



**Shepparton Irrigation Region
Implementation Committee**

Water, Land and People
Annual Report
2004-2005



**GOULBURN
BROKEN**
CATCHMENT
MANAGEMENT
AUTHORITY

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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 500,000 hectares 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 317,000 hectares within the SIR utilise approximately 1.5 million megalitres of water each year and in 2002-2003 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 25% 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 Ardmona, Campbells Soups Australia and Girgarre Country Foods.

Capital investment in food processing over the past 5 years has been in excess of \$630 million. Infrastructure investment by Goulburn-Murray Water alone totals \$2.6 billion.

Our People

The SIR's population is over 110,000 people and includes over 7,000 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 linguistical 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?

Goulburn Broken Catchment Management Authority (GB CMA)

The SIR IC is part of the corporate and business management structure of the 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 SIRCS. The SIR IC has representatives on Coordinating Committees in each of these programs.

The SIR Implementation Committee (SIR IC) has the prime responsibility to deliver the program of natural resource objectives of the Shepparton Irrigation Region Catchment Strategy (SIRCS)

The SIRCS is a 30 year strategy that provides the framework for land, water and biodiversity management. The strategy aims to improve the condition of natural resources in the SIR for current and future community. The SIRCS has been underway for over 15 years with the whole community working hard to achieve goals in the SIRCS.

The SIRCS covers a wide range of issues such as -

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. Every year 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 on-ground works undertaken by the Farm, Sub-surface Drainage and Community Surface Water Management programs are the major thrust against Salinity under the SIRCS 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 SIRCS.

Native Biodiversity

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

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 SIRCS 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 and poor river frontage management.

Pest Plant and Animals

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

Climate Change - Greenhouse Gas Emissions

Climate change has implications for long-term sustainability of our economy and community. The region has opportunities to reduce 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.

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.

Who Pays?

Annually, the SIR IC attracts funding of close to \$18 million with the majority of this funding going directly to on-ground works. The SIRCS is funded jointly by the regional community, the Victorian, Commonwealth and Local Governments.

Regional Community

The regional community has a major commitment to implementation of the SIRCS, both to capital projects and ongoing operation and maintenance. In 2004-2005, this was estimated at \$43 million.

Government Funding

Government funding is provided through annual integrated budgets for the SIRCS 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 (G-MW)

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

Department of Primary Industries (DPI) and Department of Sustainability & Environment (DSE)

DPI is responsible for delivering the key objectives of the SIRCS in natural resource management. The department implements the Farm and Environment Programs and in conjunction with G-MW the Community Surface and Sub-surface Drainage programs.

Local Government

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

Goulburn Valley Water (GVW)

GVW provides urban water supply and wastewater services in the SIR. GVW in conjunction with the GB CMA works to minimise phosphorous (to <1mg/L) exports from wastewater treatment plants to our river systems, improved water quality and for full reclaimed water reuse 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 SIRCS.

GVW also house the catchment stormwater officer who works in conjunction with the 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 (GMLN)

The 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 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 catchment management promoted under the SIRCS.

Ethnic Council of Shepparton and District Inc

The Ethnic Council represents more than 26 culturally and linguistically diverse communities who live across the region. Formed in 1991, this partnership 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 a specialist multicultural officer 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.

Murray Dairy

Murray Dairy was established to lead the economic and social development of the dairy industry in northern Victoria and southern New South Wales. 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, invest \$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 the industry's existing partnerships with government and the community organisations, including SIR IC.
- Coordinating extension initiatives that connect on-farm practices with natural resource management.
- Investing in Research & Development 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 and 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
- 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 Implementation Committee -

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

The Working Groups comprise community representatives (including representatives from each of the four G-MW Water Service Committees), Victorian Farmers Federation, local government and 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 Implementation Committee can operate effectively and strategically. This process ensures strong input from all stakeholders in the partnership.

The SIR IC is supported by 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 true role in the evolution of the Strategy and have a sense responsibility for it.

Management Structure for Implementation of the Shepparton Irrigation Region Catchment Strategy

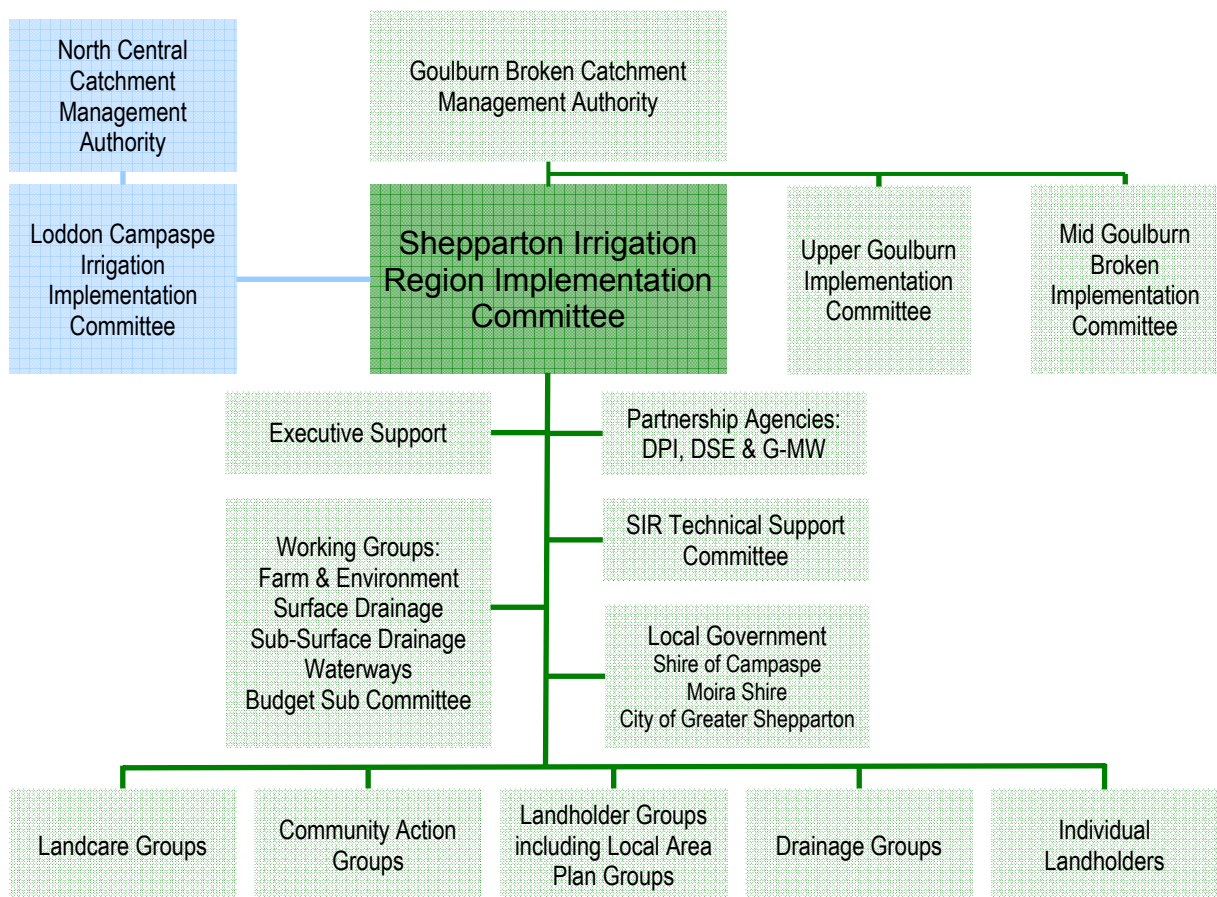


Figure 1. Management Structure for the Implementation of the Shepparton Irrigation Region Catchment Strategy



CHAIR'S REPORT



Russell Pell
Chair

Shepparton
Irrigation
Region
Implementation
Committee

Sustained progress in implementation of the Shepparton Irrigation Region component of the Goulburn Broken Regional Catchment Strategy (GBRCS) was due to a number of strengths:

- Strong links with the catchment community through the Implementation Committee members and members of the various working groups that report to the IC
- A strong and vigorous partnership with the Landcare groups, the 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 SIRCS
- An integrated approach to tackling the key natural resource issues and protecting our important natural assets

Further, our success is largely attributed to the continued commitment of my fellow IC members, Nick Roberts, Steve Farrell, Peter Gibson, Allen Canobie, Peter McCamish, Ann Roberts, Nick Ryan, Terry Hunter and Bruce Cumming.

I would like to sincerely thank Athol McDonald, who retired 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 the 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.

I would also like to recognise John Avard who retired from our Sub-Surface Working Group after a 15 year involvement in our forums.

I would also like to recognise the role of Denis Flett. As the CEO of G-MW he has led one of our main partner organisations in an enlightened fashion until his recent retirement.

The term of half of our IC was completed in 2004. Peter McCamish, Ann Roberts, Peter Gibson were re-appointed to the SIR IC this year and Nick Ryan joins the IC for the first time. Congratulations on the appointments and welcome to Nick.

I would also like to congratulate one of our current SIR IC members, Nick Roberts who continues to represent environmental interests on the Murray Darling Basin Commission Community Advisory Committee.

I would also like to acknowledge Peter McCamish for taking on the role of Chairing the revised Katunga Groundwater Management Plan Consultative Committee.

Achievements

The partnership program with the Catchment and Water group of DSE is delivered with our regional partners in G-MW, DPI's Catchment and Agriculture Services business and Primary Industries Research Victoria (PIRVIC). A reflection of the successful partnership is seen in the Research Reporting and the Partnership Reporting Days held during the year.

The Research Reporting Day was held in July and over 80 people from the catchment and beyond attended to discuss updates of the research activities which are under way to keep our Catchment Strategy as relevant as possible. The Partners Reporting Day was held in November and about 100 people discussed current implementation issues from a range of programs.

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.

This year saw the completion of the review of the Broken Creek Management Strategy. This will provide the GB CMA, partners and the community with a clear direction for works and activities on the Broken Creek over the next five years. The review has highlighted several significant achievements since 1998, and has identified a range of social, economic and environmental values which the community wishes to protect. In support of the strategy a detailed action plan was also commissioned.

2004-2005 marked the completion and celebration of 200,000 hectares whole farm planned in the SIR through the Whole Farm Plan incentive program. A celebratory event to mark this occasion was held on the property of local dairy farmers Frank and Maureen Leyden who have participated in a number of the incentive programs. This event created a great deal of publicity and awareness of the program.

