

# Shepparton Irrigation Region Implementation Committee

Water, Land and People



Annual Report 2003-2004



**GOULBURN  
BROKEN**  
CATCHMENT  
MANAGEMENT  
AUTHORITY

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[www.gbcma.vic.gov.au](http://www.gbcma.vic.gov.au)

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Department of Sustainability and Environment  
Department of Primary Industries



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## **OUR REGION - OUR PEOPLE**

### **THE SHEPPARTON IRRIGATION REGION**

The Shepparton Irrigation Region (SIR) covers over 500,000ha and occupies approximately one third of the Goulburn Broken Catchment, the eastern area of the North Central Catchment and forms part of the Murray-Darling Basin.

The SIR includes the municipalities of City Of Greater Shepparton, Moira Shire and Campaspe Shire and the major rural centres Shepparton, Cobram, Echuca, and Kyabram. The townships of Mooroopna, Cobram, Rochester, Numurkah, Tatura, Nathalia, Stanhope, Lockington, Murchison, Colbinabbin, Tongala, Strathmerton, Katamatite, Undera, Girgarre, and Katandra also lie within the SIR boundary.

The irrigated area of 317,000ha within the SIR utilise approximately 1.5 million megalitres of water each year and in 2003-2004 produced the gross value of production calculated at approximately \$5.5 billion. The main primary industries are horticulture, dairying, cropping, viticulture, wool, forestry and grazing.

The SIR is the centre for major food processing industry that contributes a major percentage of Victoria's export earnings. Companies include Kraft Foods, Fonterra Cooperative Group (Bonlac), Snow Brand Australia, Cedenco, Simplot Australia, Nestlé Australia, Unifoods, Henry Jones Foods (IXL), Tatura Milk, Murray-Goulburn, Meiji-MGC Dairy Company, SPC Armona, Campbells Soups Australia and Girgarre Country Foods.

### **OUR PEOPLE**

The SIR's population is over 110,000 people and includes over 7000 rural properties, with over 20% of those being of a multicultural background.

Our region is home to the largest Aboriginal population outside of metropolitan Melbourne. Cultural and linguistic diversity is a feature of the region where well established communities, primarily as a result of Southern European post-war migration, co-exist with more recently arrived communities from countries such as Iraq, Iran and India.

### **WHAT DO WE DO?**

The SIR is part of the corporate and business management structure of the Goulburn Broken Catchment Management Authority (GB CMA). The GB CMA also is directly responsible for the management and implementation of the Biodiversity, Floodplain and River Health and Water Quality programs in the SIR Catchment Strategy. The SIR Implementation Committee (SIR IC) has representatives on Coordinating Committees in each of these programs.

The SIR IC has the prime responsibility to deliver the program of natural resource objectives of the SIR Catchment Strategy. The SIR Catchment Strategy is a 30 year strategy that provides the framework for land, water and biodiversity management and aims to improve the condition of natural resources in the SIR for current and future community. The SIR Catchment Strategy has been underway for over 10 years with the whole community working hard to achieve goals.

Under the *Catchment and Land Protection Act 1994* the strategy is reviewed every five years with an extensive review of natural resource management programs engaging in consultation with community-based committees, State agencies, partner organisations and Local Government.

## **Issues**

### **Salinity**

Salinity has increased in the SIR through rising watertables and salt mobilisation, resulting in significant environmental, social and economic losses. Clearing of land and inefficient application of irrigation water has increased watertable levels. Annually 260,000 tonnes of salt is exported to the River Murray with adverse impacts to downstream communities in the Murray-Darling Basin. Research and Development, together with the onground works undertaken by the Farm, Sub-surface Drainage and Community Surface Water Management programs are the major thrust against Salinity under the SIR Catchment Strategy in reducing accessions to groundwater and other salinity threats.

### **Water Quality**

Contaminants including salt, nutrients from irrigation drainage, sewerage treatment plants, sediment mobilisation, urban stormwater and intensive animal industries affect the water quality in the SIR. The management of these contaminants is being addressed under action programs within the SIR Catchment Strategy.

### **Native Biodiversity**

An improvement in information available has led to a stronger understanding of the importance of biodiversity to natural and our productive systems. All actions that impact on land and water impact on native biodiversity. The SIR Catchment Strategy aims to ensure that all impacts are considered in decision-making and that biodiversity needs are an integral part of all the natural resource management programs in the SIR.

### **Riverine Health**

Storing and delivering water for urban and agricultural use has dramatically altered flow patterns of our rivers and creeks and had a direct impact on the region's aquatic biodiversity, quality of water and the waterway environment. The SIR Catchment Strategy programs target threats to stream health: erosion; sedimentation and salinisation; effects from agriculture, land clearing and urbanisation; changes to stream environment including introduction of exotic flora and fauna, de-snagging, construction of dams and barriers; river regulation and water extraction; poor river frontage management.

### **Pest Plants and Animals**

Pest plants and animals have a negative impact on biodiversity ecosystem function and the productive capacity of the land and water resources. The SIR Catchment Strategy programs target declared noxious weeds such as Paterson's Curse, prairie ground cherry, silver leaf nightshade, blackberry, sweet briar, St. John's wort, Chilean needle grass, African lovegrass and hardheads. Priority pest animal species are foxes and rabbits and in the waterways European Carp are a major problem, causing turbidity, damage to stream habitat and depletion of native fish populations.

In the blackberry, sweet briar and Paterson's Curse programs, DPI pest management staff conducted 870 farm inspections covering 83,000ha. A total of 431 Work Plans were issued to landholders and in 93% of cases, satisfactory compliance was achieved. This is extremely satisfying and indicates the general preparedness of landholders to participate in coordinated control programs. Where non-compliance occurred, 29 Land Management Notices were issued, resulting in two prosecutions.

The Community Landcare Facilitator (CLF) Program, (formerly the Rural Extension Program) provided considerable support to compliance and enforcement efforts during the year, and eleven of the 29 Land Management Notices were generated in CLF target areas.

Late in 2003, all nurseries and retail plant outlets in the region were inspected to ensure the ten newly declared state prohibited species were not being offered for sale. Two cases were detected where prohibited plants were on sale and a number of plants were volunteered for destruction. Further inspections will be conducted later in 2004.

A revised edition of the booklet "Weeds of the Goulburn Broken" has been developed and will be published in August 2004. The booklet has been extremely popular and as well as being an excellent resource, is also a useful extension tool. The revised edition will include additional information on optimum treatment times and modes of weed spread.

#### Enhanced Fox Project

DPI staff in the SIR conducted an intensive extension program as part of the Enhanced Fox Project during autumn of 2004. Landcare groups in sheep farming areas were the focus of the project. Despite constraints in relation to 1080 use, a number of coordinated baiting programs occurred in an effort to minimise lamb predation.

#### **Climate Change - Greenhouse Gas Emissions**

Climate change has implications for the long-term sustainability of our economy and community. The region has opportunities to assist the reduction of greenhouse gas emissions that are consistent with salinity, biodiversity and water quality programs. Through revegetation programs and enhanced agricultural practices multiple benefits can be achieved.

#### **WHO PAYS?**

Annually, the SIR IC attracts funding of close to \$19 million with the majority of this funding going directly to onground works projects. The SIR Catchment Strategy is funded jointly by the regional community, the Victorian, Commonwealth and Local Governments. The SIR Catchment Strategy is an integrated program of works with funds sources from a wide area.

#### **Regional Community**

The regional community has a major commitment to implementation of the SIR Catchment Strategy, both to capital projects and ongoing operation and maintenance. In 2003-2004, this was estimated at \$37 million.

#### **Government Funding**

Government funding is provided through annual integrated budgets for the SIR Catchment Strategy prepared on the basis of bids submitted by the SIR IC.

#### **Industry Funds**

Private industry also plays a significant role in the program. Powercor Australia provide substantial support to the Sub-surface Drainage Program in the form of a rebate on the cost of a pole and substation. SPC Ardmona contributes significantly for the East Shepparton Salinity Project.

#### **OUR PARTNERS**

##### **Goulburn-Murray Water**

Goulburn-Murray Water (G-MW) manages water storages and the supply and drainage channel infrastructure in the SIR. G-MW is the major partner in the delivery of the Salinity Program under the SIR Catchment Strategy through the Sub-surface Drainage and Community Surface Drainage Programs.

## **Department of Primary Industries**

The Department of Primary Industries (DPI) is responsible for driving the key objectives of the SIR Catchment Strategy in natural resource management. DPI implements the Farm and Environment Programs and, in conjunction with G-MW, the Community Surface and Sub-surface Drainage Programs. The Agriculture Victoria Division of DPI also carries out vital Research and Development programs providing scientific advice and direction.

## **Local Government**

Local Government is a key partner, providing Statutory and Strategic Planning, participating in cost-sharing for the SIR Catchment Strategy and providing a link with the broader community. Local Government jointly with the Goulburn Broken Catchment Management Authority, funds a coordinator to ensure that the partnership operates effectively. This involves the municipalities of the Greater Shepparton City Council, the Moira Shire Council and the Campaspe Shire Council.

## **Goulburn Valley Water**

Goulburn Valley Water (GVW) provides urban water supply and wastewater services in the SIR. GVW in conjunction with the GB CMA, work to minimise phosphorous (to <1mg/L) exports from wastewater treatment plants to our river systems, improve water quality and for full reclaimed water re-use to land. They develop waste management plans in line with Government requirements and implement these plans to meet State Environment Protection Policy (Waters of Victoria) and the SIR Catchment Strategy. GVW also house the Catchment Stormwater Officer who works in conjunction with GB CMA and all local councils throughout the SIR and catchment to improve stormwater through a range of structural and non-structural measures.

## **Goulburn Murray Landcare Network**

The Goulburn Murray Landcare Network (GMLN) is a voluntary community-run forum, networking 35 Landcare groups in the SIR. A sound relationship has been established between the GMLN and the SIR IC. A number of projects are also undertaken by the GMLN in partnership with the GB CMA. The GMLN coordinates and funds regional projects such as community monitoring, the Weed Busters and Rabbit Busters program, "Impact Tours" and primary school education. These projects enhance the high level of community participation in the catchment management promoted under the strategy.

## **Ethnic Council of Shepparton and District Inc**

The Ethnic Council of Shepparton and District Inc (Ethnic Council), represents more than 26 culturally and linguistically diverse communities who live across the region. Formed in 1991, this strong relationship supports and services the needs of these communities in land management issues. The 60 member Ethnic Council is represented on committees and in policy development by specialist staff from within the Ethnic Council and Agencies.

## **Private Farm Forestry Program**

The SIR Farm Forestry Network (SIRFFN) facilitates and coordinates development and management of private forestry and eco-services in the SIR. The SIRFFN works with landholders to integrate private forestry into local farming systems and rural landscapes for improved investment, social and environmental outcomes. There is a representative from the SIR IC on this program and it is closely linked to environmental and farm tree projects.

The key Private Forestry activities revolved around completion of the "Cooperative Mechanical Thinning of Farm Forests for Commercial Preservation Products" project. An additional 6ha was harvested (to a total of 40ha) and a number of products generated and sold. Products included 50m<sup>3</sup> of preservative treated eucalypt posts, found by the CSIRO to

have superior strength characteristics to pine. One sale for vineyard trellising on the Mount Camel Range has generated interest for further purchases. Around 75 tonnes of plantation firewood and 120 tonnes of export pulpwood were also sold.

### **Murray Dairy**

Murray Dairy was established to lead the economic and social development of the dairy industry in northern Victoria and southern NSW. This is achieved by investing industry Research & Development funds in research programs and regional development activities that benefit all stakeholders of the dairy industry and the broader community. Murray Dairy with its partners, including the SIR IC, invests around \$2 million annually on natural resource management Research & Development.

As part of the dairy industry's national natural resource management strategy "Dairying for Tomorrow – Sustaining Our Natural Resources", Murray Dairy has coordinated the development of a Regional Action Plan that focuses on:

- Building on existing partnerships with government and community organisations, including SIR IC
- Extension initiatives that connect on-farm practices with natural resource management
- Investing in R&D to improve water use efficiency on dairy farms
- Enabling the industry to better report and demonstrate its environmental performance to the market and community
- Ensuring a strong, coordinated industry response to new and emerging issues

### **OUR ORGANISATION - COMMUNITY ENGAGEMENT**

Members of the SIR IC are nominated because of their specific skills and their links to community networks. The SIR IC meets on a six week cycle throughout the year and is made up of eight community representatives and representatives from partnership agencies (ie. DPI and G-MW).

