Shepparton Irrigation Region
Implementation Committee

Water, Land and People

Annual Report

2008-2009

GOULBURN BROKEN
CATCHMENT MANAGEMENT AUTHORITY

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Find more information about the Goulburn Broken Catchment Management Authority on the web at:
www.gbcma.vic.gov.au

Cover image: The late Ken Sampson, pictured in his element, inspecting program works in the catchment.
(Photographer - Rachael Spokes GB CMA)

Acknowledgment
This project is funded as part of the Goulburn Broken Catchment Management Authority Regional Catchment Strategy in the Shepparton Irrigation Region and is provided with support and funding from the Australian Government and Victorian Government through the National Action Plan for salinity and water quality and the Natural Heritage Trust. This project is delivered primarily through partnerships between the Department of Primary Industries, Goulburn-Murray Water, Department of Sustainability and Environment, the Goulburn Broken Catchment Management Authority, North Central Catchment Management Authority and other bodies.

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OVERVIEW

Introducing the Shepparton Irrigation Region Implementation Committee

The Shepparton Irrigation Region Implementation Committee is one of two Implementation Committees established by the Goulburn Broken Catchment Management Authority (GB CMA) to give communities a strong role in managing natural resources. The Shepparton Irrigation Region Implementation Committee plays a vital role in effective land and water management in the Shepparton Irrigation Region including overseeing the development and delivery of detailed work programs to protect our natural resources. The community provides input into these programs through the Implementation Committee.

Roles

The Implementation Committee roles include:

- Providing advice to the GB CMA on resource management objectives, targets, activities, priorities and budgets;
- Delivering the program of natural resource objectives of the Shepparton Irrigation Region Catchment Implementation Strategy;
- Planning, developing and implementing plans for specific issues or sub-catchments;
- Overseeing on-ground works programs;
- Acting as a communication link with relevant stakeholder groups;
- Monitoring performance on activities and reporting to the GB CMA on the achievement of objectives and targets;
- Chairing and attending Shepparton Irrigation Region Implementation Committee Working Groups and sub-committees;
- Representing the Implementation Committee on various forums.

The Implementation Committee members are appointed for a period of four years.

Members are nominated because of their specific skills and their links to community networks. There are eight community representatives and representatives from partnership agencies (Department of Primary Industries; Department of Sustainability and Environment and Goulburn-Murray Water). Current Implementation Committee members are shown in the diagram on the following pages.

Working Groups

Working Groups have been established for the four action program areas overseen by the Shepparton Irrigation Region Implementation Committee: Farm and Environment; Surface Water Management; Groundwater and Salt Management, and Waterways. All Working Groups comprise community representatives including representatives from each of the four Water Service Committees of Goulburn-Murray Water, Victorian Farmers Federation, Local Government, environmental groups and agency representatives.