Landholders in the region have continued to implement salinity mitigation works, encouraged by the public expenditure in infrastructure such as surface drains and public ground water pumps. Works such as farm reuse and improved irrigation layout contribute significantly to the improvement in 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.

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.

Funding

The implementation of the SIR component of the GB RCS is funded jointly by the regional community and the Victorian and Commonwealth Governments.

The SIR component of the 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 continue to decline.

In 2004-2005, the total SIR IC budget was over \$17.7million. This comprised of 73% State funds, mainly from the National Action Plan (NAP), salinity and river health programs, 22% of Federal NAP and Natural Heritage Trust funds - much less than in the period prior to the NAP. The other 5% 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 its working groups continued to have a major input into review of its strategy to align with a number of State activities and the NAP. This includes ongoing reviews of Surface, Farm, Environment, Waterway and Sub-Surface Programs. These activities have provided the opportunity to reflect on our progress in implementing the SIRCS 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 the review of the Broken Creek River Health Strategy.

The SIR IC had a significant input 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 our staff to a number of important issues. These included the implementation of the Farm Dams legislation in the SIR, the implementation of the Memorandum of Understanding for Irrigation Drainage, the implementation of groundwater management plans, the review of Crown Frontage Management, the reviews of our salt disposal entitlements, the Victorian Environmental Assessment Council (VEAC) river red gum study, the GB Monitoring Evaluation and Reporting Strategy and the Living Murray Barmah Significant Ecological Asset plan.

The SIR IC had a significant input into the Irrigation Futures project by acting as its steering committee. Individual members have been heavily involved in the community engagement process of the project itself.

The SIR IC prepared its Business Plan as a component of the Goulburn Broken Regional Catchment Investment Plan. The SIR IC prepared quarterly reports on implementation of the Regional Catchment Strategy (RCS) for the funding bodies. Individual communication strategies are being developed for each new or amended policy issue as the IC endorses it.

Conclusion

It is essential that the SIRCS programs continue 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 dependent on this.

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.

In conclusion I wish to acknowledge the contribution of our agency and community partners, in particular members of the various catchment forums.

Russell Pell
Chair - Shepparton Irrigation Region
Implementation Committee



SIR IC members 2004-2005 (L-R): David Lawler, Ken Sampson, Pat Feehan, Peter Gibson, Ann Roberts, Allen Canobie, Peter McCamish, Russell Pell, Steve Farrell, Nick Roberts, Peter Howard



IMPLEMENTATION

Executive Officer's Report



Ken Sampson
Executive Officer

Shepparton
Irrigation
Region
Implementation
Committee

2004-2005 has been a year of achievement and progress in the implementation of the Shepparton Irrigation Region component of the GBRCs.

The partnership program with the Catchment and Water group of DSE is delivered with our regional partners in G-MW, DPI and DSE. The progress towards our targets for onground works continues to be impressive.

The support given by agency staff and the regional communities has been enthusiastic and dedicated towards achieving positive results.

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

Shepparton Irrigation Region Catchment Strategy Programs

- Environmental Protection Program
- Farm Program
- Tackling Pests
- Biodiversity Program
- Surface Drainage Program
- Sub-surface Drainage Program
- River Health - Waterways Program
- Water Quality Program
- Monitoring Program
- Program Support
- Research – Water for Growth Project

Environmental Protection Program

Program Goal: To prevent and, where possible rehabilitate the natural environment of the Region from loss or serious damage from high watertables and salinity.

Environmental Incentives

Environmental Incentives have provided support to protect over 180ha of remnant vegetation, which is more than twice the annual target. Some of the remnants protected include:

- 80ha of Riverine Grassy Woodland, near Koonoomoo, this site also has a Trust for Nature Conservation Covenant,
- 20ha of Yellow Box and Grey Box remnant near Stanhope,
- 12.68ha of Riverine Chenopod Woodland near Yalca,
- 43.3ha of Plains Grassy Woodland, also with a Trust for Nature Conservation Covenant.

These are valuable remnants within the SIR and the two most significant have been fully protected with covenants.

Both the Environmental and Tree Growing Incentives have facilitated the revegetation of over 63ha of native vegetation, with approximately one third being planted by direct seeding and over 21 km of fencing erected to protect remnants and fence corridors. Site assessments over summer indicate that the direct seeding has been quite successful.

LAP sub-catchments are still accounting for over one third of all incentives processed and onground works facilitated by incentives. This figure is very similar to last year and seems to be settling into a pattern for activity in LAPs.

An Environmental Incentives Monitoring Report was produced which assessed the condition of remnants previously protected by incentives. The report demonstrated that the remnants were generally well managed and had improved in habitat quality since the initial incentive was implemented.

The Environment Protection Program is an integral part of all the SIR Catchment Strategy programs with activities predominantly reflecting native biodiversity protection and enhancement, including both issue development and delivery of onground works. The Environment 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.

A key theme for this year has been the commencement of three new strategic projects:-

- Biodiversity Action Planning,
- High Value Environmental Features for Sub-surface Drainage,
- Performance Standards for Natural Features in the SIR.

When completed, these three projects will provide valuable information on the highest value biodiversity assets in the SIR and how to manage them to best practice.

Biodiversity Action Planning is a landscape scale approach to conservation planning and prioritising. It is a process for improving/compiling biodiversity information so that more informed decisions can be made about targeting works and managing sites more effectively. The Central Creeks (between the Broken and Nine Mile Creeks) and Yarrowonga Zones are close to completion. The SIR has six landscape zones.

The High Value Environmental Features for Sub-surface Drainage project is assessing over 100 remnant sites in the SIR, for habitat quality. This data will then be overlain with salinity and watertable information and put through an Environmental Risk Assessment to establish which high value sites would most benefit from groundwater control. This project is approximately 50% completed.

“Performance Standards for Natural Features in the SIR” will enable the implementation of Best Management Practices to be applied to a range of

environmental assets. The operational guidelines information is currently being developed.

With DSE taking responsibility for Victoria’s Native Vegetation Framework, during September 2004, the DPI/CAS role in Statutory Planning Referrals has become focussed on referrals and recommendations that aim to protect soil, water quality, groundwater and prevent salinity. Consequently 41 cases have been dealt with since that time.

The Environmental Management Plan for Inglis Bushland Reserve was completed and signed off in March and a draft management plan for Kanyapella Basin has been completed.

Implementation works for wetlands has resulted in an Environmental Water Allocation for Brays Swamp, construction of an upgraded inlet structure for Reedy Swamp, and commencement of a boundary fence around Mansfield Swamp. Spring rains helped fill Reedy Swamp and stimulate waterfowl breeding activity. Monitoring of the swamp for several months indicated that Royal Spoonbill’s fledged successfully. These works have been coordinated and facilitated by DPI/GB CMA and carried out by Parks Victoria and G-MW.

The Murray Valley Drain I I VCAT panel hearing prompted the production of a comprehensive Net Gain Analysis report which demonstrated how the natural features in the drain catchment had been identified, prioritised and how watertables impacted upon them. A supplementary document, Environmental Review of the Muckatah Catchment, was also produced as a case study to demonstrate environmental works in a drainage catchment.

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 and presentation of a Best Management Practices for Natural Features in the SIR workshop.

Farm Program

Program Goal: To reduce groundwater accessions, soil salinisation and waterlogging on farms.

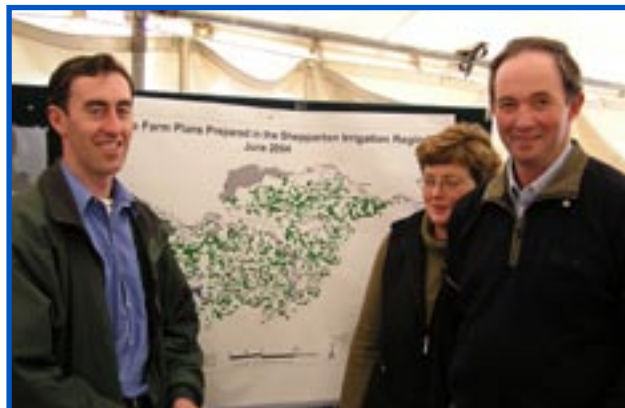
The Farm Program sits under the GB CMA structure and its role is to implement the GB RCS with a specific focus on farm activities.

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.

Whole Farm Planning Program

In 2004-2005, a total of 130 Whole Farm Plans were completed covering an area of 8,299ha. By this period, 64% of the total irrigated area in the SIR is now whole farm planned. This is in line with the Catchment Strategy which includes the target that all properties in the Shepparton Irrigation Region will have a whole farm plan by the end of 2020.

During this period, SIR IC and the DPI Sustainable Irrigation Landscapes – Goulburn Broken (SIL-GB) team celebrated the 200,000ha Whole Farm Planned in the Shepparton Irrigation Region. A presentation was made by Sharman Stone, Member for Murray, to mark the completion of 200,000ha of area Whole Farm Planned in the SIR since the incentive has been made available.



Celebration to mark the 200,000ha Whole Farm Planned in the SIR

Reuse System Program

A total of 65 drainage reuse systems were installed as part of the incentive scheme in 2004-2005 servicing 3,626ha. This was a decrease on 2004-2005 figures of 76 systems servicing 4,654ha. However this was well above the initial 2003-2004 targets of 30 reuse systems.

Since the start of the incentive in 2001, a total of 309 systems have been installed serving 21,074ha.



Reuse system installed with incentive scheme Automatic Irrigation Program

This financial year, 18 automatic irrigation systems were installed as part of the incentive scheme. Since the start of the incentive, a total of 94 automation irrigation systems have been installed covering 6,043ha.

Project staff organised five automatic irrigation farm walks in the Shepparton Irrigation Region. There were more than 120 landowners who participated in the program.

During this period, the Dairy Team requested information on automatic irrigation related information to include in their training program.



Landowners happy to discuss their Automatic system during a Farmwalk

During this period, one of the key good news stories for the program was the Australian National Conference on Irrigation and Drainage (ANCID) award presented to Ross and Keith Nicoll, dairy farmers from Katunga. Ross and Keith were presented with a national irrigation award for innovation in irrigation. The Farm Team was proud of the Nicoll's achievements as the team was closely involved in the development of their Whole Farm Plan and the installation of a state-of-the-art automatic irrigation system on their farm.

In an article in a local paper, they mentioned the assistance provided by the GB CMA incentives and the DPI advice that encouraged them to take the initial step to install automation.