Working Groups have also been established for the four action program areas overseen by the SIR IC:

- Farm and Environment
- Surface Drainage
- Sub-surface Drainage
- Waterways

The Working Groups comprise community representatives (including representatives from each of the four Water Service Committees of G-MW, Victorian Farmers Federation, Local Government, environmental groups and agency representatives. These groups manage all aspects of the particular program: budget allocation, works programs, monitoring, policy development and research. They address issues in detail so that the SIR IC can operate effectively and strategically ensuring strong input from all stakeholders in the partnership.

The SIR IC is supported an Executive Support Team, which provides executive and technical advice for the implementation of the Catchment Strategy. Agency staff also provide technical input through a Plan Implementation Support Committee, the working groups and specific project teams. This seemingly complex structure is essential to ensure community input and ownership of the Catchment Strategy as it continues to evolve during its implementation.

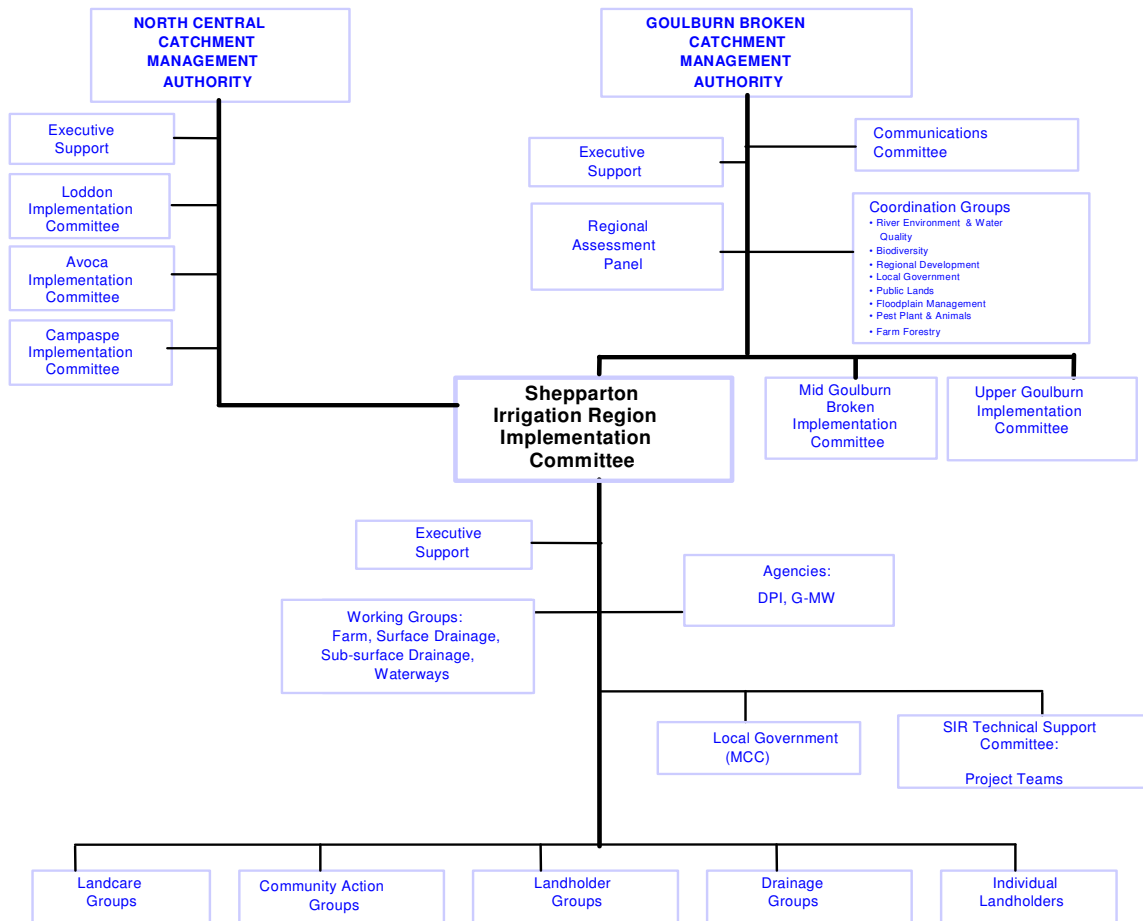


The SIR Catchment Strategy signifies a true partnership between the local community and all levels of government - state, federal and local. There has been a dedicated commitment and ownership from community members and agency staff because they all have a role in the evolution of it and a sense of responsibility for it.



Shepparton Irrigation Region Implementation Committee: L-R David Lawler, Ken Sampson, Pat Feehan, Peter Gibson, Ann Roberts, Allen Canobie, Peter McCamish, Russell Pell, Stephen Farrell, Nick Roberts, Peter Howard

### Management Structure for Implementation of the Shepparton Irrigation Region Catchment Strategy



## **CHAIR'S REPORT**

The continued progress in the implementation of the Shepparton Irrigation Region (SIR) component of the Catchment Strategy was due to a number of strengths in this catchment.

- Strong links with the catchment community through the Implementation Committee (IC) members and members of the various working groups that report to the IC.
- A strong and vigorous partnership with Landcare groups, the Goulburn Murray Landcare Network (GMLN) and the Local Area Plan (LAP) Groups.
- A strong partnership between key agencies and authorities.
- A strong technical support network to all aspects of the plan.
- An integrated approach to tackling the key natural resource issues and protecting our important natural assets.

The members of the SIR IC continued to effectively carry out their role in 2003-2004. Despite the extremely difficult year the implementation of the SIR Catchment Strategy has progressed steadily. This is in part due to the continued commitment of my fellow IC members, Nick Roberts, Athol McDonald, Steve Farrell, Peter Gibson, Allen Canobie, Peter McCamish, Ann Roberts, Terry Hunter, and Bruce Cumming.

### **Achievements**

The partnership program with the Catchment and Water group of the Department of Sustainability and Environment is delivered with our regional partners in Goulburn-Murray Water and the Catchment and Agricultural Services business of the Department of Primary Industries.

The progress towards our targets for on ground works and the high level of activities has occurred in a climate of continued low water allocations, widespread drought, reduced funding and the ever-changing political and institutional arrangements. These difficulties make the achievements all the more meritorious. The support given to the program by agency staff and the regional communities has been tremendous.

### **Conclusion**

It is essential that the SIR IC continues to attract substantial government funding in order to maintain landholder confidence in the program. Our ability to implement well planned, fully integrated, environmentally sensitive and cost effective works, ensuring the future of the SIR, is being placed in jeopardy.

I would like to sincerely thank Athol McDonald, who is retiring from the SIR IC this year, for his outstanding contribution to our catchment. Athol has been an active contributor to our catchment since the days of Salinity Program Pilot Advisory Committee (SPPAC), 17 years ago. He also represented our catchment on the Community Advisory Council (CAC) of the Murray Darling Basin Commission (MDBC) for a number of years. Well done Doc!

I would also like to congratulate one of our current SIR IC members, Nick Roberts who is representing environmental interests on the MDBC CAC.

I am certain that one of the great strengths of the program in the SIR is the continuing strong and healthy partnerships which have been established between the Community, Agency and Government at all levels.

**Russell Pell**  
**Chair**

**Shepparton Irrigation Region Implementation Committee**

## **IMPLEMENTATION REPORT**

### **EXECUTIVE OFFICER'S REPORT**

The year 2003-2004 has been one of achievement and progress in the implementation of the Shepparton Irrigation Region (SIR) Catchment Strategy.

Outcomes for the individual programs are summarised below and are further detailed in the individual project reports in Chapter 4.

#### **Environmental Protection Program**

The Environmental Protection Program is integral to all SIR Catchment Strategy programs with activities predominantly reflecting native biodiversity protection and enhancement and including both issue development and delivery of on-ground works. The Environmental Protection Program has continued to build on the solid foundation established in the previous years by improving the quality of processes and a commitment to provide better service to clients and stakeholders.

Reviews have been conducted for the Sub-surface Drainage and Surface Water Management Environmental Assessment processes, to make them more efficient, focussed and accurate and to make the reports more useful to stakeholders. Reviews of the Mosquito 36 and 40 environmental assessments have also been conducted.

Negotiations on final alignments for 18 Surface Water Management Schemes have been conducted to ensure protection of natural features along these schemes. One Sub-surface Drainage Environmental Assessment for a Public Salinity Control Pump has been completed.

A draft of a Scattered Tree Assessment Manual and a paper on Native Vegetation Retention along Surface Water Management Schemes, have been prepared. This will further protect and enhance remnant vegetation along proposed schemes. Consultants will conduct channel remodelling environmental assessments in the future, with quality checks by the Environmental Assessment Coordinator.

#### **Mandatory Environmental Monitoring**

A contractor was used for the first time to collect Mandatory Environmental Monitoring data from the seven sites. The contractor has suggested ways of further improving the data collection and storage to make it more reliable and useful in establishing trends and changes over time.

#### **Statutory Planning Referrals**

Ninety-five Statutory Planning referrals were dealt with during the year involving extensive negotiations to minimise damage to native vegetation and provide for effective offset plantings. When the offset plantings mature they will make a valuable contribution to achieving net gain.

#### **Environmental Management Plans**

Reedy and Kinnaird's Swamp Environmental Management Plans have been completed, with Mansfield Swamp close to completion. Work has commenced on the One Tree, Two Tree, and Wallenjoe Swamps complex. The management plan development process has assisted the development of strong links with both community and agency bodies. Their development has also assisted funding applications and environmental water allocations.

Considerable effort has been spent on establishing and refining protocols for the need and use of environmental water flows from wetlands in the SIR. A report was prepared on the impact of the flow into Reedy Swamp and as a result an outfall control structure was built. A deal of effort has been spent developing information for the Wallenjoe Depression.

### **Biodiversity Promotion**

A strong effort has been made to promote the management of native biodiversity in the SIR. This included visits to landholders, the Bush and Land column in the Country News (local rural newspaper), a Biodiversity Celebration at a covenanted site in Numurkah and progress in the development of Best Management Practices for Natural Features in the SIR.

Best Management Practices (BMPs) are being developed to provide information on the most appropriate methods to manage wetlands, remnant vegetation and riparian zones in the SIR. They have been developed in conjunction with the research project to develop an Environmental Management System for the dairy industry.

This year's drainage infrastructure works program has led to the potential protection of 322ha of wetland and 171ha of remnant vegetation.

### **Farm Program**

A highlight in the works program was the completion of a further 178 Whole Farm Plan grants covering 11,034ha. This project continues to exceed targets for the number and area of Whole Farm Plans prepared. A total of 199,780ha of the irrigated part of the region are now covered by Whole Farm Plans. The plans prepared this year represent an increase of 3.5% and the area now Whole Farm Planned is 63.1% of the irrigated area.

These results are particularly pleasing in the context of the continued difficult seasonal and financial conditions that irrigators were dealing with. This continued high level of activity in Whole Farm Planning shows that landholders are committed to planning for catchment works on their properties.

A major review of the Whole Farm Plan program in the SIR was conducted. The review demonstrated that the Whole Farm Planning program is successful in terms of efficiency, effectiveness and appropriateness, and there is a demonstrated case that it should continue to be supported with public funds. However, there are always areas for improvement and the review has identified some opportunities.

### **Local Area Planning**

Local Area Plan sub-catchments are now accounting for over a third of all incentives processed and on-ground works facilitated via incentives. Another encouraging trend is the ratio of incentives processed to incentives paid is now quite high. On average 70% of incentives processed and approved are now resulting in some form of on-ground works.

### **Salinity Mitigation**

Landholders in the region have continued to implement salinity mitigation works, encouraged by the public expenditure in infrastructure such as surface drains and public groundwater pumps. Although the drought and reduced terms of trade have caused some reduction in landholder expenditure from previous years our estimates of double the government expenditure are still valid. Works such as farm re-use and improved irrigation layout contribute significantly to improved water use efficiency. These have both environmental and economic benefits. Each year in the SIR, a further 3% of the irrigation area is laser graded.

Despite the drought conditions, the incentives for the construction of drainage re-use systems have continued to be strongly supported by landholders. Incentives were paid for 73 drainage re-use systems that were installed to drain 4,654ha, bringing the total number to 244 systems draining 17,448ha. This is 6% of the irrigated area in the SIR.

Ten automatic irrigation systems have been installed with assistance. These systems service 909ha and include 1 further channel outlet that has also been automated under the scheme. The total number of automatic systems installed with assistance is now 76 serving an area of 4,513ha, just over 1% of the irrigated area.