Technical support

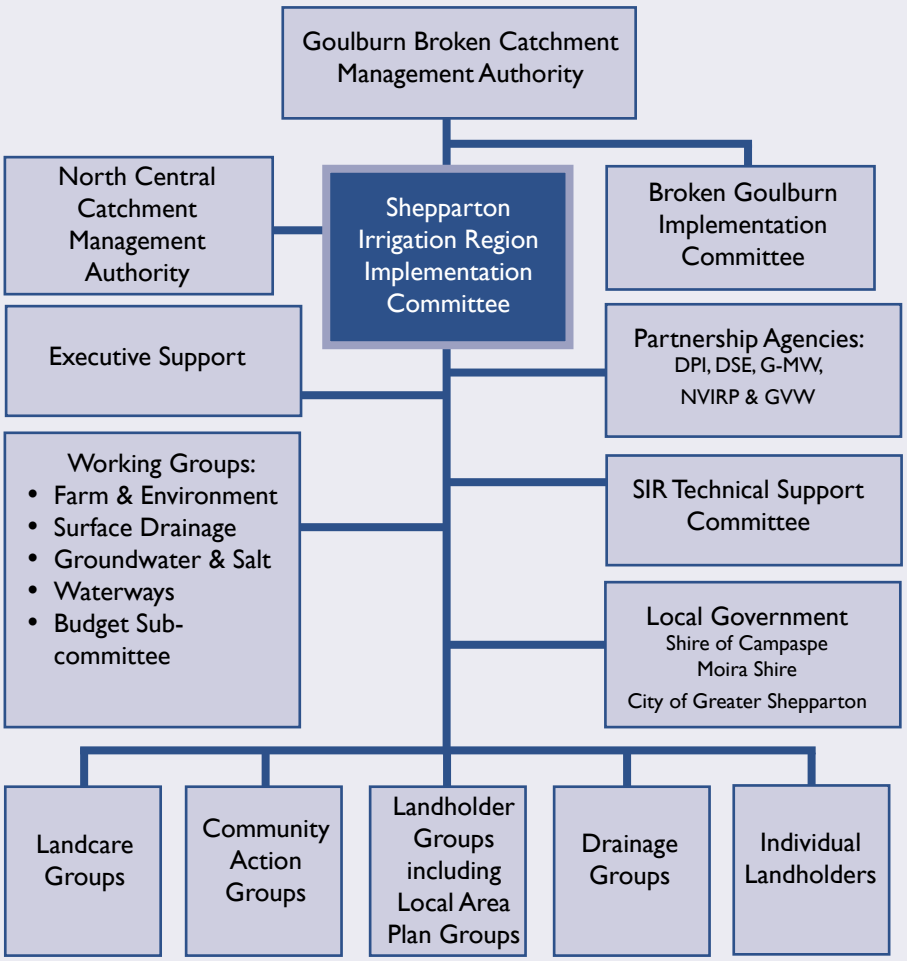
The Shepparton Irrigation Region Implementation Committee is supported by an Executive Support Team, which provides executive and technical advice for the implementation of the Shepparton Irrigation Region Catchment Implementation Strategy. Agency staff also provide technical input through the Shepparton Irrigation Region Technical Support Committee, (SIRTEC) the working groups and specific project teams.

Partnership structure

Community involvement is made possible because of a multi-faceted partnership network. This partnership network enables community involvement at every level as the Shepparton Irrigation Region Catchment Implementation Strategy evolves during its implementation. This ensures community input and ownership of the decision-making process.

The Shepparton Irrigation Region Catchment Implementation Strategy signifies a true partnership between the local community and all levels of government – State, Federal and Local. Community representatives actively participate in decision-making processes through a committee structure shown in the 'SIRIC Community Partnership' (see diagram of structure below).

Committees, Agencies, Community Groups
Shepparton Irrigation Region Catchment Implementation Strategy Partners



Community Representatives

Victoria

Goulburn Broken Catchment

Stephen Farrell

Stephen is a dairy farmer from Echuca. He has been a member of GB CMA for the last 7 years. Stephen is an active Landcare member and is concerned about all aspects affecting the environment. Stephen believes landowners should be encouraged to use better farming practices and communities made aware of the long term benefits of the implementation of on-ground works. Stephen's main focus is to balance environmental management with farming practices. Another important focus is maintaining farm productivity, profitability and provide a future for our sons and daughters. Stephen is also a member of the Surface Water Management Working Group.

Allen Canobie

Allen is an irrigation farmer at Numurkah who has been involved with environmental management since the days of the salinity program (Salinity Program Advisory Council). He is the Chair of the Surface Water Management Working Group committed to promoting better farming practices encompassing revegetation, nutrients and fertiliser use. Allen also has a strong commitment to developing better partnerships with processing bodies and industry and the wider community.

John Wenske

John is an irrigation dairy farmer and business owner from Katandra West who has been actively involved in the irrigation industry for a number of years, being a member of water services and reconfiguration committees as well as the Groundwater and Salt Management Working Group. John is keen to play a role in ensuring the ongoing viability and sustainability of our catchment community by encouraging adoption of sustainable integrated resource management principles to tackle challenges of the potential climate change, competing demands for water and regional adjustment.

Roger Wrigley

Roger is a geotechnical and environmental engineer and soil scientist employed as an academic by the University of Melbourne at Dookie College. His research and practice is related to soil,water and waste management. Students serve as his eyes and ears and he relishes learning from them whilst the CMA engagement ensures the relevance of his teaching and research. Roger is a member of both the Waterways and Farm and Environment Working Group.