G-MW plays an important role in the Farm Program as a key partner involved with ensuring sustainable and safe ground water management as a consideration in the development of Whole Farm Plans. G-MW provided technical advice for 131 whole farm plan referrals on issues relating to



Ross Nicoll proudly explains his automatic system Goulburn-Murray Water Extension services relating to the Farm Program

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

G-MW also provided support to LAP/Landcare groups and were involved in the development of the Dhurringile & District Local Area Plan.

Goulburn Broken Water Quality/Nutrients Program

GB CMA Water Quality Nutrient Project has been continuously involved in the development of Whole Farm Nutrient Management Plans. These plans provide nutrient management by incorporating an array of nutrient components such as effluent, feedpads, nutrient budgeting and mapping as 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, DPI/G-MW developed a non-compliant framework for effluent discharges under the

GB CMA Nutrient project which has been used as a blue print in the regulation/extension approach currently emerging in the southern catchments.

Local Area Plan Program

Local Area Plan implementation for 2004-2005 has seen many activities undertaken by the groups.

The launch of the Dhurringile & District Local Area Plan which marks the completion of the final Local Area Plan was held in the Shepparton Irrigation Region. There are now eight Local Area Plans implemented in the region.

Each of these Local Area Planning groups have continued to implement a range of actions identified in their plans with activities such as environmental education days, pest plant and animal control as well as waterway protection continuing to be popular.

All groups have presented their priority actions to SIR IC for comment and feedback and continue to work with a range of different programs and agencies to achieve the actions in their plan.



Members of the Nathalia and District Local Area Plan discuss tactics at a Wet, Wild and Wasted Environmental Education Day

Farm Program supports other projects for better outcomes

Farm Program staff were involved in coordinating and writing a module for the Linking Farms, Catchments and Channel Automation project. The

project involved developing a shared vision for what Total Channel Automation is, and how it will be implemented and what will change as a result of implementation.



Discussing the advantages of Total Channel Automation system

Farm Program staff are working in close partnership with the research project entitled "Efficient irrigation technologies to match soils and dairy farming systems" to develop web-based extension materials for landowners in the SIR to help adopt appropriate technology on their properties.



Web-based guidelines to select and design irrigation systems

Tackling Pests

Weed Invasion: this project asks landholders to comply with requirements under the CALP Act in targeted areas. For 2004-2005, compliance continued at a reasonably high rate. Only two briefs were written for landholders in the Girgarre area for failing to comply to Land Management Notices. The other component of this project looks at infestations of weeds in high priority areas covered by control programs. Coverage of targeted areas has been good for the year with 140,500ha covered. Mapping and control work was carried out for all known infestations of Silver-leaf Nightshade in the Nanneella/Timmering area.

Pest Animals: targets the high priority areas of rabbit and fox infested land. 3,100ha were covered as part of the rabbit control program. Field observations indicated there were few rabbits present. The area of high priority fox infested land covered by control programs totalled 25,000ha.

Noxious Weed Review: the GB CMA Noxious Weed List Review Working Group finished a draft Phase One list for the GB CMA to offer for community consultation. Phase Two of the review is under way with inclusion of current infestation data.

Biodiversity Program

The major focus of the Biodiversity Program in the SIR during 2004-2005 has been Biodiversity Action Planning (BAP). BAP is a process that seeks to implement biodiversity conservation principles set out in the Victorian Biodiversity Strategy, by bringing it to the sub-catchment/landscape scale. To plan and implement BAP, the Goulburn Broken Catchment has been divided into 21 Landscape Zones based more or less on social and biophysical characteristics.

During 2004-2005, work has concentrated on developing an Action Plan for the Yarrowonga Landscape Zone. This has involved identifying the 'assets' (areas of remnant vegetation on public and private land, including wetlands, grasslands and

bushland), the diversity of vegetation types present across the landscape zone, and notable native flora and fauna. The key 'threats' to these assets (eg fox predation, excessive grazing pressure and weed invasion) were also documented, as well as actions which are designed to redress or abate these threats.

All remnants have been mapped (using aerial photos) and 100 sites were selected for ground-truthing to verify their presence and gain an overview of their biodiversity values.

Notable plants identified as being a feature of the Yarrowonga Landscape Zone include a number of endangered species such as Yarran, Small-leaf Bluebush, Spiny salt-bush, Small Scurf-pea and Mueller's Daisy. Important birds include Superb Parrot, Bush-Stone Curlew, Barking Owl, Grey-crowned Babbler and Brolga.

Communicating the results of this work has involved a number of meetings with and presentations to community groups, including information provided to Local Area Planning Groups.

Complete BAPs for this and other Landscape Zones will be prepared and distributed to local groups, local government and state government agencies who can then use the information to better target their works and other initiatives to key assets and threats.

The Superb Parrot Action Group continues to deliver excellent outcomes for the SIR and the Superb Parrot. The Barmah Forest and surrounds are key habitat for this bird, which is nationally endangered. The only breeding population in Victoria occurs here. A key activity of the Superb Parrot Action Group is the revegetation of corridors with suitable forage plants. Although the parrot nests in hollows on mature River Red Gums, it feeds outside the Forest on native shrubs and grasses found on roadsides and other remnant vegetation. Encouragingly, Superb Parrots have readily adopted the revegetated areas (45ha) as additional food supplies. Being ground feeders also, they are easy prey for foxes and cats.

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 SWMP developed and implemented “Guidelines for Standard Fencing Designs” for all incentive programs in the SIR. An extensive audit was conducted on behalf of the GB CMA on the “Independent Review of the Environmental Aspects of northern Victoria’s Surface Drainage Programs in Irrigation Areas (Nolan Review). It was shown that the SWMP had already addressed nearly all of the recommendations from this Review.

Implementation of the ‘Memorandum of Understanding for Irrigation Drainage and Water Quality’ (IDMOU) has commenced. This included the Monitoring/Key Performance Indicators “decision support system” trial at Broken Creek, and the development of Asset and Operational Management Plans for the Stanhope Depression Drain.

Primary Surface Water Management Program

The SWMP continues to progress well. Muckatah Drain 3 and Stage 3 of the Muckatah Depression Drain were completed and handed over to the Murray Valley Area in June 2005. The total length of the two completed drains is 17km which provide a direct service to 1,705ha and an indirect service to 6,286ha of agricultural land within the catchment. Completed Primary Drainage Systems now directly service approximately 19,000km and indirectly service approximately 74,000ha of the SIR catchment.

A total equivalent length of 8.5km was constructed on Muckatah Stage 4 and Muckatah Drain 8. G-MW consultants designed 32km of drain, and works continued, or commenced, on a number of Drainage Course Declarations.

The Planning Scheme Amendment process for Murray Valley Drain 11 and Mosquito Drain Stage 10 was successful with both projects expected to be gazetted by DSE early in 2005-2006.

Community Surface Water Management Program

Whilst no Community Surface Water Management Systems (CSWMS) were constructed during the year, 1.8 km were surveyed and designed, providing a regional drainage service to another 102ha, 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 our new management option.

A major focus for the Community Surface Water Management Program was to accelerate the adoption of CSWMSs in high priority areas for drainage, through the development of the Primary Extension policy. Through the development of this policy, two case studies were investigated for primary extensions in the Old Deakin 5P and Mosquito 22P catchments. It is proposed that these extensions will provide outfall for CSWMSs further upstream.

Another significant policy developed allows for more flexibility in the design standards for the end of spurs on CSWMSs. This policy has already had significant impact on the willingness of landowners to participate in the survey and design stage of three CSWMSs this year.

In November the Byrneside Depression Drainage Group celebrated more than a decade of hard work having constructed their twelfth community surface water management system, providing protection for 3,596ha. Landowners have organised to plant 8,500 indigenous trees alongside this system.

Environmental Sub-program

Revegetation of drain batters based on the recommendations from the “Nutrient Removal from Rural Drainage Systems Using Wetlands” Research and Development trial commenced on the recently completed Muckatah Drain 3.

The wetland feasibility study on Murray Valley Drain 13 was completed and investigation into retrofitting along the existing drain commenced.

Drain Management Program

Progress continues in drain monitoring, nutrient stripping and drain management, to keep the SIR at the leading edge of best practice. All of these developments are aimed at improving downstream water quality. Drain water quality management studies were completed on two drains, to identify areas for improved management: Ardmona-Undera Drain and Shepparton Drain 12.

Phosphorus loads exported from irrigation drains were higher than the previous year, but were still below the long term target. The five-year rolling average remained well below the target value for 50% reduction. Improved methods for estimation of nutrient loads were investigated and trialed, with further work areas identified as part of a research project with the University of Melbourne and other bodies. The community monitoring program “Drainwatch” continued to be supported and provides valuable additional information on water quality in drains.

Drainage Nutrient Removal Incentive Scheme

Seven new systems were completed this year with a total capacity of 1,130ML. With the assistance of this project, 30 systems have been constructed to date, with a total capacity of 5,493ML.

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 Groundwater Pumps

No feasibility level investigations were conducted in 2004-2005. This was due to limited interest in the program driven by the current drought conditions.

Three public pump sites were completed and handed over for management by G-MW. Construction commenced at three sites. Designs were completed for two sites.

The total salt load for disposal from the three completed sites was 539 tonnes, with a disposal impact of 0.056EC. The rated area for the three sites was 672ha.

Private Groundwater Pumps

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

Investigations were completed on 50 pasture properties, with the following outcomes:

- 13 were successful in locating private groundwater pumping sites
- 22 were unsuccessful, but identified potential public pump sites
- Two were unsuccessful, but located low yielding sites
- 13 were unsuccessful, with very limited or no pumping potential

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

A further 33 investigations were commenced on properties, with works still in progress (five in LAP Areas).

Horticultural property investigations were completed on 1 property. It was unsuccessful. No investigations were in progress.

Capital Grants for Sub-Surface Drainage

14 Pasture property grant payments were made to 11 individual landholders. In 2004-2005, eight new systems and one upgrade were completed. Grant assessment pump tests were completed on five systems.

Six Grant payments for Private Exploratory Drilling were made.

No Horticultural property grant payments were made.

New grant guidelines including a cost share matrix was implemented 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 Catchment Strategy from a salinity perspective. To date, landholder feedback on the new guidelines has been quite positive.

Winter/Spring Salt Disposal Management

Flow conditions in the River Murray River and Broken Creek during winter/spring 2004 did not reach the trigger levels for disposal to commence.