### **Surface Water Management Program**

The Surface Water Management Program continues to progress well. Although no primary drains were commissioned during 2003-2004, an equivalent length of 12km was constructed on Muckatah Stages 3 and 4 and Muckatah Drains 3 and 8. G-MW consultants designed 12km of drain, and works continued, or commenced, on a number of Drainage Course Declarations. As well, 19.5km of community drains were constructed. In addition 32.1km were surveyed and designed. This provided a regional drainage service to another 2,815ha, protecting this area from waterlogging and rising watertables. Eight drains previously managed by Local Government are in various stages of transfer to G-MW under a new management option.

A major project was initiated to review the cost-share arrangements for Community Surface Water Management Schemes.

A 'Memorandum of Understanding for Irrigation Drainage and Water Quality' was signed by the following agencies - DSE, G-MW, GB CMA, NC CMA and EPA on 22 June 2004. This sets the framework for irrigation drain construction and management and defines the format for Surface Water Management Operational Plans.

Drain Water Quality Management studies were initiated on three drains: Murray Valley Drain 6 (completed), Ardmona-Undera Drain and Shepparton Drain 12 as a forerunner to Surface Water Management Operational Plans. Investigations also continued into wetland feasibility and retro-fitting on Murray Valley Drain 13.

Phosphorus loads exported from irrigation drains continued to be low, with the five-year rolling average now well below the target value for 50% reduction (see feature box). Statistical analysis has shown that flows and nutrient loads are trending downward over time and nutrient concentrations at most sites are no longer showing upwards trends.

### **Nutrient Removal Incentive Scheme**

A review of the Farm Dams Policy and the relevant guidelines was carried out and a question and answer paper developed to clearly define and illustrate the rules relating to the construction of new re-use dams in Victoria's northern irrigation districts. The Farm Dams legislation and its potential implications has continued to interrupt the demand for the Nutrient Removal Incentive Scheme. This scheme is aimed at building large farm storages (greater than 50ML) to capture high flow diversions from our major drains and results in significantly reduced nutrient outfalls from the region.

Two new systems were completed this year with a total capacity of 320ML. There have been twenty-three systems constructed with assistance from this project with a total capacity of 4,363ML. A survey undertaken over 2003-2004 indicated that even in this very dry year these storages were able to prevent five tonnes of phosphorus from reaching the rivers of the region. The total over the last five years is 30 tonnes of phosphorus prevented from reaching the rivers of the region.

## **Sub-surface Drainage Program**

In 2003-2004 implementation of the Sub-surface Drainage Program (SSDP) Strategic Research and Investigation Plan began. A number of projects were initiated to address research and development issues associated with the program. Some of the projects undertaken are: a framework for prioritising works and measures under the SSDP, a salt interception investigation on the Goulburn River and the development of technical options for high risk salinity areas within the SIR.

Pasture Farm Exploratory Drilling Scheme (FEDS) investigations were completed on 67 properties with 10 being declared successful and another 39 identified as having potential as Public Salinity Control Pump sites. There were 35 investigations still in progress and 73 properties on the high priority waiting list.

Three horticulture FEDS investigations were completed and all were unsuccessful. There is one investigation still in progress. Demand for the program is still low and there is currently one investigation still in progress.

Under the pasture private groundwater pumping program, 13 new private groundwater pumps were installed. There were no pump upgrades. This brings the cumulative total of new pumps to 249 with 69 existing pumps upgraded. The estimated area protected is almost 34,000ha. There are 18 pumps currently in the process of being installed.

Feasibility investigations were completed on three properties. Construction and handover of three Public Salinity Control Pumps was completed, bringing the total of Public Salinity Control Groundwater Pumps to 40 protecting more than 5,700ha.

No winter/spring salt disposal under the Murray Darling Basin Salinity and Drainage Strategy was available from groundwater pumps last year due to low flows in the River Murray. The uptake of Salt Disposal Entitlement for private groundwater pumps is 1.007EC and 1.415EC for Public Salinity Control Groundwater Pumps. Therefore the uptake of Salt Disposal Entitlement for the Sub-surface Drainage Program is 2.422 of the SIR's total allocation (to date) of 4.9EC.

Ongoing extension was provided to Local Area Plan and Landcare groups throughout the region. Implementation of the SIR Groundwater Management Plan has continued with routine groundwater level monitoring, flow meter reading, pumped groundwater salinity sampling and basic analysis and reporting. New licensing guidelines for shallow groundwater bores in the SIR were also introduced. Monitoring, analysis and reporting for the August 2003 watertable study were completed.

## **The River Health - Waterways Program**

The River Health - Waterways Program focused on specific reaches of rivers and streams to achieve multiple benefits in stream health, water quality, and biodiversity. The main targets were the Broken River downstream of the East Goulburn Main Channel, Seven and Castle Creeks, Goulburn River, Broken Creek system and the River Murray. A highlight was the community support for the works generated from Local Area Planning, Landcare Groups and development of Waterway Action Plans. A wide range of research, evaluation and demonstration projects continued to be supported within the catchment with a range of catchment partners. This is reported in detail in the catchment wide section of this report, as is the significant input into the River Health & Water Quality Strategy.

### **Broken River Action Plan**

Major projects included the implementation of the Broken River Action Plan through funding from the Healthy Rivers Initiative that resulted in significant community involvement. This led to the removal of exotic woody weeds, bank alignment and bed and bank stabilisation works. The Goulburn River between Nagambie and Loch Garry continued to be a primary focus for works especially in woody weed control and follow-up work on sites from previous year's actions. The River Health - Waterways Program is very conscious of the importance of monitoring works from previous years and carrying out follow-up works such as weed control where needed or modification of in-stream rock structures to improve fish passage.

### **Broken Creek Management Strategy**

The review of the 1998 Broken Creek Management Strategy began mid-year and will be finalised by September 2004. This will provide the GB CMA with a clear direction for works and activities on the Broken Creek over the next five years. Fifteen outfall stabilisation structures to reduce erosion and improve water quality were constructed on the Goulburn and Broken Rivers and the Seven and Honeysuckle Creeks.

### **River Murray Project**

The River Murray Project has continued over the last twelve months (with emphasis on the Tocumwal to Echuca reach) to improve the frequency of wetlands filling during flood events, and the overall health of the floodplain system. Implementation activities continued on the Kinnaird's Wetland Recreation Master Plan, and work continued on the Gemmill's Swamp Recreation Plan.

### **Waterway Grants**

For 2003-2004, 21 waterway grants have been completed for 18.6km of fencing, two property outfalls and 24 watering points at a grant cost of \$103,876. Most of these have been on the Broken and Nine Mile Creeks downstream of Katamatite and the Corop Lakes area. Appropriate trees and understorey species were planted in the riparian zone along with grasses and water plants along the edges of waterways. Planting remained lower than normal due to the dry conditions (10,000 plants this year). An activity that could not be avoided this year was the watering of plantations to protect current and previous investments. The off-stream stock watering points were to compensate for loss of stock access to waterways.

The success of the River Health - Waterways Program is monitored and evaluated using the Statewide Index of Stream Condition. This index reflects the various aspects of river health (water quality, in-stream habitat, river hydrology, riparian condition and river channel form). A major review of the reference sites (15 in the SIR) was completed in 2003-2004, and this will provide an important report card on the works carried out to date, and help in the planning of future works priorities.

### **Program Support**

#### **Community Engagement**

The SIR IC has continued to work closely with local Landcare Groups and networks to ensure their input into and support of the SIR Catchment Strategy. The SIR IC has continued their commitment to the Community Salinity Grants program. Last year we increased the allocation and 32 groups in the SIR received a share of \$36,000 for a range of projects.

During 2003-2004 the GB CMA and SIR IC were involved with, and sponsored, the establishment of a Young Irrigators Network.

The SIR IC continues to have a close association with Local Government. Links have been maintained through the joint employment of a Municipal Catchment Co-ordinator. A major project this year resulted in the development a Matrix for Action Document (MAD) to link the GB CMA Regional Catchment Strategy objectives and targets to the council corporate plans.

### **Local Area Planning**

Local Area Planning as a means of delivering strategic planning aligned to the Goulburn Broken Catchment Strategy at a sub-catchment scale continues to gain momentum. This project is a joint activity between the Goulburn Murray Landcare Network, DPI and the GB CMA with eight Local Area Plan groups progressed through 2003-2004.

The Cornella, Wyuna, Invergordon, Nanneella and the Nathalia Local Area Plan Groups are now well into implementation of their plans. During 2003-2004, the Bunbartha/Kaarimba/Zeerust and Muckatah/Katamatite/Naring Local Area Plans were launched and the remaining group has almost completed their plan.

### **Research, Evaluation and Demonstration**

A wide range of research, evaluation and demonstration projects continued to be supported within the catchment with a range of catchment partners.

The important *Irrigation Futures of the Goulburn Broken Catchment* project aims to facilitate a shared vision of the future of irrigation in the catchment, develop and understand the implications of future scenarios and establish a method for sustainable irrigation planning at catchment scale. Stage 1 of the project was successfully completed this year and Stage 2 community workshops have had strong regional stakeholder support.

A number of research projects directed at measuring and improving irrigation efficiency at paddock, farm and sub-catchment scales were supported. Projects included: measurement of soil hydraulic properties and their variability across the region; comparison of checkbank and pressurised irrigation system efficiencies; studies to improve the beneficial use of groundwater and waste water on farms; salt and waterlogging tolerance in plants; and development of methods to measure regional crop water use with remote sensing.

Social research projects to understand the processes of change in natural resource management were supported, with the aim of developing improved strategies for implementation of appropriate market mechanisms. The SIR Catchment Strategy also supported the further development of Geographic Information Systems for Local Area Plan support, catchment monitoring and reporting, and coordinated land and water use planning.

A successful research reporting day was held in May for the information of SIR IC partners.

### **Funding**

The implementation of the SIR component of the Catchment Strategy is funded jointly by the regional community and the Victorian and Commonwealth Governments. The SIR Catchment Strategy has continued to attract significant Federal funding - a reflection of our ability to implement well-planned, environmentally sensitive and cost-effective works.

However Federal allocations are declining. In 2003-2004, the total SIR IC budget was over \$17.7million. This was composed of 73% State funds, mainly from the National Action Plan (NAP), salinity and river health programs, 19% of Federal NAP and Natural Heritage Trust



funds – much less than in the period prior to the NAP. The other 8% was from regional sources. The majority of funds (75%) were directed to works. Other components include research and investigation, extension, monitoring, planning and coordination.

### **Policy and Planning**

The SIR IC and associated Working Groups continued to have a major input into review of the SIR Catchment Strategy to align with a number of State activities and the National Action Plan. This includes ongoing reviews of Surface Water Management, Farm, Environment, Waterway and Sub-surface Drainage Programs. These activities have provided the opportunity to reflect on our progress in implementing the SIR Catchment Strategy and develop programs to take these activities into the future.

The SIR IC and its working groups had significant input into the review of the broader GB CMA River Health and Water Quality Strategy and also put a major submission into the consultation process for the Victorian Government's White Paper - 'Securing our Water Future together'.

Major contributions were made by the SIR IC and staff to a number of important issues. These included the implementation of the Farm Dams legislation in the SIR, the establishment of the Memorandum of Understanding for Irrigation Drainage, the implementation of groundwater management plans, the review of Crown Frontage Management and the reviews of the SIR Salt Disposal Entitlements.

A large input has also been committed to the new NAP processes. Unfortunately this has been unrewarding as yet and the introduction of the NAP has continued to slow the implementation of the SIR Catchment Strategy.

The SIR IC prepared its Business Plan as a component of the GB CMA Regional Management Plan. Individual communication strategies are being developed for each new or amended policy issue as it is endorsed by the SIR IC.

## **PROGRAM REPORTS**

### Shepparton Irrigation Region Catchment Strategy Programs

- Environmental Protection
- Farm
- Surface Drainage
- Sub-surface Drainage
- River Health - Waterways
- Research – Water for Growth Projects
- Monitoring
- Program Support

## **ENVIRONMENTAL PROTECTION**

### **Environmental and Tree Growing Incentives**

Environmental Incentives have provided support to protect nearly 73ha of remnant vegetation and 12ha of wetlands during the year. One wetland was a 6.6ha Red Gum complex. Some of the remnants protected include 4.5ha of Black Box/Grey Box Woodland, four different Plains Grassy Woodland remnants at 6.3ha, 8ha, 10ha and 12ha and 21ha of Black Box Chenopod Woodland containing Grey Crowned Babblers. The last remnant has had a conservation covenant placed over it to further protect it. These results indicate a trend towards protecting and enhancing some of the larger remnants in the Shepparton Irrigation Region (SIR).

Both the Environmental and Tree Growing Incentives have facilitated the revegetation of over 130ha of private land, with about half direct seeded, and over 34km of fencing for corridors and remnants. Early assessments indicate that quite good germination rates were achieved by direct seeding.

