn Murray Water for local landowners.

While maintaining water levels, the upstream reach had become a substantial wetlands and wildlife refuge, but the weir was also a barrier for any native fish migration.



The weir itself was in a dilapidated state, being constructed of timber several years ago. Maintenance of the structure was a constant job for GMW, while only being band aid repairs.



Both GMW and CMA authorities agreed that the weir should stay in some form to protect the upstream wetlands and reserve. We then decided that a rock constructed fish way be built in place of the old wooden structure, being beneficial for GMW's water diversions and CMA's enhancement and health of Broken Creek area.

Rock Chute –Fishway commenced on a cost share basis with GMW. They also assisted in works on site, providing a pad stop which by-passed flows of the creek around our construction site, making the area easier and safer to work on, plus it kept vital water flowing downstream so as not to endanger any other aquatic fauna which rely heavily on these basic flows. The chute itself took approximately four days to construct, which included the use of a excavator, several hundred tonne of rock and assistance of another well experienced CMA worker, Max Colliver and GMW employee Brad Chessels.

## Strathbogie Bogs & Freshwater Ecology Field Day

There were around 50 participants at this field day which was held on a private property at a public water frontage reserve.

The day was jointly organised by GBCMA, DNRE (ARI) and Trust for Nature (TFN).

The aims of the day were:

- To reinforce the importance of the Strathbogie Bogs both for their unique vegetation communities (and the animals that rely on the vegetation) and for their hydrological role in filtering and slowly releasing water at the top of the catchment. It was an important source of information for many of the new landholders on the Strathbogie Tableland.
- To inform landholders of the grants available to assist with protection of remnant and riparian vegetation.



- To introduce landholders to the complex interactions between riparian vegetation, macroinvertebrates and fish populations and the importance of protecting and maintaining healthy riparian vegetation.

- To show landholders, through demonstration (electrofishing and bug sampling), that their local streams still support fish populations that are worth protecting from threats such as grazing of riparian zones.



- To allow participants to see and walk over a property where perched bog and stream vegetation has been protected permanently under a conservation covenant (through Trust For Nature)
- To meet the landholder and understand how conservation has been integrated into their property management.

## Case Study

### Mid Goulburn Broken Region

# River Health & Water Quality Annual Report 2002-2003

## Summary Completed Works Inspected in 2002-03

Fencing &  
Revegetation  
Programs

**Inspections of Completed Works 38**

<b>Fencing</b>	
Length of Fencing (kms)	26.4

<b>Off Stream Water</b>	
Total No. of OSW projects	16
No of projects (Dams)	7
Total No. of Dams	13
No. of Projects (Reticulated)	9
Total No. of troughs	16

<b>Revegetation</b>	
Area Protected (remnant) - Ha	13.99
Area Protected & enhanced -Ha	43.76
Area Revegetated - Ha	8
Total Area - Ha	65.76
Total No. of plants (overstorey & understorey)	30090
Native grasses	7800

<b>Structural Works &amp; Activities</b>	
Fish ladders/ways	1
Bed and bank stabilisation	1.3
Grade control sites	8.5
Riparian frontages woody weed control	30
Riverine/aquatic weed control	0

Mid Goulburn Broken Region

# River Health & Water Quality Annual Report 2002-2003

## Mid Goulburn Broken Waterway Working Group

Since its conception in December 2001 the Mid Goulburn Waterway Working Group has held eight meetings across the catchments addressing many issues important to the local communities

Feature issues covered – Guest Speakers:

- Crown Water Frontages – community access to waterways
- Farm Dams Legislation
- Priority Setting for Waterway Grants Program
- Lake Mokoan Study
- Biodiversity Action Planning
- Casey's Weir Majors Creek Rural Water Authority – Proposed Pipeline
- Box-Ironbark Investigation – Broken Boosey Reserve System

Common Topics

- Works Program Up Date
- Current Funding levels for individual catchments
- Community member reports

Recently where meetings have been held in strategic locations around the catchment, local community groups that may have issues with waterway management are also invited to the meetings to give the community a chance to raise issues to the forum to discuss. Examples of groups that have attended are:

- Landcare collaborative coordinators
- Warrenbayne/Boho LC
- Swanpool LC
- Molyullah/Tatong LC
- Upper Broken LC
- Strathbogie LC
- Granite Creeks LC Project
- Strathbogie Angling Club

On-ground actions to come out of the Mid Goulburn Waterway Working Group to date:

- Construction of McLaughlins Weir Fish ladder
- Sponsoring of contractor training for environmental works on waterways
- Development of Strathbogie common as an environmental/recreation asset.

Over the next twelve months the three groups from the individual IC areas will be getting together to assess the validity of the groups and any changes to structure required. Meetings will continue to be held in different locations and local community groups invited to attend. Throughout the year the group will attempt to inform the community on CMA waterway issues, works programs, and attempt to address community concerns.