Extension

DPI Groundwater staff worked with G-MW to develop a partnership approach to completing groundwater licence renewals. There are about 200 groundwater users annually that require their licence to be renewed. An evaluation project has also been incorporated into the licence renewal process to provide current information on groundwater user attitude, behaviour and perceptions on groundwater management. Following analysis of the 2004-2005 results, the survey for the next year has been modified slightly.

DPI Groundwater staff continued to implement the project on “the mechanisms to enhance participation and ownership of community in the Sub-surface Drainage Program”. A project team has been formed and strategies prioritised to be carried out.

Groundwater Management Plan

The following activities were undertaken:

- 2003-2004 Annual Report to Minister completed.
- Regional salinity limits for lucerne developed.
- Development of regional salinity limits for fruit crops largely completed.
- Methodology for productivity assessments developed.
- Drought strategy developed.
- Development of improved data management systems largely completed.
- 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.
- Metering of operational private pumps effectively completed (approx. 800 sites metered).
- 2003-2004 Groundwater usage was assessed.
- Annual collection of groundwater samples from private pumps undertaken.

Note that routine watertable monitoring and database input and analysis is included in the monitoring program Annual Report 2003-2004.

Monitoring Program

Program Goal: To understand the water quality and quantity characteristics of surface drainage and groundwater systems.

To detect trends in water quality and quantity over time and identify areas requiring further investigation.

To identify progress in achieving catchment strategy targets.

Surface Water

Monitoring of surface water management systems for flow and quality continued throughout the year. Flow and salinity were continuously monitored while nutrients, suspended solids, turbidity and pH were tested fortnightly. Biological monitoring was also undertaken in streams near three surface drain outfalls.

Regional Water Monitoring Partnerships were formed during the year and these projects are included under the new arrangements. The partnerships aim to develop more cooperative and efficient water monitoring programs across agencies and local government, with a particular emphasis on data sharing and cost savings.

Analysis of all data was undertaken and published in several reports, and reported to stakeholders.

Drain flow leaving the SIR in 2004-2005 was about 6% of water delivered into the SIR.

The five-year rolling average phosphorus load continued to show substantial decline and remained below the target value for reduction of nutrient loads from irrigation drains (refer Figure 1). Based on preliminary estimates, the inclusion of 2004-2005 loads will see a leveling out in the five-year average.

Alternative nutrient load estimation methods trialled indicated that the method currently employed provides reasonable results in most cases but there is potential for improvement.

A 10 year review of Salt Load Monitoring in the Shepparton Irrigation Region was completed.

Groundwater

Routine bore monitoring, database input and bore maintenance continued. Analysis of groundwater from a selection of public groundwater pumps also continued.

An analysis of groundwater levels in the Barmah Forest was completed and identified that groundwater levels have fallen since the mid 1990s. This is thought to be mainly due to drier climatic conditions and increased groundwater pumping in the adjacent irrigation area.

Dhurringile watertable levels were analysed in a trial to assess the appropriateness of current methods for watertable control.

A review of options and technologies was commenced for C-Type areas, where groundwater pumping for salinity control has little potential due to geological conditions.

Initial work commenced on preparation of guidelines for the installation & management of evaporation basins.

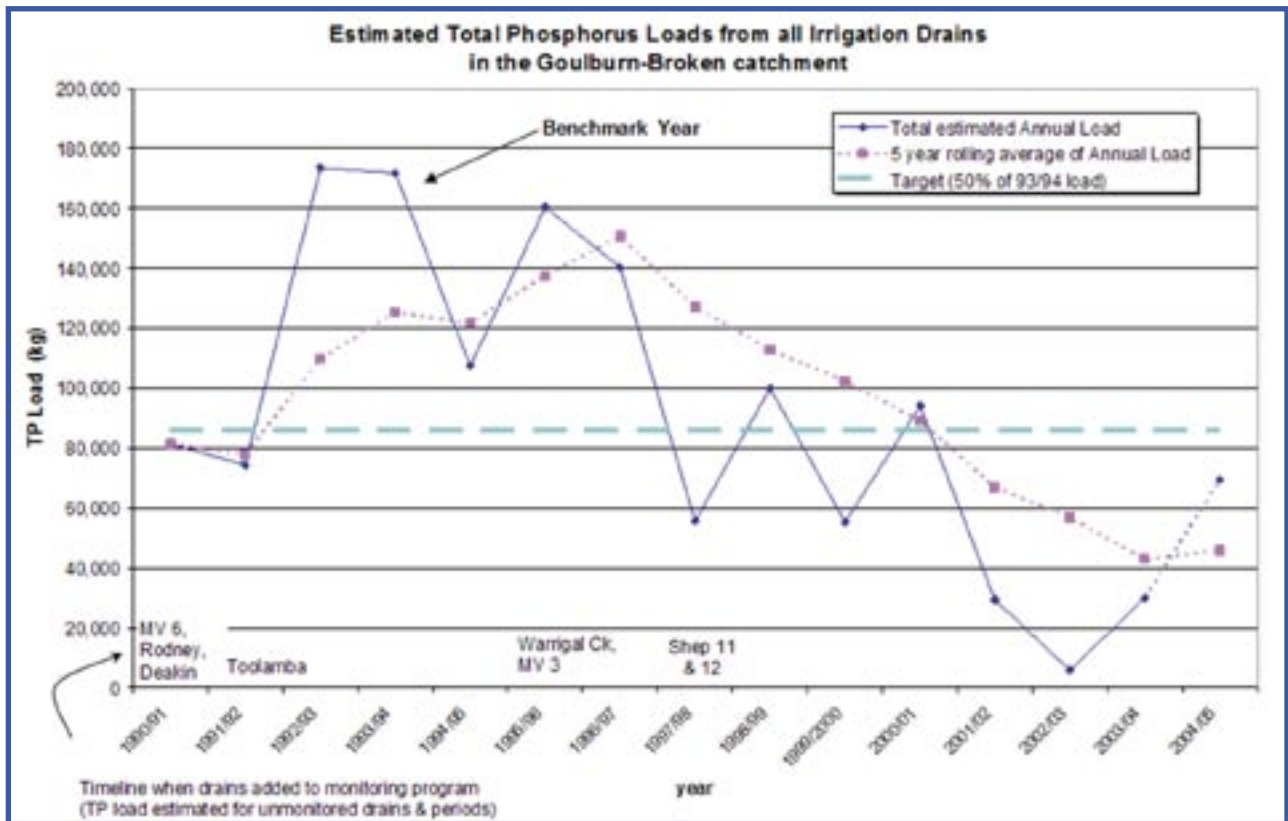


Figure 1. Estimated Total Phosphorus loads from irrigation drains

Program Support

This component of the SIRCS provides an overall framework to manage and coordinate delivery of all programs. Staff in this program provide administrative and technical support to all processes of the Catchment Strategy and partner agencies.

The DPI, Sustainable Irrigated Landscapes-Goulburn Broken program (formally Sustainable Irrigated Agriculture and Land Management) is critical to maintaining ongoing community support, participation and confidence in catchment management across the SIR.

The people in the Sustainable Irrigated Landscapes-Goulburn Broken program have a strong commitment to the aims of the Regional Catchment Strategy that is oversights by the GB CMA

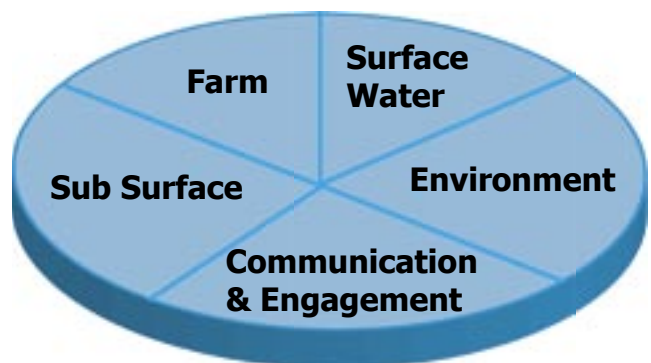


Figure 1. Sustainable Irrigated Landscapes-Goulburn Broken teams work together to deliver key parts of the Goulburn Broken Catchment Management Authority Regional Catchment Strategy

Communication and Engagement Team

People work with groups and networks to improve communication and engagement processes internally and externally to Sustainable Irrigated Landscapes-Goulburn Broken. A focus is given to improving communication with groups including women; indigenous and migrant based communities. This benefits these groups and the SIRCS by improving involvement of these communities in catchment management activities.

Community Surface Water Management Program

People in this program work with landowner communities and government agencies to improve regional drainage within the Shepparton Irrigation Region.

Farm Team - Local Area Planning

People use innovative processes to effectively engage geographically located communities which have been assigned a high priority within the Shepparton Irrigation Region.

Sustainable agriculture and water use efficiency

Working with private landowners, people support development and implementation of sustainable action plans and works using facilitation, communication and incentive methods to achieve change.

Sub-Surface Drainage Extension

People run projects enhanced by strong community and agency interaction to better manage and protect groundwater resources within the region.

Environmental Management Program

With a passion for the natural environment, people in this program provide services to the community to protect and enhance biodiversity within the region primarily on private land. These activities are carried out consistent with the GB CMA priorities.



Staff assessing bird population at a wetland in the region

Evaluation Advisory Team

This team is represented by people from across Sustainable Irrigated Landscapes-Goulburn Broken. The Evaluation Advisory Team aims to develop and foster a culture of evaluation to demonstrate impact, improvement and appropriateness of extension in facilitating a positive change in the Goulburn-Broken Catchment. One of the major achievements was production of the Evaluation Kit to assist people in developing a project evaluation plan.

The focus and achievements of the Sustainable Irrigated Landscapes-Goulburn Broken program are underpinned by a strong partnership approach for achieving natural resource management gains. The partnership approach continues with collaboration, cost sharing, shared decision-making, integration and an inclusive approach across agencies and communities.

Goulburn Murray Water Program Management

Staff have provided support to the Catchment Strategy by ensuring the coordination of many functions including management of existing works and delivery of strategic planning projects.

Staff have also supported promotion and communication of Catchment Strategy objectives through production of annual reports, performance indicators, media information and contribution to catchment partnerships.

Catchment Strategy Coordination

This key function ensures that maximum value is gained from the public funds allocated to the Implementation Committee and closely monitors the achievements and progress of the Catchment Strategy.

The Implementation Committee attracted an integrated budget of close to \$18 Million in 2004-2005. Funding was coordinated across 50 projects and 3 agencies. The success of the program requires strong liaison and cooperation between agency staff to ensure works are completed on time and within budget allocations.