Local Area Plan areas are now accounting for over a third of all incentives processed and on-ground works facilitated via incentives. Another encouraging trend is that the ratio of incentives processed to incentives paid is now quite high. On average 70% of incentives processed and approved are now resulting in some form of on-ground works.

### **Environmental Assessments**

Reviews have been conducted for the Sub-surface Drainage and Surface Water Management Environmental Assessment processes, to make them more efficient, focussed and accurate and to make the reports more useful to stakeholders. Reviews of the Mosquito 36, Mosquito 40 and Mosquito Stage 10 environmental assessments have also been conducted.

Negotiations on final alignments for 18 surface water management schemes have been conducted to ensure protection of natural features along these schemes. One sub-surface environmental assessment for a Public Salinity Control Pump has been completed.

A draft of a Scattered Tree Assessment Manual and a paper on Native Vegetation Retention along Surface Water Management Schemes, have been prepared to further protect and enhance remnant vegetation along proposed schemes. Channel remodelling Environmental Assessments, which have been previously conducted by the Environmental Protection Program staff, will be conducted by consultants working for Goulburn-Murray Water (G-MW), in the future, with quality checks by the Environmental Assessment Coordinator.

### **Statutory Planning Referrals**

During the year 95 Statutory Planning Referrals were dealt with involving extensive negotiations to minimise damage to native vegetation and provide for effective offset plantings. When the offset plantings mature they will make a valuable contribution to achieving net gain.

### **Public Land Works**

There has been very little public land works and no activity in advancing Terrestrial Management Plans due to the lack of staff for these activities. Recent appointments to these positions should improve this situation for 2004-2005.

### **Environmental Management Plans**

Reedy and Kinnaird's Swamp Environmental Management Plans have been completed, with Mansfield Swamp close to completion. Work has commenced on the One Tree, Two Tree, Wallenjoe Swamps complex. The Environmental Management Plan development process has assisted the development of strong links with both community and agency bodies. Environmental Management Plans also assisted funding applications and environmental water allocations.

### **Extension**

The group has been busy promoting management of native biodiversity in the SIR. Over 200 visits to landholders have been conducted and the well respected Bush and Land column in the Country News (local rural newspaper) has continued. Some of the topics covered in the column were:

- How to Identify Legless Lizards
- Spring Wildflowers
- Insectivorous Bats
- Shelterbelts
- Frogs
- Maintaining Habitat
- Tree Guarding
- Protecting Remnants
- Firewood
- Bush Stone Curlews
- Riparian Management Issues
- Caring for Plants Over Summer

A Biodiversity Celebration was held at a covenanted site in Numurkah, which had received support from the Environmental Project including 2.8km of fencing and 27kms of direct seeding. Forty people attended including local Federal Member, Dr. Sharman Stone, Federal Parliamentary Secretary to the Environment Minister, who spoke on the NHT2 program, which had provided the funding for incentives to carry out the works.

A workshop to introduce a Draft Best Management Practice for Natural Features in the SIR was also held mainly for agency staff. The Best Management Practices are being developed to provide information on the most appropriate methods to manage wetlands, remnant vegetation and riparian zones in the SIR.

### **FARM PROGRAM**

Historically, the Farm Program set its objectives based on achieving a reduction of groundwater accessions, soil salinisation and waterlogging on farms. The goal of the Farm Program has evolved to:

*“Improve land management practices on private land within the Shepparton Irrigation Region to protect and enhance the environment; to improve economic viability; and to help rural communities make informed decisions”.*

This recognises the important role that the community plays in the Farm Program activities and the focus on private land. This has been a significant year for major achievements in the Farm Program. The summary of the major highlights is reported below.

### **Whole Farm Program**

The Shepparton Irrigation Region (SIR) Implementation Committee (IC) and the Department of Primary Industries (DPI) Sustainable Irrigation Landscapes – Goulbourn Broken (SIL-GB) team celebrated the 200,000ha of Whole Farm Plans in the Shepparton Irrigation Region.

In 2003-2004, a total of 178 Whole Farm Plans were completed covering an area of 11,034ha. This is in line with the SIR Catchment Strategy, which includes the target that all properties in the SIR will have a Whole Farm Plan by the end of 2020.

A major review entitled “Review of the Whole Farm Plan Program in the Shepparton Irrigation Region” was completed. Peter Gibson, Deputy Chair of the SIR IC, launched the review report. The review assesses the efficiency, effectiveness and appropriateness of the program. The review identified a number of key findings:

- The report highlighted that for every \$1.00 invested by government, landowners in the SIR invested over \$ 9.00 in catchment works.
- The adoption rate of Whole Farm Planning is in line with the target that all properties in the SIR would have a Whole Farm Plan by 2020, with 64% of total irrigated area now being “Whole Farm Planned”.
- The review has demonstrated that the program produces benefits for both landowners and the community at large. There is evidence showing that the increase in the rate of adoption can be attributed to the provision of the incentive as the Government’s share of the cost.

The review recommended the need to explore innovative approaches to program delivery by targeting specific risk areas or specific community groups to see if further improvement can be made to the program.

In May 2004 the SIR IC Executive Officer, Ken Sampson, and Farm Program Manager, David Lawler, presented a paper entitled “The role of Whole Farm Planning in increasing the adoption of improved irrigation management in the Shepparton Irrigation Region”. This paper described the Whole Farm Planning process, the evolution of the process and the role of the planning process in increasing the adoption of improved irrigation management in the SIR.

### **Re-use System Program**

A record total of 73 drainage re-use systems were installed as part of the incentive scheme in 2003-2004 servicing 4,654ha. This was a decrease on 2002-2003 figures of 99 systems servicing 6716ha. However this was well above the initial 2003-2004 targets of 30 re-use systems, and close to the revised final allocation of 74 re-use systems. The slow down in the construction of drainage re-use systems from 2002-2003 can be attributed to the effects of the drought on farm finances.



*Re-use system installed with incentive scheme*

### **Automatic Irrigation Program**

This financial year, ten Automatic Irrigation systems were installed as part of the incentive scheme. Project staff organised five automatic irrigation farm walks in the SIR. More than 100 landowners participated. The Automatic Irrigation related information was also presented to the Young Irrigation Network forum. More than 35 participants attended the presentation.



*Automatic Irrigation Farm Walk in progress*

### **Goulburn-Murray Water Farm Program Extension**

Goulburn-Murray Water (G-MW) plays an important role in the Farm Program as a key partner involved with ensuring sustainable and safe groundwater management as a consideration in the development of Whole Farm Plans. G-MW provided technical advice for 155 Whole Farm Plan referrals on issues relating to natural drainage for the Local Government Municipalities across the region.

G-MW project staff contribute to the overall extension services provided under the SIR Catchment Strategy by promoting implementation, pamphlet preparation, leading and assisting in field days, tours & presentations and providing technical support to community groups. In addition, G-MW, as the lead agency responsible for the Sub-surface Drainage Program provided advice on groundwater, salinity and groundwater pumping.

### **Goulburn Broken Water Quality/Nutrients Program**

GB CMA Water Quality Nutrient Project (Nutrient Project) has been involved in the development of Whole Farm Nutrient Management Plans. These plans have taken farm nutrient management to a higher level by incorporating an array of nutrient components such as effluent ponds, feedpads, nutrient budgeting and mapping as part of a Whole Farm Systems approach rather than focusing on isolated nutrient issues.

The Nutrient Project has continued to strengthen partnerships as well as develop new alliances with other regional stakeholders to provide a mechanism of transferring information and processes. For example the DPI/G-MW “Non-compliant framework for effluent discharges” developed under the GB CMA Nutrient Project has been used as a blue print in the regulation/extension approaches currently emerging in the southern catchments.

A successful Soils and Fertiliser program was conducted in the Goulburn Broken specifically for farmers in and around the Murray Valley Drain 13 to help address farm management of nutrients.

### **Local Area Plan Program**

Local Area Plan implementation for 2003-2004 has seen many activities undertaken by the groups. Two groups finalised their plans and launched them to the community. These groups have started to implement some of the activities highlighted in their Local Area Plan. The other Local Area Plan groups have been busy implementing their plans.

The range of activities the Local Area Plan groups have undertaken, have varied between each group. Some common themes include roadside management, public lands projects, educational activities and remnant vegetation projects. Many publications/newspaper articles have also been produced by the groups.



*Nanneella Estate Primary School children helping in the launch of the Rural Information Kit.*



*CLAPIC on their bus trip to the Heartlands Project and Landcare Award winning farm. This picture is of the CLAPIC members discussing watertable levels with Barry Oswald, GB CMA.*

### **Agronomic Research and Investigation - Farm Scale Serial Biological Concentration Project**

This project has examined the long term issues surrounding higher salinity irrigation re-use, groundwater salinity trends, higher salinity agriculture options, salt tolerance, soil structure

management, Serial Biological Concentration (SBC), climatic influences, salt load management and ways of managing salt to avoid the need for downstream disposal.

After consultation with regional stakeholders, it was agreed that monitoring would cease at the Unera SBC site at the end of the financial year. During this year, data from some species of salt tolerant eucalypts at the site was gathered to assess the performance of trees under the 9000EC groundwater irrigation on heavy soils at the site. *E. Occidentalis* has performed extremely well under the circumstances.

Involvement in developing a longer-term research program has been ongoing during the year. Significant input has been provided to the development of the SIR Sub-surface Drainage Program Research & Development Strategy, from which future work may emerge.

One new piece of work to arise has been the Public Salinity Control Groundwater Pump Key Performance Indicators project. Public Salinity Control Groundwater Pumps are developed where groundwater salinity is too high for farm re-use but salinity losses due to high watertables are high enough to justify groundwater pumping. Work has been undertaken this year to try to select some new Public Salinity Control Pumps where soil salinities can be monitored over time within the area of pump influence. The objective is to show soil salinity improvement over time, one of the Key Performance Indicators for a pump. During the year, three sites were EM38 surveyed and soil sampled. Only one site with small areas of moderate soil salinity was identified.

At the Mt. Scobie site, soil and water sampling was carried out (and at the Blighty site) in May-June 2004. Analyses commenced on soil samples and a final report compilation for the Murray Darling Basin Commission (MDBC) has commenced. This work concludes the MDBC funded monitoring and interest in the sites and so reconsideration of the project next year will be required.

## **SURFACE DRAINAGE PROGRAM**

### **Surface Water Management Program**

*Program Goal: By 2020, improve the health of natural resources and reduce the risk to investment in the Shepparton Irrigation Region, by providing an appropriate surface water management service in areas where the total benefits, including economic, social and environmental benefits, exceed the costs.*

The Surface Water Management Program continues with drainage design and construction across the SIR. Although no Primary Surface Water Management Systems were commissioned during 2003-2004, 12km of drainage was constructed on Muckatah Drains 3 and 8 and Stages 3 and 4. G-MW consultants designed 12km of drain, and continued or commenced work on a number of Drainage Course Declarations. These included Wanalta, Woolwash, Stanhope and Lockington.

This year 11.6km of Community Surface Water Management Systems was constructed. In addition, 75km were surveyed and designed. This provided a regional drainage service to another 865ha, protecting this area from waterlogging and rising water tables.

The Indigenous Heritage Management Project aims to prevent the disturbance of Aboriginal archaeological sites wherever possible and to involve and consult with local Aboriginal communities in matters relating to indigenous cultural heritage. Following government agency department restructuring, the partnerships between Aboriginal Affairs Victoria (AAV) Community Surface Water Management Plan (CSWMP) and Regional Cultural Heritage Program (RCHP) was re-established. Liaison with Aboriginal communities, landowners and

other government authorities was re-commenced. AAV continued production and distribution of Indigenous Heritage mini-posters.

With dry conditions continuing, only two high-flow storages were constructed this year under the Drainage Nutrient Removal Incentive Scheme. These storages were spaced around the SIR with 120ML constructed at Tallygaroopna, and a 200ML storage constructed at Strathmerton. Since the scheme commenced the total number of high flow storages built in the SIR, within the GB CMA area, with assistance from the incentive scheme is 23, with a storage capacity of 4,363ML.

The procedure for dealing with dairy effluent discharges into drains was improved and implemented in partnership with key agencies. Only two discharges were detected during this year.

A Memorandum of Understanding for Irrigation Drainage and Water Quality was signed by Department of Sustainability and Environment (DSE), G-MW, GB CMA, North Central CMA and the Environmental Protection Authority (EPA) on 22 June 2004. This sets the framework for irrigation drain management and defines the format of drain operating and management plans.

The G-MW Surface Water Management team continued to support the implementation of Community Surface Water Management Systems. Expenditure for 2003-2004 was \$222,667.88, which exceeded the allocated budget of \$200,000 by \$22,667.88. The excess was due mainly to additional investigation and consultation associated with the construction of a number of G-MW Community Surface Water Management Systems.