### Committee Members 2002-03

#### **Community Members**

Sally Simson	Shepparton East (Chairperson)
Kathy Beattie	St. James
Arthur Frost	Euroa
Ken Whan	Benalla
David Ritchie	Mansfield
Kevin Mitchell	Devenish

#### **Agency Members**

Peter Burns	Department of Sustainability & Environment
Steve McMonigle	Department of Sustainability & Environment
Chris Meek	Goulburn Murray Water



Waterway  
Working  
Group

Mid Goulburn Broken Region



## Shepparton Irrigation Region IC

# River Health & Water Quality Annual Report 2002-2003

## Murray Corridor Floodplain Rehabilitation Project Yarrowonga to Tocumwal

### Case Study

Preparatory work for the project involved field assessment of all recognisable and promising wetlands, topographic survey, hydrographic modelling of various flow scenarios and comparison of each scenario against natural and current conditions. This led to the identification of on-ground works to improve water management, and delivery to the target wetlands. Social feasibility, including indigenous involvement, then followed and led to the preparation of the Proposed Works Program.

The wetlands in the reach between Yarrowonga and Tocumwal generally retain some form of natural seasonality in flood timing (from the Ovens River Catchment), though experience a reduction in flood frequency and duration due to the dams on the Murray and Mitta Mitta Rivers. For these wetlands, more passive methods of rectifying the flood regime have been developed such as reductions in sill levels (commence-to-flow thresholds) of selected flow alignments.

The management outcomes from reinstating a more natural flooding regime to wetlands within the study area include:

- Re-creating a wetland type that was once common but now rare within the regulated floodplain;
- Re-establishment of submerged macrophyte beds;
- Expansion of emergent microphyte stands throughout the wetlands;
- Development of a habitat for a range of indigenous flora and fauna that specifically require a natural hydrological regime in the frequent (annual) return period end of the scale;
- Development of ecological (physical, chemical and biological) processes that may benefit the riverine system following seasonal connection with the river;
- Restoration of flow passage for native fish migration.

The bulk of funding for the construction of approved works is already available, having been provided by the Victorian Government through the Rural Water Reform Program and some targeted works funded via the Murray-Darling Basin Commission. Funding for the 2003/04 program was provided through a MDBC Rivers Program, Environmental Flows Investigations.

A 5-year monitoring program is also to be established, in conjunction with the Cooperative Research Centre for Freshwater Ecology (via Latrobe University) and other programs as appropriate. Ecological monitoring is to begin in 2003/04, with both pre and post-works monitoring to be undertaken.

The initial construction program involved basic on-ground earth works prior to 30 June 2003, with more complicated regulating structures to be designed and constructed within the following financial year. The GBCMA field works activities involved earthworks excavation, rock beaching, habitat restoration, revegetation, and restoration of public access facilities such as roads, bridges and fencing. Aboriginal site monitors were engaged to supervise all earthworks excavations. It was satisfying to see many of the sites perform as designed in the floods during July 2003.

Location of work sites in Yarrowonga to Tocumwal reach;

Bruce's Bend: Little Reedy Lagoon & Big Reedy Lagoon.

Cobrawonga Island: Duck Hole

Cobram Regional Park: Horseshoe Lagoon, Schier's Lagoon & Wetland 117.

Quinn's Island.



*This redundant weir on Schiers Lagoon has been removed*



*This culvert was a barrier to fish movement into Horseshoe Lagoon near Cobram, and has been removed.*

## Erosion Control - Bank Stabilisation



Bank restoration works undertaken to 4 selected sites down stream of the Goulburn Valley Highway on the **Seven Creeks**. The works were followed on from last years works program with badly eroded banks stabilised using timber pile fields as alignment training.



Woody Weed Removal & Bank Stabilisation works at Fairley Downs on the Goulburn River. The first activity was to remove all the non-native vegetation from the banks of the waterway. The bank stabilisation works involved the driving of timber pile groynes in the bank in strategic locations.

## Erosion Control - Bed Stabilisation



Works along the Nine Mile Creek down stream of Wunghnu was completed following the completion of the irrigation season. The works consisted of the construction of seven Grade control structures along the reach from Wunghnu to the Broken Creek.



Works comprised of the construction of two Grade Control Structures to stabilise the inlet/outlet channel from the Gemmills Swamp wetland to the Goulburn River.

## Fish Passage



The works to the Shepparton Weir on the Goulburn River was undertaken to provide fish passage. The works involved the placement of approx. 250 tonne of large rock to create a pool and riffle effect across the structure. Improvements to the boat ramp are pending funds from State boating Council.



## Fish Passage

Structural Works Program



Works completed on the Castle Creek upstream of the Ross Road Bridge at Arcadia. This works was undertaken to provide fish passage to an existing weir in the creek. Works to stabilise two sections of eroding bank upstream of the structure was also undertaken.



Construction works at the East Goulburn Main Channel syphon on the Seven Creeks site involved a structure that was built downstream of the exposed syphon and when completed has flooded the exposed syphon pipe and allowed for fish passage.

Shepparton Irrigation Region



Remodelling works to eight existing grade control structures down stream of the Goulburn Valley Highway on the Seven Creeks to allow improved fish passage.