Community Education - Community Salinity Grants

The Community Salinity Grants program has been successfully administered across the Goulburn-Broken Catchment since 1986. It began before the Shepparton Salinity Pilot Program Advisory Committee launched the Shepparton Irrigation Region Land & Water Management Plan in 1989, and has been embraced by the current, broader, Regional Catchment Strategy introduced by the GB CMA.

The purpose of the Community Salinity Grants program is to encourage non-profit organisations to undertake activities that increase the community's awareness and understanding of salinity related issues in the catchment.

In 2004-2005, there were 17 successful grant applications in the Shepparton Irrigation Region receiving a total of \$25,816 funded through GB CMA Community Salinity Grants.

In addition to completing the 2004-2005 funding round, the Community Salinity Grants went through a significant review to determine whether the Community Salinity Grants provide sufficient benefit to warrant continued investment. A desktop study was conducted to develop an inventory of Community Salinity Grants since their inception, including funding allocation processes each year and an assessment of overheads, including corporate governance costs. An analysis of the successful Community Salinity Grant project themes was also conducted. The evaluation methodology was deliberately non-exhaustive for efficiency reasons. It focused on capturing judgments and opinions of both agency staff and community members who had prior involvement in the Community Salinity Grant program.



SIR IC Executive Officer being interviewed by the Community Salinity Grant coordinator

Landcare and Local Area Planning (development)

In 2004-2005 SIR IC launched the inaugural SIR Landcare Award. The SIR Landcare Award specifically aims to reward a voluntary SIR Landcarer who has shown commitment to Landcare. Landcare volunteers ensure a sustainable future for their environment through weed control, remnant vegetation protection, wetland enhancement,

revegetation to promote biodiversity and salinity education.

Collier McCracken of the Arcadia and District Landcare Group was announced as the recipient of the inaugural Shepparton Irrigation Region Landcare Award at the Healthy Rivers, Healthy Communities Forum held at the Melbourne University Dookie Campus in December 2004.



Collier M McCracken (Centre) winner of the 2004 SIR Landcare Award, pictured with wife Jackie McCracken (R) and Russell Pell, SIR IC Chair (L)

Local Area Plans will accelerate the implementation of the Shepparton Irrigation Region Catchment Strategy in high priority areas of the Region. Local Area Plans form the next phase of the already highly successful community consultation and empowerment approach built for the development and implementation of the Catchment Strategy.

The Dhurringile & District Local Area Plan was officially launched at Longleat Winery, Murchison. The Dhurringile & District Local Area Plan was the last of eight plans to be developed in the Shepparton Irrigation Region.

Municipal Coordination

The Municipal Catchment Coordinator has been employed in the Shepparton Irrigation Region since 1990. The role of the Municipal Catchment Coordinator is to ensure that Local Government is an active partner in delivery of the Regional Catchment Strategy. Further, the Municipal Catchment Coordinator demonstrates the importance of linkages between programs and Local Government.

Water Reform

Water trading, environmental water flows, unbundling of water rights and 'Reconfiguration' of irrigation systems is bringing radical change to the Shepparton Irrigation Region. Local Government faces substantial challenges too. Reduced rate revenue, which was already occurring in some areas as a result of permanent water trading, will be focussed on 1 July 2006 when water rights are "unbundled" and no longer included in property values. Councils will also be involved at regional and local level in 'Reconfiguration': the rationalisation of the region's irrigation infrastructure. Water reform has many benefits, but also has potential for large-scale social impact that will involve Local Government for many years to come.

Boundaries

Boundaries and their inherent differences are a constant issue in regional management, whether it be municipalities coping with different policies and priorities of Catchment Management Authorities, or Catchment Management Authorities facing similar inconsistencies over municipal borders. Many boundaries are logical (eg: irrigation regions based on infrastructure, catchments on topography, municipal on demographics), but that does not make it any easier to deal with the complexities they create. While every effort is made to align different Catchment Management Authorities, some differences will always exist because they, like Local Government, are community driven and dealing with different issues, priorities and resources. A

major project to minimise differences between GB CMA and Local Government is the “Matrix for Action Development” project, which has been with the Municipal Catchment Coordinator since 2002. It is now in its final stages of itemising differences between municipal plans and the catchment strategy, one aim of which is to reduce boundary issues.

River Health - Waterways

The 2004-2005 Waterways Program focused on Priority Rivers and Streams as identified within the “draft” Regional River Health Strategy. The objectives of the program are to:

- enhance and protect the rivers that are of highest community value,
- maintain the condition of ecologically healthy rivers (as defined in the VRHS),
- achieve an ‘overall improvement’ in the environmental condition of the remainder of rivers; and
- prevent damage from inappropriate development and activities.

The main targets of activity were the lower Broken River, Seven and Castle Creeks, Goulburn River, the lower Broken Creek, streams in the western catchment and the River Murray. Continued support for the program from Local Government, regional government agencies, Landcare Groups and individuals remained key to the program’s ongoing success.

Major Projects

Major projects included the implementation of the Broken River Action Plan (following its preparation in 2003-2004) through funding from the “Protecting and Repairing Our Water Resources Initiative”. Target works included removal of exotic woody weeds, bank alignment and bed and bank stabilisation works.

The Goulburn River between Nagambie and Loch Garry again continued to be a primary focus for works especially in woody weed control and follow up work on sites from previous actions.

Cornella Local Area Plan Implementation Committee

A new focus this year was the initiation of a joint stream protection project within the upper Cornella Creek catchment. The Cornella Local Area Plan Implementation Committee supported this initiative. Key onground works include control of bed, bank and gully erosion along Sheepwash and Lady’s Creeks. Structural works were supported by the construction of protective fencing and revegetation programs.

The program supported works within the mid Goulburn region through undertaking works along the mid/lower Broken River. This was again funded under the “Protecting and Repairing Our Water Resources Initiative”.

Following the completion of a stream assessment along gullies in the upper Gobarup Creek catchment a number of priority works (gully control, fencing and revegetation) were identified and undertaken.

Works continued along the River Murray Corridor over the last twelve months to improve the frequency of wetlands filling during flood events (Goose Swamp and Red Tank Lagoon), and to improve the overall health of the floodplain system.

The works program continued to support the implementation of wetland plans. This included further support for the management and protection of both Kinnaird’s Wetland and Gemmill’s Swamp. In addition a joint project to protect Mansfield Swamp was initiated in partnership with Parks Victoria and the DPI.

Waterway Grants

In 2004-2005, 21 Waterway Grants have been initiated with the managers of river frontage. The grants have resulted in the protection of approximately 21km of stream frontage. Grant works in the Shepparton Irrigation Region consisted of: protecting 105ha of remnant vegetation; enhancing 104.4ha of frontage including the planting

of 27,200 seedlings; and establishment of 58 off-stream watering points.

A further 19 grants approved in 2004-2005 will be completed in 2005-2006. These grant works consist of 23.7km of fencing and the protection of 156ha of stream frontage. In addition 41 grant offers have been made in 2004-2005 that are awaiting approval and support by frontage managers.

Broken Creek Management Strategy

This year saw the completion of the review of the Broken Creek Management Strategy. This will provide the GB CMA, partners and the community with a clear direction for works and activities on the Broken Creek over the next five years. The review has highlighted several significant achievements since 1998, and has identified a range of social, economic and environmental values which the community wishes to protect. In support of the strategy, a detailed action plan was also commissioned.

Works Program

A number of local waterway activity plans and strategies were completed during 2004-2005. These assist with planning of future works and activity programs and encourage both community and agency involvement in their development. This year, plans were undertaken on the Goulburn and Broken River (urban zones) and the Mid Goulburn River (Goulburn Weir to the Broken River confluence).

River Health

The success of the River Health 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) and will be undertaken again in 2009. Data was collected to assess both channel form and riparian condition at a range of sites throughout the Shepparton Irrigation Region and will be reassessed in future years to test the effectiveness of onground works.

In addition further 'new' sites were assessed within the region to extend on the base assessment. These sites are located on tributaries of major waterways.

A wide range of research, evaluation and demonstration projects continued to be supported within the catchment with a range of catchment partners. Highlights in 2004-2005 included:

- An assessment of the effectiveness of fishways on the lower Broken Creek
- The development of future River Health Monitoring Programs on the Broken River system
- Management and control of aquatic weeds – to look at the control of Arrowhead, supporting work being undertaken by G-MW (Aquatic Plant Services) and DPI
- The hosting of a further successful Research Workshop in association with the University of Melbourne.



Research Program

The following project summaries briefly describe progress and results from work being undertaken by research scientists and technical staff based at Tatura DPI. The projects provide important new knowledge to support sustainable land and water management that is fundamental to implementation of the Shepparton Irrigation Region component of the GBRCS.

Water Use Efficiency Through Better Groundwater Management

Program goal: To seek improvements in regional water use efficiency by developing a stronger understanding of the part that shallow groundwater plays in irrigation enterprises of the region. In particular, irrigators make decisions on when, how and where to use groundwater based on a large number of factors such as seasonal allocations, weather, crop type, and costs. For sustainability and to meet goals of the catchment strategy, the decisions are sometimes in conflict. This research project probes these issues with the goal of finding ways to fine tune management of the regional shallow groundwater resource.

Activities and achievements

Activity this year focussed on producing a review that documented best management practices for private groundwater pumps. The report provides an analysis of regional shallow groundwater usage and salinity trends and a summary of regional groundwater management policies. The report also discusses issues critical to development of best management practices for sustainability and performance, including:

- private pump management objectives and consequent operational practices,
- trade-offs between on site and downstream salinity impacts,
- dealing with regional groundwater variation (salinity and yields), and
- proposes a best management practices framework.

A draft report on this work was being reviewed at June 2005.

Policy Instruments to Improve WUE Market Mechanisms

Program goal: The irrigation industry of northern Victoria is a major economic force based on the use of a large volume of Victoria's water resource. While enormous change leading to improved sustainability outcomes and water efficiency has taken place over the past 20 years, this project aims to explore the potential of new policy instruments that can maintain such momentum and continue to cause beneficial change in irrigation efficiency. Specifically, it is to investigate market based instruments (financially driven reasons) that will change behaviour as well as identify any barriers (such as lack of knowledge, marginal benefits and costs).

Activities and achievements

A key outcome is the recognition that a successful set of policy instruments and market mechanism options focussed at improving water use efficiency will rely on:

- The regional stakeholders and government will need to define and agree on what options to implement;
- An enabling and authorising environment needs to be put in place and the key institutions need to be willing and able to implement the options;
- The options need to be soundly based and well designed to ensure they deliver the desired outcomes, and
- Examples of successful implementation and outcome need to be demonstrated to stakeholders.