Staff of the Surface Water Management Program went on a study tour to Deniliquin. This was a fantastic opportunity to build teamwork across agencies while learning Murray Irrigation Limited's strategies for managing surface water.

## **SUB-SURFACE DRAINAGE PROGRAM**

*Program Goal: To, where possible and justified, protect and reclaim the Shepparton Irrigation Region's land and water resources from salinisation through management of the Region's groundwater.*

### **Public Salinity Control Groundwater Pumps**

Feasibility level investigations were completed at three sites, with none in progress. All three completed investigations were successful and gained community support to proceed with pump design and construction.

Three Public Salinity Control Groundwater Pump sites were completed and handed over for management by G-MW. Construction commenced at three sites. Designs were completed for two sites, and none were in progress.

The total salt load for disposal from the three completed sites was 479 tonnes, with a disposal impact of 0.050EC. The rated area for the three sites was 317ha.

### **Private Groundwater Pumps**

Farm Exploratory Drilling Service (FEDS) investigations progressed at a high level of activity.

Investigations were completed on 67 pasture properties, with the following outcomes:

- 10 were successful in locating private groundwater pumping sites
- 39 were unsuccessful, but identified potential Public Salinity Control Pump sites



- 1 was unsuccessful, but located a low yielding site
- 17 were unsuccessful, with very limited or no pumping potential

Private groundwater pumping has been promoted to Local Area Plan groups, and 10 of the investigations completed during 2003-2004 were on properties within Local Area Plan areas.

A further 35 investigations were commenced on properties, with works still in progress.

Horticultural property investigations were completed on three properties, with all three being unsuccessful. Investigations were in progress on two other properties.

### **Capital Grants for Sub-surface Drainage**

Due to the high FEDS success rate in 2002-2003, there continued to be a high level of demand for the installation of groundwater pumping systems on pasture properties. There were 33 pasture property grant payments made to 30 individual landholders. Many of these were to landholders that completed works in the 2002-2003 financial year. In 2003-2004, 13 new systems and no upgrades were completed. Grant assessment pump tests were completed on six systems.

Grant payments for Private Exploratory Drilling were made for eight completed systems.

No horticultural property grant payments were made.

New grant guidelines including a cost-share matrix was developed to improve the distribution of grant payments for implementation from 1 July 2004. These guidelines see a shift from support for high resource value sites to sites that may have lower resource value for the landholder but more value to the SIR Catchment Strategy from a salinity perspective.

### **Salt Disposal Management**

Flow conditions in the River Murray and Broken Creek during winter/spring 2003 reached trigger levels for disposal to commence, but there was concern that the flows may not be sustained for a long enough period to warrant a request for all eligible pumps to be started (lasted all of four days). Therefore no pumps were given the opportunity to dispose during this brief period.

### **Extension**

An evaluation project will be incorporated into public pump activities to gain an understanding of the attitudes, reactions and general feelings of the landowners towards the public pump program and the impact of extension in driving change. This process forms part of a larger evaluation framework developed for the DPI Groundwater Extension Program.

Groundwater staff and Rabi Maskey (DPI, Farm Team) developed a quantitative evaluation project seeking to provide data on the perceived value of groundwater to groundwater users. The project will complement the Bennett's Hierarchy evaluation technique drawn up for DPI Groundwater Extension project. The project will test the hypothesis that if landowners place enough value on the 'assets' on their property they will do works without accessing government assistance.

DPI and G-MW extension officers reviewed the implementation and administration of incentives for new private groundwater pumps, upgrades and conversion. Part of the review has been testing the feasibility of adapting the cost-share matrix as used for re-use, automated irrigation, tree planting and environmental incentives.

DPI and G-MW groundwater extension staff developed a partnership approach to completing groundwater licence renewals. There are about 200 groundwater users annually that require their licence to be renewed. The process is looking at providing targeted extension to the groundwater users. An evaluation project will also be incorporated into the licence renewal process to provide current information on groundwater user attitude, behaviour and perceptions on groundwater management.

### **Support to Sub-surface Drainage Program Implementation**

DPI Sub-surface Drainage Extension staff provided the following support:

- Pumper's Trumpet newsletter sent out to all shallow (<25m depth) groundwater users.
- Collated information to develop a series of brochures.
- Finalised landowner support for a new Public Salinity Control Pump in Wyuna. At this site there is significant remnant vegetation and direct seeding works undertaken by a landowner that will benefit from the drawdown created by the pump.
- Worked with the Wyuna Landcare Group to compile a video celebrating 10 years of achievements in the Wyuna Landcare area.
- Represented DPI on the Katunga Management Plan Volume Appeals Panel established by G-MW. The process of documenting what might constitute grounds for appeal and a review of the Management Plan Volume was also completed.
- Documented a plan outlining mechanisms to enhance participation and community ownership the Sub-surface Drainage Program. The plan has been developed as part of the Strategic Review of Research and Investigation Needs of the Sub-surface Drainage Program.
- Investigated 6-7 potential public groundwater pump schemes for landowner support. This involved an extension program for between 30 – 50 landowners across the SIR.

### **SIR Groundwater Management Plan**

The following activities were undertaken:

- Groundwater usage and salinity trends were assessed.
- Annual collection of groundwater samples from private pumps undertaken.
- Strategic response to issues developed.
- Simplified guidelines for determining irrigation licence entitlements developed.
- Provided support for the Groundwater Management Plan Working Group.
- Presentation on Work Plan, budget, usage and salinity trends and strategic response made to SIR Groundwater Management Plan Working Group.
- Review of metering status completed.

### **RIVER HEALTH - WATERWAYS PROGRAM**

While a number of new initiatives commenced in 2003-2004 the River Health-Waterways Program continued to build on initiatives commenced in previous years. The aim of our program is to reduce the key threats to the health of our rivers and the quality of water within them. This included stabilisation of near-stream and in-stream erosion, protection and enhancement of riparian lands and wetlands, address degraded riparian frontages (control of exotic vegetation and revegetation activities). Through special funding, barriers to fish migration were investigated to prepare for removal or modification in future years.

This year key implementation targets achieved included:

- 217km of stream frontages protected (with 190 binding management agreements);
- over 60km of in-stream and near-stream erosion controlled; and

- 79ha of woody weed control.

Key projects included: extension of habitat for the native trout cod (Seven Creeks); recreational fishing access and habitat (Goulburn River); healthy rivers and stressed rivers projects (Broken River); planning for future works programs – Local Waterway Activity Plans for the Broken River (Caseys Weir to the Goulburn River Confluence).

### **Waterway Health Activity Plan - Shepparton Irrigation Region**

This action plan was prepared for the Broken River from Gowangardie Weir to its confluence with the Goulburn River at Shepparton. This study aimed to develop a detailed action plan to maximise environmental values and minimise the impact of threats to the stream.

Consultants were engaged to undertake an assessment of the health and condition of the Lower Broken River and undertake a risk analysis to identify the range of stream values and threats. The occurrence of bank instabilities was identified highest in reaches 3 & 4 from the East Goulburn Main Channel to the Goulburn River at Shepparton.

A works and activities program was developed with a number of high priority bank erosion sites identified for works to take place late in the 2003-2004 financial years works program.

#### **Anabranche Flow Restoration and Fish Barrier Removal**

The Seven Creeks has a number of anabranches in the lower reaches with one commencing upstream of the East Goulburn Main Channel. The “named” Seven Creeks follows the eastern waterway and the “anabranche” is the western waterway. Due to past works by the old State Rivers and Water Supply Commission the flow was diverted into the western anabranche leaving the eastern waterway blocked at the bifurcation. The design was for structural works to restore flows to the eastern waterway of the Seven Creeks as the eastern waterway has no barriers and also improve fish passage to the western waterway.

The construction works consisted of a structure downstream of the East Goulburn Main Channel siphon site of the western waterway to flood the exposed siphon pipe and allow fish passage.

A structure was also built on the western waterway at the bifurcation of the eastern waterway as a control point to allow water to flow to the eastern waterway as well as the western anabranche to open both flow paths to fish passage. A fish friendly ford crossing was also constructed to the eastern waterway to allow landowner access as a result of the increased flows along the waterway.

The combined efforts of the River Health and Water Quality and Sustainable Agriculture and Land Management (SALM) Programs successfully made improvements to land and water throughout the Mid Goulburn Broken catchment in priority areas identified by the Goulburn Broken Regional Catchment Strategy. Major improvements were made with ‘in-stream’ works, revegetation and protection of biodiversity.

The Waterways team carried out an impressive array of works supported by the community-based Waterways Working Group who actively engage local communities and provide a valuable connection between landholders and the GB CMA.

Establishing native grasses at sites following works such as willow removal, bank stabilisation and fencing is a continuing challenge in the Waterways program. Interest in Waterway Grants remains strong with total expenditure 2003-2004 of \$141,000 resulting in 22km of fencing protecting 55ha of stream frontage. Nineteen off-stream watering systems were established to offset the loss of access to drinking water for stock. A further \$100,000

in grants have been approved and are in progress while \$107,000 in Waterway Grants are proposed and under consideration with landholders.

## **RESEARCH - WATER FOR GROWTH PROJECTS**

### **Market Mechanisms**

Sustainable use of water resources in the dairy industry is a regional priority. While there has already been major improvement in water use efficiency over the past 20 years (for which drought and water trading have played a big part in forcing change) Government policies and incentives also play a large part in encouraging improved irrigation efficiency.

Now close to completion, this study has investigated 'policy instruments' (which include policies, programs, incentives, penalties and social aspects) that the Government is able to use to help drive irrigation systems towards sustainability. A number of conclusions about what factors have been the most successful in helping irrigators take up more efficient practices have been made. One key finding has been that policy instruments are often designed as discrete things. These may have unknown results when combined with all the other policies, incentives, penalties and pressures that go into water efficiency decisions made by irrigators. This was seen as a major barrier to the adoption of new market based instruments (such as water trading) by natural resource managers.

How to navigate through the available policy instruments and deal with such issues as what combinations to use and their combined consequences has led to the development of a Decision Support Framework (DSF). The DSF aims to help navigate through the maze of issues and has been tested in collaboration with the three north and western CMAs. Key results common to each CMA include:

- Equity is an important consideration in terms of net costs and benefits. A key success criteria will be real or perceived inequity arising from implementing policy instruments.
- Evaluation of the performance of current policy instruments against regional objectives is an essential (and difficult) part of designing improved systems for the future.
- Designing a suitable policy mix and decision framework is made very complex because of the large number of factors that have to be considered.
- Social capital is a fundamental part of any policy instruments-based program. It is only produced over time by all the relevant stakeholders through investing in building relationships and trust. How much social capital is available influences which policy instruments should be chosen.

### **Bayesian Networks**

Bayesian Networks are a method of representing complex systems. In this study, the Bayesian Network approach has been used to develop a systematic framework to represent the water resources in the irrigated landscape. A framework constructed in this way contains a conceptual model of the system where all the linkages between the many parts of the system are identified and built into a computer model. The computer model can then be used to help understand and consider the affect of different water resource management decisions on key parts of the system, such as a farm.

Work has now largely been completed and the main project objectives have been achieved. This has included completing the development of the computer based model of an irrigation farm (called INTECA farm) to test alternative pasture irrigation systems. The benefit of this modelling approach is that it has allowed scientific research results to be integrated with practical knowledge to predict such things as water use, productivity, recharge and runoff.

A similar conceptual model has also been developed for the shallow groundwater system to predict watertable depth and aquifer salinity. A surface water system model was also prepared, but it has not advanced as far as the groundwater and farm model. However, the farm and groundwater models have been successfully combined with mapping capability (GIS) to enable the outputs to be displayed as maps. The key benefit of this work has been the ability to identify areas at risk from high watertables and salinity. This then allows those areas most at risk to be targeted for land and water management practice change.

### **Improving Water Use Efficiency through Improved Irrigation System Design**

Border check (flood) irrigation is the main way pasture is grown in the SIR. As the northern Victorian dairy industry is the largest user of irrigation water, ways to improve water use efficiency are very important for the future of the industry and are the focus of this study. While considerable advance has been made over the past decade with laser grading and farm design, a method to get the highest water efficiency out of farm designs and take into account soil types has not been available.

Whole Farm Planning is currently used to ensure farm designs consider environmental outcomes as well as practical farm considerations. However, there is no requirement that the irrigation system meet any irrigation performance standard. This study looked into whether it was possible to improve irrigation water use efficiency by identifying appropriate irrigation performance standards and include these in Whole Farm Planning guidelines.