Work to high profile wetland along the Murray River from Yarrawonga to Tocumwal was completed with the aim of reinstating a more natural flooding regime to the selected wetlands

# River Health & Water Quality Annual Report 2002-2003

## Summary Completed Works Inspected in 2002-03

Fencing & Revegetation Programs

**Total No. of Grants involved 34**

<b>Fencing</b>	
Length of Fencing (kms)	38.20
<b>Off Stream Water</b>	
Total No. of OSW projects	13
Total No of projects (dams)	4
Total No of dams	5
Total No of Projects (troughs)	9
Total No of Troughs	48
<b>Revegetation</b>	
Area Protected (remnant) - Ha	111
Area Protected & enhanced -Ha	15
Area Revegetated - Ha	0
Total Area - Ha	126
Total No. of plants (overstorey & understorey)	8000
No. of Native grasses	2000

<b>Structural Works &amp; Activities</b>	
Alignment Training	6
Fishway	33
Rock Beaching	4
Grade Control Structure	20
Exotic Weed Control	14
Earthworks	26

### Boating Safety (Facilities) Grants Program

**Location:** Yambuna Bridge, Lower Goulburn River

**Works:** Construct ramp, parking area & signage

**Grant amount:** \$10,000

**Total Cost** \$12,500

**Background:** Before the current Road Bridge was built at this site there was a Punt for stock and light vehicles to cross the river. The approaches to the punt were excavated into the riverbank and still exist as a rough access to the river that is used by the public for boat launching of small crafts. Sites such as this have the potential to be the cause of erosion and littering (with water quality impacts) if not properly constructed, maintained and regulated. This site has regional significance for the recreational fishing community, and for the Emergency Services who require access to the Goulburn River during emergency situations.



*Goulburn River Bank at site of old punt before the works*



*Reconstructed rock and stabilised rock filled launch ramp*

# River Health & Water Quality Annual Report 2002-2003

## Shepparton Irrigation Region Waterway Working Group

The Shepparton Irrigation Region Waterway Working Group has held six meetings across the Shepparton Irrigation Region addressing many locally important issues. Some of the key issues discussed in the working group were;

**Willow Strategy** - Details of the occurrence of willows in the SIR were contrasted with the incidence of willows in the middle and upper catchments where seeding willows are a particular threat to waterway health. The case for continuing to work on willow management and eradication programs in the SIR waterways was made and the potential threat from willows used as windbreaks on irrigation farms was considered. The catchment wide strategy will help prioritise projects across the catchment and identify high risk sites as well as sites where value for money returns are high in terms of river health protected or restored.

**River Murray Wetlands Project** - Details of the Murray River Wetlands restoration projects were of great interest to members. Works are being carried out to increase the frequency of filling on wetlands now adversely affected by river regulation and suffering from too few flooding events. Some of the works carried out had an immediate payback with a flood event in July 2003.

**Broken Creek Operations Study** - Members took a great interest in the review of (G-MW) operations on the Broken Creek system. Operating requirements for the fish ladders were identified and built into the operating rules. The need to identify environmental flow and water level requirements separate from the irrigation requirements, has led to the initiation of a full review of the Broken Creek River Health Strategy. This will commence in the first half of 2003/2004. WWG Members were involved in the establishment of a water quality monitoring network for the Broken Creek after a serious fish kill in the lower Broken Creek in November 2002.

**Grazing of Riparian Lands** - Water Way Working Group Members raised concerns regarding the condition of Riparian Lands and Crown Water Frontages under pressure from grazing. It was acknowledged that the drought was putting pressure on landowners to find feed and water for stock, but the damage to riparian vegetation and associated soil erosion would cause a major impact on waterway health and water quality. A sub-committee was formed and the case for improved riparian land management was taken to the Mid Goulburn Broken and Upper Goulburn Water Way Working Groups for their information and support.

**Goulburn River Environmental Flows Project** - Members were informed that the purpose of the project was to study the environmental needs of the Goulburn River and identify the flow requirements for protection/restoration of the identified values. The WWG was represented on the Community Reference Panel, and members were involved in a site assessment with the study team, and participated in a workshop to make a preliminary assessment of the social and economic implications of a number of flow scenarios designed to address defined levels of benefit to the environmental values identified in the study.

**Woody / Environmental Weed Control Program** - Works programs for the removal of woody environmental weeds from the district waterways were discussed with the members, who assisted with identification of sites where infestations were causing degradation of river health values. These included willows, poplars, elms, date palms, desert ash, box thorn, briar rose, blackberry, black locust, and peppercorn. The members also discussed control of aquatic weeds such as arrow head, and gave support for control programs funded by the CMA and G-MW.

### Committee Members 2002-03

#### Community Members

Russell Pell	(Chairperson)	Kyabram
Ron Pearce		Picola
Alan Sutherland		Shepparton
Bill Probst		Kialla
Tate Hamilton		Corop
Nick Roberts		Shepparton

#### Agency Members

Bruce Cumming	Department of Primary Industries
David Trickey	Department of Sustainability & Environment
Silvio Fontana	Goulburn Murray Water
Melva Ryan	Department of Primary Industries
Ken Sampson	Shepparton Irrigation Region IC



*Inspecting Goulburn River bank stabilisation work Mooroopna*

Waterway Working Group

Shepparton Irrigation Region