Subsequent work in this areas looks at more specific needs and applications, such as developing a set of principles for trialing policy initiatives such as market based instruments, designing a market for managing phosphorus emissions or salt loads from farms.

Regional Irrigation Information System to Support Land and Water Management

Program goal: Irrigation regions in Northern Victoria are confronting major land use change driven by water resource, infrastructure and land degradation issues. Particularly following the 2002-2003 drought, pressures on the irrigation industries are driving unprecedented rates of change. Knowing what is changing, when and where, is driving a strong demand for information products that can integrate and allow analysis of all this change. In addition, remote sensing technologies offer a range of ongoing monitoring options that enable assessment of changes in water use and management across large spatial areas. This project is to develop a comprehensive information management framework to support prediction, monitoring and evaluation of the impacts of water movement and use within the irrigation areas of the Goulburn Broken and North Central Catchments.

Activities and achievements

A key achievement has been the establishment of data sharing agreements between water authorities, local councils, DPI, CMAs and DSE. Part of this has been working out any issues and getting clearance through the Privacy Commissioner. This agreement is a first for Victoria.

Substantial progress has since been made this year in working out links between various water use registers, land use data and spatial information systems. Project outputs can then be utilised for a range of regional programs, including:

- Improving the conduct of the G-MW irrigation farm survey.
- Underpinning G-MW's strategic review of irrigation assets and reconfiguration needs
- Providing input into the development of site water use licenses
- Providing input into the channel automation project
- Enabling the integration of water and land-use information for the DSE Water Use Efficiency-Benchmarking Project.

Soil Hydraulic Properties

Program Goal: 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 applying just the right amount of irrigation are important considerations that hinge on knowing the hydraulic properties of the soil. This study took detailed measurements of soil hydraulic properties from the main soil types at 50 locations in the region. The results of this detailed field and laboratory testing provide fundamental information about the natural range of soil hydraulic properties found in the SIR.

Activities and achievements

This study was finished in June 2005. The soils data collected has now been compiled into a comprehensive set of soil hydraulic properties data for the major soil types of the SIR. This is now available as a reference book. This information has filled a major knowledge gap on soils of the region.

Farm scale and within soil group variability in soil properties was also studied. This has enabled a picture of the broad trends and variability of hydraulic properties of soils to be developed. Overall, it has been found that hydraulic properties can be highly variable. While each soil group has broadly similar characteristics, the variability in one soil type within a paddock can sometimes cover much of the region wide within-soil type variability.

The information gathered complements and adds significant value to the pre-existing soil maps of the region. The published reference book will be valuable for irrigators, farm designers, engineers and catchment managers. Better understanding of the soil properties will assist in working out where best to put new irrigation developments, as well as suggest changes to existing supply systems and targeting of irrigation incentive schemes. At the farm level, the information can be used to support irrigation system selection and design, irrigation scheduling, Whole Farm Planning and drainage management. Developing a practical guide to using the soils hydraulic data should be the focus of some follow on work in subsequent years.

Irrigation Futures

Program goal: Given the fundamental importance of irrigation to the Goulburn Broken catchment, meeting the enormous challenges of the future requires sound planning. Some of these challenges include:

- *It is one of the oldest gravity irrigation systems in Australia.*
- *The irrigation system needs substantial renewal of its ageing infrastructure.*
- *Pressure for increased environmental flows.*
- *Reduced rainfall from climate changes, and*
- *Increasingly stringent demand for responsible management of natural resources to meet the social, economic and environmental aspirations of the community.*

The broad objective of the Irrigation Futures project is to bring together the key stakeholders in irrigated agriculture and the regional community, to develop a shared vision for, and to make informed choices about, the future of irrigation in the Goulburn Broken catchment. The detailed objectives of the project are to:

- *Involve key regional stakeholders in the development of a shared vision for the future of irrigation in the Goulburn Broken catchment.*
- *To identify future scenarios of major opportunities, constraints and regional response options.*
- *Understand the social, economic and environmental consequences of various scenarios through impact assessment, which is based on the integration of the best available knowledge.*
- *Build consensus among the key stakeholders on the preferred plans for the future of irrigation, and*
- *Recommending regional follow-up actions to make the future happen.*

Activities and achievements

During 2004-2005, the project team conducted an extensive series of workshops to capture information on aspirations, future challenges etc for the region. Stakeholders from irrigated agriculture, major processors, business & community groups, Local Government & agencies responsible for land

& water management were invited to participate in a series of 4 full-day workshops. Representation from women and young people was also specifically targeted. Those workshops were held at 6 major centres throughout the region (Echuca, Kyabram, Shepparton, Cobram, Benalla and Seymour). In total, over 500 person-days of stakeholder input was involved.

The output from the workshops has been analysed to define:

- What are our collective aspirations for the future of irrigated agriculture in the region,
- What are the range of driving forces and future scenarios people see for the region
- Four plausible future irrigation scenarios
- How might the region respond to the changes seen in the various scenarios
- The development of an interim suite of Regional Strategies to meet these future challenges, and
- A list of the region's competitive assets.

A report has been completed to present a synthesis of these outputs. This constitutes a significant community resource. It is recommended that these Strategies be considered for adoption by organisations within the region. To help this process, communication of these outputs is being carried out through information sessions and products to stakeholders and community.

In the coming year, Stage 3 of the project seeks to assess the effectiveness and robustness of the suite of Regional Strategies. This will include developing a suite of options for future action that can readily respond to future challenges and opportunities as they arise. The project will also develop full scenario stories describing the interplay of the External Scenarios, Regional Strategies and their consequences, especially in light of the current plans for water reform.

APPENDICES

Physical Performance Indicators

Program Activity Description		2004-2005			Cumulative Total to Date	Cumulative Target 2020
		Target for year	Actual to date	% +/-		
Farm and Environment Program						
<i>Broadacre Whole Farm Plans</i>						
Number		140	124	89	2,806	5,000
Area (ha)		10,000	8,228	82	202,003	350,000
<i>Horticulture Whole Farm Plans</i>						
Number	1	14	6	43	172	250
Area (ha)		350	71	20	6,078	25,000
<i>Re-use Systems Incentives</i>						
Number	2	40	70	175	335	
Area served (ha)			5,365		25,833	
Volume of storage (ML)			296		1,671	
<i>Total Re-use Systems</i>						
Number	3,4	40	70	175	3,622	
Area served (ha)			5,365		211,833	
Volume of storage (ML)			296		14,397	
<i>Automatic Irrigation Incentives</i>						
Number		40	18	97.5	94	
Area served (ha)			1,530		6,043	
Number outlets automated			2		50	
<i>Landforming/laser grading (ha)</i>	5	10,000	11,700	117	192,100	300,000
Environmental Works						
Tree Growing Incentives (ha)		40	18.1	45	582	
<i>Protection of Wetlands</i>						
Management Plans complete			0		3	
<i>Private Land Environmental Incentives</i>						
Protected (ha)	6	52	14	27	315.6	
Revegetated (ha)	6	20	Note 6			
<i>Protection of Remnant Vegetation</i>						
Sub-surface Drainage (ha)	7		148		2,070	
Management Plans complete			1		2	
<i>Private Land Environmental Incentives</i>						
Protected (ha)	6	52	180.51	300	872	
Revegetated (ha)	6	20	45.4	228	230.62	
<i>Public Land works (ha)</i>			n/a			

Program Activity Description		2004-2005			Cumulative Total to Date	Cumulative Target 2020
		Target for year	Actual to date	% +/-		
Sub-surface Drainage Program						
<i>Private pumps installed - broadacre</i>						
Number: new / upgrade		20	8/1	45	254/71	365/95
Agreed Volume (ML/yr)	8	2,000	1,171	59	35,697	51,500
Area protected (ha)	9	2,000	1,171	59	35,697	51,500
<i>Private pumping - broadacre</i>						
Agreed Volume (ML/yr)	10		138,669			
Volume pumped (ML)			64,820			
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	164	27	2,139	40,000
Area protected (ha)	15	1,200	626	52	8,966	85,000
Surface Water Management Program						
<i>Primary</i>						
Length designed (km)		35	32	91	387.5	644
Constructed: New (km)	16	14	12	86	177	362
Remodelled (km)		Incl above	0	Incl above	46.6	282
Area drained (ha)			1,750		18,900	
<i>Community</i>						
Length designed (km)		19	2	11	1,191.6	2,102
Constructed (km)		22	0	0	520.5	2,102
Area drained (ha)		2,200	0	0		
<i>Nutrient Removal Schemes</i>						
Number		5	7	140	30	
ML Storage			1,350		5,713	

Notes for Table: Physical Performance Indicators:

1. Does not include horticultural whole farm plans prepared by landholders with technical assistance from agency staff.
2. Includes NC component of SIR.
3. Assumes 1,000 systems constructed prior to the commencement of the plan.
4. Includes an estimate of post plan systems prior to incentives becoming available in 2001.
5. Includes re-grading works. This needs to be taken into account when considering cumulative total. Estimated from the 1996-1997 census.
6. Area of wetland revegetated included in remnant total.

7. 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.