Key results from this study, (now completed) include:

- Market research indicated designers needed a tool to assist them to design irrigation systems that are appropriate for the soil conditions. The market research also identified that to support the use of the tool, some soil data, particularly the soil infiltration properties, was required.
- A review of available tools identified Analytical Irrigation Model (AIM) to be the most user-friendly. AIM has been demonstrated to adequately represent surface irrigation processes in the SIR and was therefore used as the base for a design tool. A workshop was held for irrigation designers and extension staff to demonstrate the use of AIM for irrigation design. Subsequently AIM has been used to assist Whole Farm Planning decisions for a number of properties.
- A database of irrigation event simulations has been generated to examine the sensitivity of irrigation performance to design parameters, such as bay length, width, slope and flow rate. Analysis of the database suggests that for an irrigation bay of given dimensions and soil type, irrigation efficiency increases with flow rate up to a certain point. Above this point, further improvements in irrigation performance are minor. The point at which this occurs increases with the permeability of the soil and length of irrigation bay.
- A series of publications have been developed that describe the principles of irrigation design for the SIR. The first publication describes generic background material including plant water use, soil water relationships and measures of irrigation performance. The second publication describes the selection and design of border-check irrigation systems including descriptions of surface irrigation models, how to use them and how to interpret their output.

### **Soil Hydraulic Properties Mapping**

The water holding and drainage properties of soils are very important in respect to the design and operation of irrigation farming. Water use efficiency, salinity management and knowing how much water should be applied are also important considerations that hinge on knowing about the hydraulic properties of the soil. This study took detailed measurements of soil hydraulic properties from at least 50 locations, based on the mapped soil types, in the region.

The results of this detailed testing in the field and laboratories provide fundamental information about the natural range of soil hydraulic properties found in the SIR.

The information gathered will support further improvements in irrigation design through improved matching of irrigation type to soil and enterprise needs. The need for this was identified during the "Improving Water Use Efficiency through Improved Irrigation System Design" study. Better understanding of the soil properties will also assist in siting new irrigation developments, suggesting changes to existing supply systems and targeting irrigation incentive schemes.

This study, due to be finished in 2005, has made substantial progress during 2003-2004. Data collection for the six major soil groups in the region was completed by June 2003. Work in 2003-2004 focussed on farm scale variability in soil properties and also tried to develop a simple method of mapping the essential soil properties rapidly and cheaply to help with irrigation design on farms. In addition, detailed analysis of soil texture, density, chemical analysis and organic matter in representative soils was completed.

## **MONITORING PROGRAM**

*Program Goal: To review the efficiency of outcomes achieved by implementing the plan, provide data for prioritising and targeting works and from regular plan review and identify the impact of salinity and nutrient pollution where no plan activity has been undertaken.*

Monitoring programs have been in operation for many years to detect threats and trends, determine priorities and assess progress towards achieving catchment strategy targets for salinity, nutrient and other environmental issues.

Groundwater levels are monitored at nearly 1800 locations across the region, with the monitoring frequency varying from monthly to annually. The information collected is used to determine the priority of Catchment Strategy works, indicate the threat to the region's natural resources, provide information on the effectiveness of Catchment Strategy works, and refine management plans. The information has also been extremely valuable in conveying to the broader community the messages about the salinity problem and thereby getting the community engaged in developing and implementing solutions. It is now over 20 years since the first Watertable maps were produced and widely distributed.

Monitoring of surface drainage water commenced in the late 1980's under the salinity plan and expanded over the following decade. Of the area of the Shepparton Irrigation Region served by primary drains, 93% are continuously monitored for flow; 90% are continuously monitored for salinity; and 87% are monitored for nutrients, pH, turbidity and suspended solids (fortnightly). Surface drain flow leaving the region in 2003-2004 was 3.4% of water delivered into the region, or less than 1.5% of available water if rainfall is taken into account.

The salinity program includes monitoring of flow and salt levels in surface water management systems (drains) and streams across the region, a total of 32 sites. This enables determination of salt loads exported to the River Murray, to meet requirements under the Murray Darling Basin and Victorian salinity strategies/plans, and allows assessment of salinity strategy implementation progress. A recent review of 10 years of data found decreasing trends in flow and salinity at all drain and stream sites in the region. It also concluded that the current monitoring program was meeting all requirements.

Monitoring of nutrient levels in surface drainage water commenced in 1990 at 4 sites and has since expanded to 14 sites. Results are used to assess progress against the nutrient load reduction target set in the water quality strategy, which primarily aims to reduce the risk of eutrophication and blue-green algal blooms. The total phosphorus export from drains for

2003-2004 was about half of the long term target load, while the 5-year average phosphorus export was also well below the target (see graph). Rigorous trend analysis has shown that flows and nutrient loads are trending downward over time and nutrient concentrations at most sites are no longer showing upwards trends. In most cases these trends are independent of rainfall, season, irrigation water deliveries and flow.

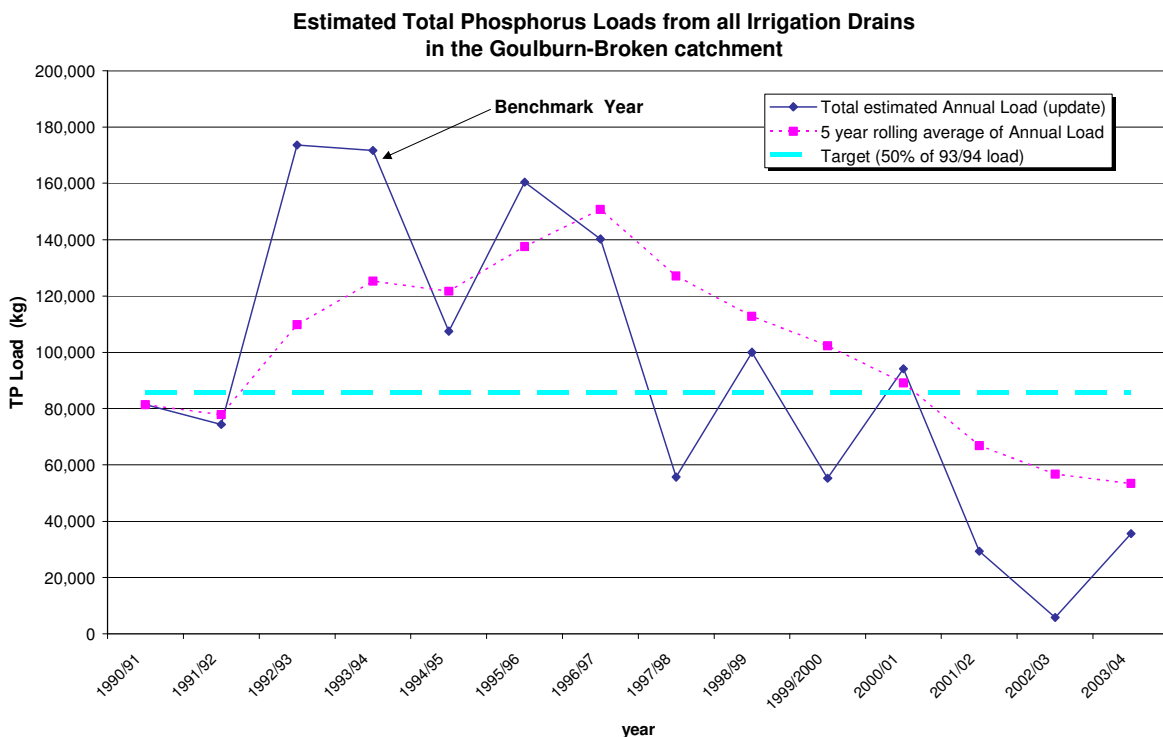
The Waterwatch community monitoring program for drainage water was re-named *Drainwatch* and continued, although dry conditions in the latter half of the year resulted in low drain flows that restricted sampling opportunities.

Monitoring is also undertaken to determine the long term impacts of high watertables and salinity on natural features. Monitoring was recommenced after a review of the program and information was collected at three wetland and four terrestrial sites during November 2003. Groundwater depths and salinity levels, vegetation transects and photographs were recorded for all sites, while at the wetlands with water various water quality parameters were also measured. The monitoring is expected to continue on an annual basis.

The 5-year rolling average TP load continued to show substantial decline and remained below the target value for reduction of nutrient loads from irrigation drains. Based on preliminary estimates, the inclusion of 2003-2004 loads will see a further decline in the five year average (refer graph 1). Statistical analysis has shown that flows and nutrient loads are trending downward over time and nutrient concentrations at most sites are no longer showing upwards trends. In most cases these trends are independent of rainfall, season, irrigation water deliveries and flow. From the perspective of nutrient generation the trend continues in the right direction. However a 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 and comparison to Water Quality Strategy targets continued during 2003/04. Phosphorus export from the SIR drains was only 14% of the amount that would have met the long term 5-year average target.

Graph 1 Estimated Total Phosphorous Loads



## **PROGRAM SUPPORT**

Program Support in this context is specifically focussed on delivery of the SIR component of the Regional Catchment Strategy for the GB CMA. It encompasses community engagement, communication and partnership management. Program support includes works from all the partner agencies: DPI, G-MW, GB CMA and Local Government.

### **Support to the Shepparton Irrigation Region Implementation Committee**

The Executive Officer coordinates program activities and provides a high level of technical advice and administrative support to partnership agencies and community. Funding of nearly \$19 million is coordinated across 50 projects and three agencies.

The "Policy Document of the Shepparton Irrigation Region Implementation Committee" (released 1998) continues to be revised and updated to reflect new policy adoption and amendments. A revision and updating of the Implementation Committee Communication Strategy commenced to ensure all stakeholders are kept informed all new and arising issues.

### **Community Engagement Program Philosophy**

Community education underpins the success of the Shepparton Irrigation Region component of the Regional Catchment Strategy. The focus of community-based catchment management is to:

- Facilitate the decision-making process between community groups and government agencies;
- Establish and maintain an efficient and systematic process for meeting the needs of client groups;
- Promote community awareness of salinity and nutrient pollution through presentations at schools in the region; and
- Maximise area covered by landowner groups by providing group facilitators

### **Raising awareness in the Community**

#### **Community Salinity Grants**

The Community Salinity Grants program has been successfully administered across the Goulburn-Broken catchment since 1986. The purpose of the Community Salinity Grant program is to encourage non-profit organisations to undertake activities that increase the community's awareness and understanding of salinity related issues. In 2003-2004, there were 36 successful grant applications receiving a total of \$48,552. Twenty-six of these groups were in the SIR.

#### **Landcare and Local Area Plan Development**

The 42 Landcare and seven Local Area Planning groups in the SIR undertake activities to address issues of groundwater management, biodiversity, waterways, surface drainage and monitoring. These issues were used as strategic priorities to develop the network of Local Area Plans across the region. Local Area Planning is the next stage for Landcare groups to be reinvigorated through an issue-identification and priority setting process.

Three Community Planning Groups were supported to further develop their Local Area Plans. This work resulted in the launch of the Bunbartha/Kaarimba/Zeerust Local Area Plan and the Muckatah/Katamatite/Naringaningalook Local Area Plan in December 2003 and May 2004 respectively. The Dhurringile & District Local Area Plan was further progressed and will be seeking endorsement from the agencies and broader community in the year ahead.



### Saltwatch

Saltwatch is an environmental monitoring program that helps communities identify and better understand salinity problems in their local area. It is Australia's longest running community monitoring program. Saltwatch Week is held in May every year. This year there were 18 school visits (28 including the 'Matter of Salt' days and other related activities). School visits engaged about 780 students across all year levels.

### Multicultural Community Engagement

Another dimension to the community program is the engagement of diverse communities. The Multicultural Facilitator who is located at the Tatura DPI office, provides overall coordination and strategic communication to a number of culturally diverse communities including Punjabi, Iraqi, Afghani, Italian, and Greek.

### Salinity Program Coordination

The Department of Primary Industries support delivery of several key programs including: Farm, Environment, Community Surface Water Management, Sub-surface Drainage and Communication & Engagement. Teams servicing these areas make up the Sustainable Irrigated Landscapes-Goulburn Broken program. Overall, the program aims to provide a well-informed, effective and appropriate level of service to agency partners and community.

This is achieved through:

- Strong and healthy partnerships with communities, groups and partner agencies;
- Encouraging integration across disciplines and structural boundaries; and
- Incorporating evaluation into project delivery and reviewing impact and processes to continually improve services.

Key achievements and challenges include:

- Supporting an increase in farm activities despite the impact of the drought
- Development of a checklist to ensure responsibilities for environmental management are understood by partner agencies and farmers;
- Formation of an Evaluation Advisory Team to support and foster a stronger culture of evaluation across all Sustainable Irrigated Landscapes-Goulburn Broken programs;
- Review of the Environmental Assessment process for Surface Water schemes; and
- Development of Community Surface Water Management policy to commence discussions on road-crossings and extending primary drains further into individual drainage catchments.