Peter Gibson

Chair

Peter is an irrigation dairy farmer and business manager at Nanneella and is involved in a number of committees and organisations. He is passionate about the use of water and its impact on the environment into the future. Peter has seen a number of changes during his involvement with catchment management. Peter has been re-elected as the Chair of the Shepparton Irrigation Region Implementation Committee. The Regional Catchment Strategy is a critical document and sets targets and priorities for on-ground works. Peter has been Chair of the Nanneella/ Timmering Landcare group for a number of years and is a member of the Rochester Campaspe Water Services Committee. Peter is also a member of the Groundwater and Salt Management Working Group.

Nick Ryan

Nick is an irrigation dairy farmer and has a keen interest in sustainable economic growth and natural resource management in the Shepparton Irrigation Region. Nick is Chairman of a Steering Committee project 'Future Dairy Farming Systems'. Nick brings a number of skills to the program and is a keen advocate of community consultation keeping the public informed of the work done by the implementation committee and its working groups. Nick is also a member of the Waterways Working Group.

John Gray

John Gray is a retired school teacher who has had vast experience as a municipal councillor, and as a government appointee to the former Catchment and Land Protection Board, the GB CMA and Goulburn Valley Water. He is proud to have enthusiastically embraced successful cultural and organisational changes in natural resource management, the water industry and local government over the past progressive couple of decades. John is committed to the environment, sound sustainable land planning principles, floodplain management and best utilisation of our finite water resource. John is a member of the Farm and Environment Working Group.

Helen Reynolds

Helen is an irrigation grain farmer and enthusiastic conservationist and has a background in ecology and natural resource management. She is President of the Goulburn Valley Environment Group and an active member of the Victorian Farmers Federation and the Victorian Irrigated Cropping Council. She is interested in seeing the region flourish through improved environmental management on farms and enhanced protection and management of public land. Helen is also a member of the Farm and Environment Working Group.

Shepparton Irrigation Region Implementation Committee - A Success Story

The continued effectiveness of the Shepparton Irrigation Region Implementation Committee is due to strong relationships between farming community representatives and partner agencies and local government. The Shepparton Irrigation Region Implementation Committee is actively involved in policy framework design and strategic direction.

Community representatives and partner agencies combine in a close working relationship to oversee the four Shepparton Irrigation Region programs through working groups: Farm and Environment, Groundwater and Salt Management, Surface Water Management and Waterways.

These groups comprise community members and agency staff and including representatives from the Department of Primary Industries, Goulburn-Murray Water, the Department of Sustainability and Environment, Water Services Committees, the Victorian Farmers Federation, Local Government and local interest groups such as Landcare.

Community representatives of the working groups have full confidence in communicating across all levels of the committee structure. Informal communication is encouraged through the working group and committee network.

From its beginnings the Executive Officer has fostered a close relationship with key partnership agency people. This has been intrinsic to the success of the Shepparton Irrigation Region Implementation Committee.

Within the Shepparton Irrigation Region the community is resilient in adapting to a constantly changing environment. The financial strength of agriculture industries in this irrigation region enables landholders to have the financial capacity to invest in positive outcomes to their properties and access incentive schemes that Shepparton Irrigation Region Implementation Committee oversee.

The effectiveness of the Shepparton Irrigation Region Implementation Committee to deliver an on-ground works program gives landholders the confidence to invest in "works that will work". The value of potential benefits of the works is such that for every dollar invested, they can potentially receive approximately between $1.27 and $1.64 (benefit:cost ratio).

The Shepparton Irrigation Region Implementation Committee strives to reflect the needs and aspirations of the community to leave the land in better shape for the next generation.

Shepparton Irrigation Region Catchment Implementation Strategy

The Shepparton Irrigation Region Catchment Implementation Strategy is a 30-year strategy that provides the framework for land, water and biodiversity management. Commencing in 1989, with whole community cooperation, the strategy aims to improve the condition of natural resources in the Shepparton Irrigation Region for current and future community.

The Shepparton Irrigation Region Catchment Implementation Strategy addresses the following issues: salinity, water quality, native biodiversity, riverine health, pest plants and animals and climate change and greenhouse gas emissions.