Summary of Cost Share Details

	Annual Expenditure 2004-2005 \$	Accumulated Expenditure \$
Government	17,165,000	225,599,750
Community	37,463,210	586,205,070
	54,628,210	811,804,820

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

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

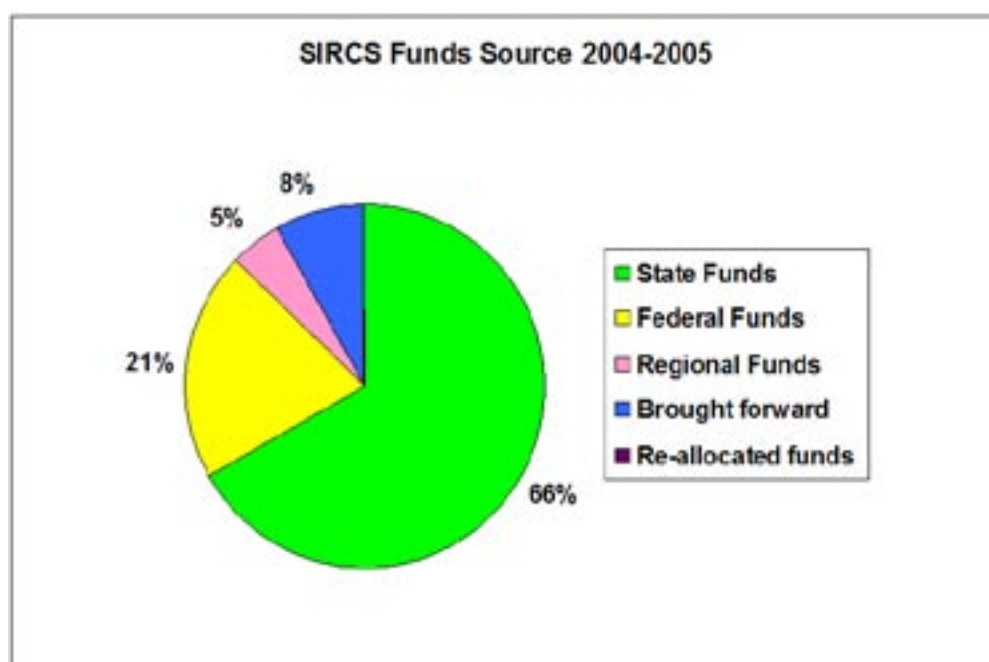
Regional community and landholder expenditure was derived from a survey of farmers within the SIR, and from records of government administered assistance programs.

Accumulated Expenditure

Accumulated expenditure is expressed in 2004-2005 dollars. Previous expenditure was adjusted by applying the Victorian CPI increase of 2.2% in 2004-2005.

SIR Catchment Strategy Budget & Final Expenditure 2004-2005

SIR Catchment Strategy Programs 2004-2005	State Funds \$'000s	NAP/ NHT \$'000s	Regional Funds \$'000s	Brought forward \$'000s	Re-allocated funds \$'000s	Total Budget funds \$'000s	Program \$'000s
Tackling Pests	203	0	0	0	15	218	257
Environmental Protection	330	440	0	97	0	867	861
Farm	1,384	631	0	260	87	2,362	2,083
Surface Drainage	2,014	2,638	75	273	0	5,000	5,085
Sub-surface Drainage	1,449	856	612	-78	0	2,839	3,098
Monitoring	225	205	98	6	0	535	561
Program Support	1,614	1,273	33	359	0	3,279	2,717
River Health - Waterways	1,382	432	0	194	-25	1,983	1,813
Research	0	450	0	344	-87	707	533
Biodiversity	0	158	0	0	0	158	158
Total SIRCS Programs	8,601	7,084	818	1,455	-10	17,948	17,165



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.

Grants paid in the Shepparton Irrigation Region

Group	\$
Ardmona Primary School	2,050
Broken Creek Improvement Landcare Group	1,775
Bunbartha Kaarimba Zeerust Landcare Group	1,290
Congupna Tallygaroopna Landcare Group	500
Dhurringile and District Local Area Plan Group	3,000
Dhurringile and District Landcare Group	2,300
Golden Cow Dairy Education Centre	3,800
Goulburn Murray Landcare Network	1,600
Guthrie Street Primary School	1,302
Kyabram Urban Landcare Group / Wyuna LAPIC	615
Merrigum Primary School / Girgarre Primary School	2,800
Muckatah Landcare Group	790
Nanneella / Timmering Action Group	2,000
St Mary of the Angels Secondary College Nathalia	256
Undera Primary School	560
Wanganui park Secondary College	680
Wyuna Landcare Group Inc	400
St. Joseph's College	500
Total Grants paid in the Shepparton Irrigation Region	\$28,316

Salt Disposal Report 2004-2005

Progressive Uptake of Salt Disposal Entitlements in the SIR

Activity	Uptake of Salt Disposal Entitlements (EC)			
	Pre-1991	Total to 2003-04	Uptake in 2004-05	Total to 2004-05
Primary Drains	0.055	0.407	0.037	0.444
Community Surface Drains	0.008	0.097	0.000	0.097
Public Groundwater Pumps		1.438	0.056	1.494
Private Groundwater Pumps		1.007	0.272	1.279
Horticultural Sub-surface Drainage	0.030	0.156	0.000	0.156
Total	0.093	3.105	0.365	3.470

*Includes pre-1991 impacts

Note: There was no disposal opportunity for private or public groundwater pumps during the 2004 winter-spring period. Therefore, of the potential 2.929 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.

Presentations and Publications

Environmental Protection

Publications

- Environmental Review of the Muckatah Catchment
- BAP Communication Strategy
- Inglis Bushland Reserve Management Plan
- Bush and Land articles on a range of biodiversity/environmental issues/topics

Presentations

- Catchment Partners Day- Performance Standards for Natural Features of the SIR

Farm

Publications

- “Review of the whole farm plan programs in the Shepparton Irrigation Region”, DPI Tatura, 2004.
- “Attitudes of landowners towards the installation of drainage re-use systems” DPI Tatura, 2004.
- “Attitudes of landowners about the automatic irrigation systems” DPI Tatura, 2004.

Conference papers:

- A paper entitled “Landowners’ attitudes on the benefits and barriers of adopting pressurised irrigation systems on broadacre farms” at the Irrigation Association of Australia (IAA) conference held at Townsville in May 2005.
- A paper entitled “Linkages between farmers, extension and researchers in efficient irrigation technologies” at the DPI conference held at Bendigo from 7-8 September 2005.
- A paper entitled “Linkages between farmers, extension and research” at the ANCID conference held at Mildura, 2005.

Surface Drainage

Publications

- SKM (2005), Shepparton Drain 12 Water Quality Review
- SKM (2005), Ardmona-Undera Drain Water Quality Review

Final Reports published for the following CSWMs:

- Mosquito 5/24P
- Mosquito 8/24P
- Wyuna 5/7P
- Deakin 7/3P
- Coomboona 3P
- Mosquito 6/25P
- Rodney 5/6P
- Rodney 3/6P
- Mosquito 11/25P

Sustainable Irrigated Landscapes Stories:

- “A Sunny Trip” - Kym Ockerby October 2004
- “Community Surface Water Management Program Portfolio’s - a change in the way we operate” - Sue Ward July 2004
- “Surface Water Management without the bells and whistles” - Brian Holmes April 2005
- “Changing from a YES to a NO, then a MAYBE, then back to a YES” - Clair Haines January 2005
- “Strategy and Respect are required to resolve landowner issues” - Shane Byrne May 2005
- “After the rain – CSWMP Open all hours!” - John Bouchier March 2005
- “There and back again – a reluctant landowner tale” - Tobi Edmonds March 2005

Catchment & Agriculture Services (CAS) Impact Story

- “Byrneside Depression Drainage Group - working with CAS to achieve surface water management success in their catchment” - Clair Haines April 2005

Brochures:

- General brochure for landowners: “CSWMS – Its more than just digging ditches in the ground”
- Brochure for landowners within systems that are about to be constructed, which describes the G-MW Management Option: “Managing your Community Surface Water Management System – G-MW are offering to do it for you”

Presentations

- Catchment Partners Day – Environmental Improvements in Surface Water Management Systems
- Presentation at Sustainable Irrigated Landscapes Partner Reporting day 2004, “Benefits of a Group Approach to Surface Water Management” by Mark Paganini and Clair Haines.
- Presentation at the launch of the 12th constructed CSWMS by the Byrneside Depression Drainage Group by Sandy Schroen.
- Presentation at the launch of the 12th constructed CSWMS by the Byrneside Depression Drainage Group by Sandy Schroen.

Tours

- Kinnaird’s Wetland at Numurkah for South Australian Water Users
- Tours of Kyabram Fauna Park Staff and Kyabram Students and South Australian Water Users
- DPI SWMP staff took a tour to Mildura to experience first hand the land and water management issues of that region.

Sub-surface Drainage

Publications

- 2003-2004 Public Pump Key Performance Indicator Annual Report
- 2003-20004 Annual Report to Minister completed.
- Regional salinity limits for lucerne developed.
- Development of regional salinity limits for fruit crops largely completed.
- Drought strategy developed.
- Metering of operational private pumps effectively completed (approx. 800 sites metered).
- Annual collection of groundwater samples from private pumps undertaken.
- Towards Best Management Practices for Private Groundwater Pumping and Conjunctive Reuse in the Shepparton Irrigation Region, June 2005 Authors Mike Morris and Bruce Gill. Completion report for stage two of 'Water Use Efficiency Through better Groundwater Management' project.
- Shepparton Irrigation Region Public Pumps Key Performance Indicators - Report on 2004 soil salinity investigations. Authors: Alister Terry and Bruce Gill, March 2005. Department of Primary Industries, Tatura. Technical report.

Presentations

- Presentation on Work Plan, budget, usage and salinity trends and strategic response made to SIR Groundwater Management Plan Working Group.

Monitoring

Publications

- SKM (2004) Trend analysis of Nutrients in Irrigation Drains in the Shepparton Irrigation Region (C806)
- SKM (2005) Shepparton Irrigation Region and Campaspe West Drain Nutrients Annual Review 2003-4 (C806 & T035)
- WSL Consultants (2004) Biomonitoring of the Impacts of Discharges from Irrigation Drains 2003-4

Program Support

Publications

- Balancing the Salt Budget for the Shepparton Irrigation Region. Batey & Sampson

Presentations

- SIRCS Briefing to RMIT Student Delegation
- Role of WFP in increasing Irrigation Management in the SIR
- Lower Goulburn Floodplain
- SIRIC Briefing to Campaspe and Moira Shires
- GB presentation to BSMS Independent Audit Group
- SIR Salinity Audit Nov 2005
- NRM Induction Workshops

Research

Publications

- SIRIC Research Reporting Day – Compilation of Project research reports and presentations from 2004 – 05 year (Published for Research reporting day July 2005)
- A Review of Salt Mobilisation and Management in Irrigated areas of the Murray Darling Basin. Authors: Ruth Duncan, Matthew Bethune, Evan Christen & John Hornbuckle, March 2005. Published in Cooperative Research Centre for Catchment Hydrology and DPI and DSEVictoria. ISBN Number I 920813 19 5
- Soil Hydraulic Properties of the Shepparton Irrigation Region. Authors Brijesh Mehta & QJ Wang, February 2005. Department of Primary Industries Tatura Book. ISBN Number I 74146 961 9
- Salinity control with Sustainable Salt balance – Project report on the Blighty (NSW) and Mt Scobie partial conjunctive re-use study sites. Author Bruce Gill, March 2005. Department of Primary Industries Tatura Technical Report. ISBN: I 74146 387 4.
- Australian Journal of Experimental Agriculture SPECIAL ISSUE for the Irrigated Dairy Industry. Volume 44, Number 2, 2004 pp127 – 212. Editors Matthew Bethune et al. Contains 11 articles on Research work of relevance to the Shepparton Irrigation Region.