### Municipal Catchment Coordination

The role of the Municipal Catchment Co-ordinator is to liaise between the Municipalities within the SIR and the agencies responsible for implementing the Goulburn Broken Regional Catchment Strategy. The Municipal Catchment Coordination project has been operating since 1992 and was implemented through the "Municipalities against Salt in Northern Victoria" group.

In conjunction with Local Government officers, a process framework called a Matrix for Action Document has been developed. The document has been designed to show direct links between the objectives of the Goulburn Broken Regional Catchment Strategy and a council's corporate plan using a range of key catchment issues that affect both councils and Catchment Management Authorities. These issues of common concern provide a base for the development of stakeholder partnership activities.

### **Local Area Plan Technical Support**

Local Area Plan's will be a major vehicle for targeted implementation of works. The Geographic Information Systems (GIS) Group at DPI, Tatura provide technical services to ensure that:

- Local Area Plan's are based on good science and align with the Regional Catchment Strategy, while at the same time achieving community ownership of the plans; and
- Community-based monitoring programs yield data that is both reliable and useful to the Regional Catchment Strategy.

In 2003-2004, this project completed maps for the Nathalia and District Local Area Plan that were used for planning tree planting activities to link with remnant vegetation. Maps were also provided to the Wyuna Local Area Plan group to find out what irrigation infrastructure existed in the local area.

### **Supporting development of the Shepparton Irrigation Region component of the Regional Catchment Strategy**

G-MW continued development and implementation of the Sub-surface Drainage Research and Investigations Strategic Plan. This includes the preparation of project plans and progress on the management of Research and Investigation of the Sub-surface Drainage Program; review of the compatibility of program and agency policies and procedures; and development of a transparent framework for prioritising works and measures under the Sub-surface Drainage Program. In addition, staff continued work on an audit of EC impacts of on-ground works. The approach has been approved by Victorian Salt Disposal Working Group and Murray-Darling Basin Commission and is to be applied to the whole of the Goulburn-Broken catchment.

The Shepparton Geographic Information System project at the DPI, Tatura, develops and maintains information systems that support the implementation, monitoring and review of the Shepparton Irrigation Region component of the Regional Catchment Strategy; and the activities of Landcare groups and the Goulburn Murray Landcare Network.

Project staff also:

- Supported creation of maps and Geographical Information Systems for the Whole Farm Plan, Automatic Irrigation and Drainage Re-use System projects.
- Completed maps for the Muckatah Katamatite Naringaningalook Local Area Plan.
- Produced spatial products for Bunbartha and Muckatah implementation staff. These were for weed mapping, grant applications, project planning, newsletters and posters.
- Completed maps for Landcare groups used for project planning.

Additionally a project has been undertaken with the support of a graduate to analyse the landscape structure, within the Shepparton Irrigation Region, from an ecological perspective and to identify priority areas for revegetation and management works.

Sub-regional Planning coordinates the provision of technical input and support for community based groups and agency staff in the planning, identification, prioritisation, implementation and ongoing monitoring of works. With continued input from partners, this project produced a Sub-surface Drainage Geographical Information System which is currently being trialled.

The project also assessed salt load entering the Goulburn River between Goulburn Weir and Murchison, and to assess options to reduce groundwater inflows (Funded by Murray-Darling Basin Commission); evaluated electron-magnetic equipment and techniques; progressed development of a catchment scale sub-surface drainage plan commencing in the Wyuna catchment, Sub-surface Drainage Program performance indicators and review of Sub-surface Drainage Program monitoring needs.

## APPENDICES

### PHYSICAL PERFORMANCE INDICATORS

Program Activity Description	Note	2003-2004			Cumulative Total to Date	Cumulative Target 2020
		Target for year	Actual to date	% +/-		
<b>Farm and Environment Program</b>						
<i>Broadacre Whole Farm Plans</i>						
Number		126	175	139	2,682	5,000
Area (ha)		10,000	10,907	109	193,775	350,000
<i>Horticulture Whole Farm Plans</i>						
Number	1	14	3	21	166	250
Area (ha)		350	127	36	6,007	25,000
<i>Re-use Systems Incentives</i>	2					
Number		40	76	190	269	
Area served (ha)			5,018		20,468	
Volume of storage (ML)			319		1,376	
<i>Total Re-use Systems</i>	3,4					
Number		40	76	190	3,582	
Area served (ha)			5,018		206,468	
Volume of storage (ML)			319		14,101	
<i>Automatic Irrigation Incentives</i>						
Number		40	10	25	76	
Area served (ha)			909		4,513	
Number outlets automated			1		48	
<i>Landforming/laser grading (ha)</i>	5	10,000	11,700	117	180,400	300,000
<b>Environmental Works</b>						
Tree Growing Incentives (ha)		40	44.4	110	563.7	
<i>Protection of Wetlands</i>						
Management Plans complete			1		2	
<i>Private Land Environmental Incentives</i>						
Protected (ha)		52	12.6	24.2	301.6	
Revegetated (ha)	6	20	Note 6			
<i>Protection of Remnant Vegetation</i>						
Sub-surface Drainage (ha)	7		144		1,922	
Management Plans complete			2		4	
<i>Private Land Environmental Incentives</i>						
Protected (ha)		52	72.9	140	693.3	
Revegetated (ha)	6	20	84.8	212	185.22	
<i>Public Land works (ha)</i>			n/a			

Program Activity Description	Note	2003-2004			Cumulative Total to Date	Cumulative Target 2020
		Target for year	Actual to date	% +/-		
<b>Sub-surface Drainage Program</b>						
<i>Private pumps installed - broadacre</i>						
Number: new / upgrade		20	13/0	65	246/71	365/95
Agreed Volume (ML/yr)	8	2,000	4,097	114	32,469	51,500
Area protected (ha)	9	2,000	4,097	114	32,469	51,500
<i>Private pumping - broadacre</i>						
Agreed Volume (ML/yr)	10		n/a			
Volume pumped (ML)			118,132			
Salt disposed (tonnes)	11		0	0		
<i>Private - horticulture</i>						
Number: New/Upgrade		2	0	0	20/1	40/10
Area protected (ha)	12		0		770	1,000
Tile drainage (ha)		0	0	0	15.9	300
<i>Public</i>						
Number	13	6	3	50	40	425
Volume pumped (ML/yr)	14	600	TBD		TBD	40,000
Area protected (ha)	15	1,200	626		4,609	85,000
<b>Surface Water Management Program</b>						
<i>Primary</i>						
Length designed (km)		35	12	34	355.5	644
Constructed: New (km)	16	14	12	86	184.9	362
Remodelled (km)		Incl above	0	Incl above	46.6	282
<i>Community</i>						
Length designed (km)		19	32.1	169	1,189.6	2,102
Constructed (km)		22	19.5	77	520.5	2,102
Area drained (ha)		2,200	1950	77		
<i>Nutrient Removal Schemes</i>						
Number		5	2	40	23	
ML Storage			320		4,363	

**Notes for Table: Physical Performance Indicators:**

- Does not include horticultural whole farm plans prepared by landholders with technical assistance from agency staff.
- Includes NC component of SIR.
- Assumes 1,000 systems constructed prior to the commencement of the plan.
- Includes an estimate of post plan systems prior to incentives becoming available in 2001.
- Includes re-grading works. This needs to be taken into account when considering cumulative total. Estimated from the 1996-1997 census.
- Area of wetland revegetated included in remnant total.
- Sub-surface drainage protection of environmental features, includes wetlands. Doesn't include area enhanced by regional surface drainage.

8. Average annual volume to be pumped in accordance with the capital grant agreement.
9. Assumed that 1 ML/yr pumped and re-used regularly and within Plan guidelines provides salinity control for 1 ha.
10. Estimate of minimum required pumping volume for registered salinity plan bores.
11. Salt load pumped under Salt Disposal Allocation contract, 2003 winter disposal period (no disposal available).
12. Assumed that small horticultural pumps operate on average for 100 days/yr and that 1.0 ML/yr pumped provides salinity control and reasonable watertable control for 1 ha.
13. Pumps with final rating completed. The targets are interim values (less than original Plan targets) that have been adopted pending resolution of disposal issues. The future targets are the original Plan targets, and include targets for pumps disposing to evaporation basins.
14. Assuming 120 days per year of operation.
15. Area of private land rated as receiving salinity control. The target values are based on the assumption that the average gross area served by public pumps is 200 ha per site.
16. The Cumulative Total has not increased by the length of drain completed, as the previous Cumulative Total was incorrect due to the use of "equivalent lengths" of drains in previous reporting.

### SIR CATCHMENT STRATEGY BUDGET AND FINAL EXPENDITURE 2003-2004

SIR Catchment Strategy Programs	State Funds \$'000	Federal Funds \$'000	Region Funds \$'000	B'fwd \$'000	Re-allocated \$'000	Total Funds \$'000	Program Expenditure \$'000
Tackling Pests	184	-	-	-	-	184	197
Veg'n M'ment	100	60	-	-	-	160	139
Catchment & Inv. Services	147	65	-	25	-	237	234
Environmental Protection	455	485	-	45	-	985	893
Farm	1,996	385	-	126	-3	2,505	2,156
Surface Drainage	2,111	2,566	168	112	141	5,097	5,138
Sub-surface Drainage	1,194	1,469	784	11	117	3,574	3,771
Monitoring	150	255	96	-	160	661	597
Program Support	1,113	741	104	378	-214	2,121	1,726
Water for Growth	1,174	115	-	18	190	1,498	1,242
River Health – Waterways	1,001	401	-	96	100	1,598	1,600
Water Quality	34	123	-	71	-67	161	139
<b>Total SIRCS</b>	<b>9,658</b>	<b>6,665</b>	<b>1,152</b>	<b>881</b>	<b>423</b>	<b>18,780</b>	<b>17,262</b>

### Summary of Cost Share Details

	Annual Expenditure 2003-2004 \$	Accumulated Expenditure \$
<b>Government</b>	17,262,000	203,947,900
<b>Community</b>	37,463,210	536,930,390
<b>Total</b>	<b>54,725,210</b>	<b>739,877,290</b>

*Note: estimates for water quality and waterways were included for the first time in 1999/2000.*

#### *Government Expenditure*

Includes expenditure of funds from budget allocation, plus funds transferred into the Strategy during the year. The total amount for the year was for works related to the SIR CS.

Government expenditure has been obtained from reports on each project, provided by relevant agency. Appropriate managers, subject to verification certified the expenditure reports as correct by audit.

#### *Community Expenditure*

Regional community and landholder expenditure was derived from a survey of farmers within the SIR, and from records of government administered assistance programs.

#### *Accumulated Expenditure*

Accumulated expenditure is expressed in 2003-2004 dollars. Previous expenditure was adjusted by applying the Victorian CPI increase of 3.0% in 2003-2004.

## **COMMUNITY SALINITY GRANTS**

Community Salinity Grants were established in 1986 to help raise awareness and understanding of salinity.

Grants are available for salinity education and demonstration projects undertaken by schools, farmers and community groups in the Goulburn Broken catchment. The scheme encourages projects that are related to local salinity management plans and strategies. Groups may apply for a grant up to a maximum of \$8,000.

<b>Group</b>	<b>\$</b>
Ardmona Primary School	2,365
Broken Creek Improvement Landcare Group	2,000
Bunbartha Kaarimba Landcare Group Inc	1,000
Cobram Primary School / Koonoomoo Landcare Group	600
Colbinabbin Primary School	900
Congupna Tallygaroopna Landcare Group	725
Cornella Local Area Plan Implementation Committee	535
Dhurringile and District Landcare Group	720
Dhurringile and District Landcare Group	2,400
Dhurringile and District Landcare Group	750
Ethnic Council of Shepparton and District Inc	1,200
Fig Tree Community Garden	370
Goulburn Broken Waterwatch/Goulburn Valley Water	2,500
Goulburn Murray Landcare Network	2,200
Goulburn Murray Landcare Network	792
Goulburn Murray Landcare Network	7,175
Guthrie Street Primary School	690
Nathalia Primary School	700

Numurkah Secondary College	400
Rochester Secondary College	850
St Josephs College Echuca	650
St Mary of the Angels Secondary College Nathalia	290
Tongala Primary School	1,350
Wanganui Park Secondary College	600
Wyuna Local Area Planning Implementation Committee	4,000
Wyuna Landcare Group Inc	350
<b>Total Grants paid in the Shepparton Irrigation Region</b>	<b>\$36,112</b>

## SALT DISPOSAL REPORT 2003-2004

### Progressive Uptake of Salt Disposal Entitlements in the Shepparton Irrigation Region

Activity	Uptake of Salt Disposal Entitlements (EC)			
	Pre-1991	Total to 2002-03*	Uptake in 2003-04	Total to 2003-04
Primary Drains	0.055	0.407	0.000	0.407
Community Surface Drains	0.008	0.095	0.002	0.097
Public Groundwater Pumps		1.388	0.050	1.438
Private Groundwater Pumps		0.692	0.315	1.007
Horticultural Sub-surface Drainage	0.030	0.156	0.000	0.156
Total	0.093	2.738	0.367	3.105

\*Includes pre-1991 impacts

Note: There was no disposal opportunity for private or public groundwater pumps during the 2003 winter-spring period. Therefore, of the *potential* 2.445 EC disposal from groundwater pumps, none occurred from private pumps and virtually none from public pumps. In addition, very little disposal from horticultural systems occurred, and drain flows to the River Murray continued to remain low.