Who pays

The Shepparton Irrigation Region Catchment Implementation Strategy is funded jointly by the regional community, the Australian, Victorian and Local Governments. The regional community has a major commitment to the Shepparton Irrigation Region Catchment Implementation Strategy, both to capital projects and ongoing operation and maintenance. In 2008-2009, this was approximately $34 million. Annually, the Shepparton Irrigation Region Implementation Committee attracts funding of close to $18 million with the majority of this funding going directly to on-ground works projects.

Our Region

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

The irrigated area of 317,000ha within the Shepparton Irrigation Region utilise approximately 1.5 million megalitres of water each year. The gross value of agricultural production in 2005-2006 (ABS) was $1.38 billion. This accounts for 14.9 percent of Victoria's gross value of agricultural production. The main primary industries are horticulture, dairying, cropping and grazing.

The Shepparton Irrigation Region's population is over 120,000 people and includes more than 7000 rural properties, with over 20 percent of those landholders being of a multicultural background.

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

A modernised irrigation structure in the Shepparton Irrigation Region

CHAIR'S MESSAGE

Peter Gibson
Chair

Shepparton Irrigation Region Implementation Committee

It is with great sadness that I begin my message by acknowledging the sudden passing of our Executive Officer Ken Sampson. Ken has been the driving force and inspiration to the Committee for over 15 years. His immense technical knowledge and enthusiasm for community involvement created a unique collaboration that resulted in many natural resource management success stories over the years.

This report details the program of works that the Shepparton Irrigation Region Implementation Committee has achieved over the past year.

The Shepparton Irrigation Region Catchment Implementation Strategy program successfully attracted $16 million in funding through Victorian and Australian Government initiatives including Our Water Our Future, Water in a Climatically Challenged Environment, and National Action Plan for Salinity and Water Quality. The program also included over $0.5 million of regional funds.

The Implementation Committee was also supported in the delivery of the planned programs as a direct result of the ongoing commitment of the representatives from our Partnership Agencies: the Department of Primary Industries, Goulburn-Murray Water and the Department of Sustainability and Environment and the high level of professional support from the Executive Team.

The Implementation Committee continues to attract community leaders and benefits from a well credentialed and diverse membership with a wide knowledge and experience base.

Allen Canobie, Nick Ryan and I were reappointed to the Implementation Committee for four years. John Wenske became a new member following the completion of half the committee's four year term.

Peter McCamish did not seek reappointment due to commitments on the boards of the Northern Victoria Irrigation Renewal Project and Water for Victoria. On behalf of the Implementation Committee I would like to thank Peter for his dedication and the knowledge and energy he brought to the Implementation Committee during his four year term.

I would personally like to commend the continued work of my fellow Committee members: Allen Canobie, Steve Farrell, John Gray, Helen Reynolds, Nick Ryan, Roger Wrigley and John Wenske together with our Assistant Executive Officer, Peter Howard, and Agency representatives Terry Batey, James Burkitt and Rob Steel. I thank them for their hard work and personal contribution.

On behalf of the Committee, I would like to pay tribute to Ken who has been taken all too soon. May we, as a Committee, continue to strive for the better outcomes in the Shepparton Irrigation Region community that Ken had dedicated his working life to.

Peter Gibson

Peter Gibson and Ken Sampson (dec'd) chairing a Shepparton Irrigation Region Implementation Committee meeting

Vale Ken Sampson
28/1/1950 - 8/10/2009

Ken Sampson, affectionately known as 'Sambo' was a work colleague and friend of many in the Goulburn Valley, sadly passed away on Thursday 8th October 2009. His passing was both sudden and unexpected.

Ken's earliest forays into agriculture were spent in Kerang, training in irrigated agriculture followed by several years in Swan Hill as an Extension and Applied Research Officer.

This was followed by a stint as Principal Advisory and Senior Project Officer for the Indo-Australian Cattle Breeding Project in Hissar, Haryana, India before returning to Echuca to work as a district Extension Officer.

In 1994 Ken became the Executive Officer of the Shepparton Irrigation Region Catchment Implementation Strategy. In 2004 Ken resigned from DPI to work for the Goulburn Broken Catchment Management Authority as Executive Officer of the Shepparton Irrigation Region Implementation Committee, a position he administrated until his death.

Ken was a solid believer in the strength of community and what people could achieve together. His passion for and understanding of natural resource management was a strength that co-workers were fortunate to benefit from.