Committees and Working Group Members 2004-2005

Shepparton Irrigation Region Implementation Committee Members

Voting Members Community Representatives	Non-Voting Members Agency Representatives	Executive Support Agency Staff
Russell Pell - (Chair) Numurkah Peter Gibson (Deputy Chair) Nanneella Allen Canobie - Numurkah Stephen Farrell - Echuca Peter McCamish - Ardmona Nick Ryan - Lancaster Ann Roberts - Shepparton Nick Roberts - Tatura	Bruce Cumming - DPI Terry Hunter - G-MW	Ken Sampson - GB CMA Peter Howard - GB CMA Pam Collins - DPI Ross Plunkett - G-MW David Lawler - DPI Alex Sislov - DPI Geoff Lodge - DPI Melva Ryan/Colin James - GB CMA Wayne Tennant- GB CMA

Attendance Record

Name	04-5	04-6	04-7	04-8	05-1	05-2	05-3	05-4
Allen Canobie	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nick Ryan	Yes	Yes	Yes	Yes	Yes	Apol	Yes	Apol
Steve Farrell	Yes	Yes	Apol	Apol	Yes	Yes	Yes	Yes
Peter Gibson	Yes	Apol	Yes	Yes	Yes	Yes	Yes	Apol
Nick Roberts	Yes	Yes	Apol	Apol	Yes	Yes	Yes	Yes
Russell Pell	Yes	Yes	Yes	Yes	Yes	Yes	Apol	Apol
Peter McCamish	Yes	Apol	Yes	Yes	Yes	Yes	Yes	Yes
Ann Roberts	Apol	Yes	Yes	Apol	Yes	Yes	Yes	Yes

Working Group Members

Group	Voting Member	Non-Voting Member
SIR Technical Support Committee (SIRTEC)	Allen Canobie - SIR IC Russell Pell - SIR IC Peter Gibson - SIR IC Ken Sampson - GB CMA Ross Plunkett - G-MW Peter Dickinson - G-MW Greg Smith - G-MW Bruce Cumming - DPI Geoff Lodge - DPI David Lawler - DPI Steve Lottkowitz - DPI Wayne Tennant - GB CMA Melva Ryan/Colin James - GB CMA Mike Morris - DPI	Peter Howard - GB CMA Pam Collins - DPI Corresponding Members Elita Briggs - EPA Laurie Gleeson - GVW Peter Gray - NVFGA
Budget Sub-Committee	Allen Canobie Peter McCamish Peter Gibson Stephen Farrell	Ken Sampson - GB CMA Peter Dickinson - G-MW Greg Smith - G-MW James Burkitt - GMW Peter Howard - GB CMA Pam Collins - DPI David Lawler - DPI Bruce Cumming - DPI
Sub-Surface Drainage Working Group	Kevin Chapman John Avard Ian Whatley George Trew Bruce Cumming Peter McCamish Peter Dickinson Brian Gledhill Alan Strang Heather duVallon Gordon Weller Ian Whatley Rein Silverstein Peter Gibson Terry Hunter Jenny Pagon/Terry. Batey Bruce Gill	Ken Sampson - GBCMA Colin James - GBCMA

Surface Drainage Working Group	Allen Canobie Stephen Farrell Geoff Witten John Horder Ron Brooks Mick Trevaskis Hank Sanders George Trew	Mark Paganini - DPI Ken Sampson - GB CMA Pam Collins - DPI Colin James - GB CMA
Farm and Environment Working Group	Ann Roberts Nick Ryan Graeme Talarico George Trew Rien Silverstein Ian Klein Bob Watters Helen Reynolds Athol McDonald John Laing Les Langley	Ken Sampson - GB CMA David Lawler - DPI Colin James - GB CMA
Waterways Working Group	Russell Pell Nick Roberts Ron Pearce Alan Sutherland Bill Probst Tait Hamilton	Bruce Cumming - DPI Silvio Fontana - GB CMA David Trickey - Parks Victoria Alex Sislov - DPI Ken Sampson - GB CMA Peter Howard - GB CMA Colin James - GB CMA

SIRCS Staff 2004-2005

SIR IC acknowledge the valuable contribution and dedication of the staff of our partnership agencies throughout the past year.

Tackling Pests

Drew	Gracie	DPI
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Biodiversity

Tim	Barlow	CMA
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Environmental Protection

Alex	Sislov	DPI
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Rebecca	Heard	DPI
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Suzanne	Johnstone	DPI
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Joel	Pike	DPI
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Andrew	Morrison	DPI
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Kathryn	Stanislawski	DPI
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Allison	McCallum	DPI
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Fiona	Copley	DPI
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Krista	Patterson-Majoor	DPI
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Bryony	McGregor	DPI
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Farm

David	Lawler	DPI
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Chris	Nicholson	DPI
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Rabi	Maskey	DPI
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Libby	Reynolds	DPI
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Jen	Pagon	DPI
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Chelsea	Nicholson	DPI
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Alan	Lavis	DPI
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Penny	Shaw	DPI
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Scott	McDonald	DPI
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Surface Drainage

Geoff	Lodge	DPI
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Sandra	Schroen	DPI
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Brian	Holmes	DPI
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Dan	Hunter	DPI
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Neil	McLeod	DPI
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Nick	Roberts	DPI
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Kylie	Preece	DPI
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Georgie	Fraser	DPI
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Shane	Byrne	DPI
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John	Bouchier	DPI
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Veronique	Froelich	DPI
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Sue	Ward	DPI
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Mark	Paganini	DPI
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Kym	Ockerby	DPI
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Clair	Haines	DPI
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John	Tunn	AAV
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Andrew	Costello	AAV
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Carl	Walters	G-MW
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Daryl	Eaton	G-MW
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Sam	Green	G-MW
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Glen	Collins	G-MW
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John	Owen	G-MW
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Robert	O'Meara	SKM
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Sub-surface Drainage

Terry	Hunter	G-MW
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Peter	Dickinson	G-MW
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David	Douglas	G-MW
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Stephen	Fiess	G-MW
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Sudath	Herath	G-MW
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James	Burkitt	G-MW
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Chris	Howard	G-MW
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Ian	Oppy	G-MW
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Leanne	Dempster	G-MW
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Ray	Modystack	G-MW
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Samantha	Longley	G-MW
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Melissa	Turpin	G-MW
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Andy	Yeomens	G-MW
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Martin	Brownlee	G-MW/SKM
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Monitoring

Pat	Feehan	G-MW
Greg	Smith	G-MW
Erin	Simpson	G-MW
Stephen	Lawless	G-MW
Mark	Newton	G-MW
Rod	McQueen	G-MW

Program Support

Bruce	Cumming	DPI
Terry	Batey	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
Ken	Sampson	CMA
Pam	Collins	DPI
Peter	Howard	CMA
Andrea	Smith	CMA
Melva	Ryan	CMA
Colin	James	CMA

Research

Mohammed	Abuzar	PIRVic
Susan	Barker	PIRVic
Ben	Binger	PIRVic
Matthew	Bethune	PIRVic
Kim	Broadfoot	PIRVic
Peter	Clayton	PIRVic
Tony	Cook	PIRVic
David	Cornwall	PIRVic
John	Ford	PIRVic
Bruce	Gill	PIRVic
Clair	Haines	PIRVic
Alfred	Heupermann	PIRVic
Fiona	Johnson	PIRVic

Melinda	Leth	PIRVic
Richard	Maxwell	PIRVic
Andrew	McAllister	PIRVic
Brijesh	Mehta	PIRVic
Mike	Morris	PIRVic
Elizabeth	Morse-McNabb	PIRVic
Brendan	Paterson	PIRVic
Jodie	Ridges	PIRVic
David	Robertson	PIRVic
Leon	Soste	PIRVic
Edward	Thomas	PIRVic
QJ	Wang	PIRVic
Shin Yuan	Yang	PIRVic
Brendan	Paterson	PIRVic

River Health - Waterways

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
Phil	Lesire (dec'd)	CMA
Peta	Mazur	CMA
Sue	Botting	CMA
Keith	Ward	CMA
Scott	Morath	CMA
Geoff	Earl	CMA
Justin	Sheed	CMA
Simon	Casanelia	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	RCS	Regional Catchment Strategy
DSE	Department of Sustainability & Environment	REALM	Resource Allocation Model
DRDC	Dairy Research and Development Corporation	RWC	Rural Water Corporation
EM	Electromagnetic	SBC	Serial Biological Concentration
EPA	Environmental Protection Agency	SDA	Salt Disposal Allocation
FEDS	Farm Exploratory Drilling Scheme	SIR	Shepparton Irrigation Region
FRP	Filterable Reactive Phosphorus	SIR IC	Shepparton Irrigation Region Implementation Committee
GAM	Generalised Additive Model	SIRCS	Shepparton Irrigation Region Catchment Strategy
GB CMA	Goulburn Broken Catchment Management Authority	SIRLWMP	Shepparton Irrigation Region Land and Water Management Plan
GIS	Geographical Information System	SIRLWSMP	Shepparton Irrigation Region Land and Water Salinity Management Plan
GMLN	Goulburn Murray Landcare Network	SIRTEC	Shepparton Irrigation Region Technical Support Committee
GMP	Groundwater Management Plan	SKM	Sinclair Knight Merz
G-MW	Goulburn-Murray Water	SPAC	Salinity Program Advisory Council
GPIS	Groundwater Pumping Incentive Scheme	SPC	Shepparton Preserving Company
GSPA	Groundwater Supply Protection Area	SPPAC	Salinity Pilot Program Advisory Council
GVEEP	Goulburn Valley Environment Employment Program	TKN	Total Kjeldahl Nitrogen
GVW	Goulburn Valley Water	TP	Total Phosphorus
IIP	Improved Irrigation Practices	UDV	United Dairyfarmers of Victoria
ISDG	Irrigation Surveyors and Designers Group	VFF	Victorian Farmers Federation
LAP	Local Area Plans	WFP	Whole Farm Plan
LPIS	Land Protection Incentive Scheme	WSC	Water Services Committee
LWRRDC	Land and Water Rural Research and Development Corporation		
MASNV	Municipalities Against Salinity in Northern Victoria		

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