## COMMITTEES AND WORKING GROUP MEMBERS 2003-2004

### Shepparton Irrigation Region Implementation Committee Members

Voting Members Community Representatives	Non-Voting Members Agency Representatives	Executive Support Agency Staff
Russell Pell - (Chair), Wyuna Peter Gibson (Deputy Chair) Nanneella Allen Canobie - Numurkah Stephen Farrell - Echuca Peter McCamish – Ardmona Nick Ryan – Lancaster Athol McDonald – Girgarre Ann Roberts – Shepparton Nick Roberts – Tatura	Bruce Cumming - DPI Pat Feehan/Terry Hunter – G-MW	Ken Sampson - DPI Peter Howard – GB CMA Pam Collins - DPI Ross Plunkett - G-MW David Lawler - DPI Alex Sislov - DPI Geoff Lodge - DPI Andrea Smith/Melva Ryan - GB CMA Gordon O'Brien – GB CMA

### Attendance Record

Name	03-5	03-6	03-7	03-8	04-1	04-2	04-3	04-4
Allen Canobie	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Athol McDonald	Yes	Yes	Yes	Yes	Yes	Apol	Yes	Yes
Steve Farrell	Yes	Yes	Apol	Yes	Yes	Yes	Yes	Apol
Peter Gibson	Yes	Yes	Yes	Yes	Yes	Apol	Yes	Yes
Nick Roberts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Russell Pell	Yes	Yes	Yes	Yes	Yes	Apol	Yes	Apol
Peter McCamish	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ann Roberts	Yes	Yes	Yes	Yes	Apol	Yes	Apol	Apol

### Working Group Members

Group	Voting Member	Non-Voting Member
SIR Technical Support Committee (SIRTEC)	Allen Canobie – SIR IC Russell Pell – SIR IC Ken Sampson – DPI Ross Plunkett – G-MW Peter Dickinson – G-MW Greg Smith – G-MW Chris Norman – DPI Bruce Cumming – DPI Geoff Lodge – DPI David Lawler – DPI Steve Lottkowitz – DPI Justin Sheed – GB CMA Gordon O'Brien – GB CMA Andrea Smith/ Melva Ryan – GB CMA Alfred Heuperman – DPI	Peter Howard – GB CMA Pam Collins – DPI  Corresponding Members Elita Briggs – EPA Laurie Gleeson – GVW Peter Gray – NVFGA
Budget Sub-committee	Allen Canobie Athol McDonald Peter McCamish	Ken Sampson – DPI Chris Norman – DPI Peter Dickinson – G-MW Greg Smith- G-MW Peter Howard – GB CMA Pam Collins – DPI
Sub-surface Drainage Working Group	Kevin Chapman John Avard Les Langle Ian Whatley George Trew Bruce Cumming Peter McCamish Andrea Smith Peter Dickinson Heather duVallon	Ken Sampson – DPI Terry Hunter – G-MW
Surface Drainage Working Group	Allen Canobie Geoff Witten Noel Russell Peter Gibson Morris Brown Hank Sanders	Ken Sampson – DPI Pam Collins - DPI



Surface Drainage Working Group continued	Les Langley Alan Strang	
Farm Working Group	John Cornish John Pettigrew Jim McKeown Ann Roberts Ian Klein Les Langley Ashley Walker Peter Gibson Rien Silverstein Roger Wrigley Bruce Cumming Alan Lavis Andrea Smith Noel Russell George Trew Vera Fleming	Ken Sampson – DPI David Lawler – DPI
Waterways Working Group	Russell Pell Ron Pearce Allen Sutherland Bill Probst Tait Hamilton Nick Roberts	Bruce Cumming – DPI Silvio Fontana – GB CMA David Trickey – Parks Alex Sislov – DPI Ken Sampson - GB CMA Peter Howard – GB CMA

## SIR CATCHMENT STRATEGY STAFF 2003-2004

SIR IC acknowledges the valuable contribution and dedication of the staff of our Partnership Agencies throughout the past year.

<b>Program</b>	<b>Employee</b>	<b>Agency</b>
Tackling Pests	Drew Gracie	DPI
Vegetation Management	Tim Barlow	CMA
Catchment & Investment Services	Ken Sampson	DPI
Environmental Protection	Alex Sislov	DPI
	Rebecca Heard	DPI
	Kim Dyson	DPI
	Suzanne Johnstone	DPI
	Joel Pike	DPI
	Andrew Morrison	DPI
	Lance Williams	DPI
	Kathryn Stanislawski	DPI
	Allison McCallum	DPI
	Briony McGregor	DPI
Farm	David Lawler	DPI
	Chris Nicholson	DPI
	Rabi Maskey	DPI
	Libby Reynolds	DPI
	Jen Pagon	DPI
	Chelsea Nicholson	DPI
	Alan Lavis	DPI
	Penny Shaw	DPI
	Kym Ockerby	DPI
	Scott McDonald	DPI
Elizabeth Maclean	DPI	
Surface Drainage	Geoff Lodge	DPI
	Sandra Schroen	DPI
	Brian Holmes	DPI
	Dan Hunter	DPI
	Neil McLeod	DPI
	Nick Roberts	DPI
	Kylie Preece	DPI
	Georgie Fraser	DPI
	Shane Byrne	DPI
	John Bouchier	DPI
	Veronique Froelich	DPI
	Sue Ward	DPI
Mark Paganini	DPI	

<b>Program</b>	<b>Employee</b>	<b>Agency</b>
Surface Drainage continued	Elizabeth Maclean	DPI
	John Tunn	AAV
	Michael Green	AAV
	Daryl Eaton	G-MW
	Carl Walters	G-MW
	Sam Green	G-MW
	John Owen	G-MW
	Chris Guthrie	G-MW
	Robert O'Meara	G-MW
Sub-surface Drainage	Terry Hunter	G-MW
	Peter Dickinson	G-MW
	David Douglas	G-MW
	Stephen Fiess	G-MW
	Sudath Herath	G-MW
	James Burkitt	G-MW
	Chris Howard	G-MW
	Leanne Dempster	G-MW
	Ray Modystack	G-MW
	Samantha Longley	G-MW
	Melissa Turpin	G-MW
	Terry Batey	DPI
	Martin Brownlee	G-MW/SKM
	Monitoring	Pat Feehan
Greg Smith		G-MW
Stephen Lawless		G-MW
Mark Newton		G-MW
Georgia Neele		G-MW
Rod McQueen		G-MW
Erin Reid		G-MW
Program Support	Bruce Cumming	DPI
	Rhonda McKie	DPI
	Lyndall Ash	DPI
	Candy Carter	DPI
	Marg Watters	DPI
	Rachael Spokes	DPI
	Raechel Ballinger	DPI
	Helen Reynolds	DPI
	Malwinder Pandher	DPI
	Sharon Atkinson-Firebrace	DPI
	Ken Sampson	DPI
	Pam Collins	DPI

<b>Program</b>	<b>Employee</b>	<b>Agency</b>
Program Support continued	Peter Howard	CMA
	Andrea Smith	CMA
	Melva Ryan	CMA
Research - Water for Growth	Susan Barker	PIRVic
	Matthew Bethune	PIRVic
	Kim Broadfoot	PIRVic
	Peter Clayton	PIRVic
	Tony Cook	PIRVic
	David Cornwall	PIRVic
	John Ford	PIRVic
	Bruce Gill	PIRVic
	Clair Haines	DPI
	Fiona Johnson	PIRVic
	Brigette Keeble	PIRVic
	Melinda Leth	PIRVic
	Ruth Lourey	PIRVic
	Louise Mann	PIRVic
	Richard Maxwell	PIRVic
	Andrew McAllister	PIRVic
	Brijesh Mehta	PIRVic
	Mike Morris	PIRVic
	Brian O'Meara	PIRVic
	Brendan Paterson	PIRVic
	Greg Richards	PIRVic
	David Robertson	PIRVic
	Leon Soste	PIRVic
Ninghu Su	PIRVic	
Sonia Wakenshaw	PIRVic	
River Health - Waterways	Justin Sheed	CMA
	Wayne Tennant	CMA
	Gordon O'Brien	CMA
	Dustin Lavery	CMA
	Richard Warburton	CMA
	Fleur Jaques	CMA
	David Trickey	DPI
	Silvio Fontana	G-MW
	Guy Tierney	CMA
	Lou Torelli	CMA
	Meegan Davies	CMA

## GLOSSARY

AAV	Aboriginal Affairs Victoria	MCC	Municipal Catchment Coordinator
ANCID	Australian National Committee of Irrigation and Drainage	MD2001	Murray-Darling 2001 Program (NHT)
ATCV	Australian Trust for Conservation Volunteers	MDBC	Murray-Darling Basin Commission
CAS	Catchment and Agriculture Services	MDBSDS	Murray-Darling Basin Salinity and Drainage Strategy
CaLP	Catchment and Land Protection	MIL	Murray Irrigation Limited
CMA	Catchment Management Authority	NATA	National Association of Testing Authorities
CMSA	Catchment Management & Sustainable Agriculture	NHT	Natural Heritage Trust
CRC	Cooperative Research Centre	NLP	National Landcare Program
CSD	Community Surface Drainage	NOX	Oxidised Nitrogen
CSIRO	Commonwealth Scientific Industry Research Organisation	NRMS	Natural Resource Management Strategy
DDP	Drain Diversion Plan	O&M	Operations and Maintenance
DPI	Department of Primary Industries	PISC	Program Implementation Support Committee
DSE	Department of Sustainability & Environment	RCS	Regional Catchment Strategy
DRDC	Dairy Research and Development Corporation	REALM	Resource Allocation Model
EM	Electromagnetic	RWC	Rural Water Corporation
EPA	Environmental Protection Agency	SBC	Serial Biological Concentration
FEDS	Farm Exploratory Drilling Scheme	SDA	Salt Disposal Allocation
FRP	Filterable Reactive Phosphorus	SIR	Shepparton Irrigation Region
GAM	Generalised Additive Model	SIR IC	Shepparton Irrigation Region Implementation Committee
GIS	Geographical Information System	SIRCS	Shepparton Irrigation Region Catchment Strategy
GMLN	Goulburn Murray Landcare Network	SIRLWMP	Shepparton Irrigation Region Land and Water Management Plan
GMP	Groundwater Management Plan	SIRLWSMP	Shepparton Irrigation Region Land and Water Salinity Management Plan
G-MW	Goulburn-Murray Water	SKM	Sinclair Knight Merz
GPIS	Groundwater Pumping Incentive Scheme	SPAC	Salinity Program Advisory Council
GSPA	Groundwater Supply Protection Area	SPC	Shepparton Preserving Company
GVEEP	Goulburn Valley Environment Employment Program	SPPAC	Salinity Pilot Program Advisory Council
IIP	Improved Irrigation Practices	TKN	Total Kjeldahl Nitrogen
ISDG	Irrigation Surveyors and Designers Group	TP	Total Phosphorus
LAP	Local Area Plans	UDV	United Dairyfarmers of Victoria
LPIS	Land Protection Incentive Scheme	VFF	Victorian Farmers Federation
LWRRDC	Land and Water Rural Research and Development Corporation	WFP	Whole Farm Plan
MASNV	Municipalities Against Salinity in Northern Victoria	WSC	Water Services Committee

## **ACKNOWLEDGMENTS**

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### **Implementation Committee**

Russell Pell, Chair  
Peter Gibson, Deputy Chair  
Implementation Committee Members

### **Goulburn Broken Catchment Management Authority**

Peter Howard  
Wayne Tennant  
Lisa McKenzie

### **Department of Primary Industries**

Bruce Cumming  
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### **Goulburn-Murray Water**

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