'Sambo' will be missed very much for his dry wit and dogged determination in understanding policy implications brought about by changing environmental needs in recent years.

His perceptions and advice were given freely and his support for young scientists was always encouraging, especially when collaborating for presentations at conferences.

Ken's contribution to the Executive Team Report in this 2008-2009 Annual Report is Ken's last official act of service for the Shepparton Irrigation Region Implementation Committee. His influence will be felt for many years to come.

Ken Sampson was a unique man and the gap he leaves will be very difficult to fill.

May he rest in peace.

ACTIVITIES and ACHIEVEMENTS

Executive Team Report

Written by Peter Howard and Ken Sampson (dec'd), Shepparton Irrigation Region Implementation Committee and Rod McLennan, Goulburn Broken Catchment Management Authority

Works and activities are delivered in collaboration with our regional partners in the Department of Primary Industries, Goulburn-Murray Water and the Department of Sustainability and Environment and more recently Northern Victoria Irrigation Renewal Project. Our links with Local Government form part of the strategy to ensure a consistent approach to natural resource management issues across the Shepparton Irrigation Region.

The emphasis this year has been to link implementation of the Shepparton Irrigation Region Catchment Implementation Strategy with various modernisation programs, especially the Northern Victoria Irrigation Renewal Project, to optimise opportunities presented by changes to delivery systems. Much of the farm planning to date has been based on an unchanged regional delivery system. With channel modernisation, the delivery system is changing. This requires changes in the farm irrigation system to take full benefit of the improved delivery system.

New collaborations

- Shepparton Irrigation Region Implementation Committee has worked closely with the Northern Victoria Irrigation Renewal Project and other modernisation activities to ensure that water saving projects are consistent with and complementary to implementation of the Shepparton Irrigation Region Catchment Implementation Strategy;
- A new environmental projects technical working group was established as part of the Groundwater and Salt Management Program.

Performance

The drought continues to have an impact on the works programs, especially the Environmental and Surface Water Management Programs. Funding cuts have limited the Groundwater and Salt Management and Surface Water Management Programs.

Works and operations - Highlights

- Whole Farm Plans on 247 properties covering 20,476ha were completed, including ten 'revised modernised' plans, bringing the total number of Whole Farm Plans under this incentive to 3,716, covering 253,959ha or 80 percent of the irrigated area;
- A total of 485 farm irrigation systems were assessed to link with the irrigation modernisation process;
- Sixty-six re-use systems draining 3,643ha were installed, bringing the total number of re-use systems constructed with assistance from this scheme to 549 serving 35,670ha;
- Fifteen automatic irrigation systems were installed under the scheme, serving 607ha, including seven for automating outlets from Goulburn-Murray Water delivery channels, bringing the total number of automatic irrigation systems constructed with assistance from this scheme to 142 serving 8,238ha;
- Fifteen landholders received support to undertake environmental projects and they fenced 29ha of remnant vegetation and revegetated 62ha;
- Implementation of many of the 94 waterways grants were supported by the Drought Employment Program and achievements included 87km of fencing, protecting 1,397ha of vegetation and 390ha of wetlands; establishment of 54 off-stream watering points; and revegetation of 84ha of streamside zone;
- Environmental water was delivered to Reedy, Black and Kinnairds swamps and the Broken Creek;
- Five shallow groundwater pumps were installed and six upgrades were completed, with ten new and five upgrades in progress. Completed works have produced 1,595ML and therefore 1,595ha of irrigated land have been protected from high watertables;
- Groundwater investigations were completed at 43 sites, and one was identified as suitable for private pumping. Three investigations are in progress. A new prioritisation process is being implemented and 11 sites are on the newly prioritised waiting list;
- There were 5.5km of primary drains and 5.3km of community drains constructed.

Shepparton Irrigation Region Implementation Catchment Strategy Program Reports:

- Environment
- Biodiversity
- Farm
- Tackling Pests
- Surface Water Management
- Groundwater and Salt Management
- Waterways
- Monitoring
- Program Support
- Research

Environment Program

Written by Jen Pagon, Department of Primary Industries

Program Goal: To protect and enhance natural assets and their ecosystem processes and functions in a way that provides benefits for native biodiversity, social and economic aspects.

The Environment Program is a component of the Farm and Environment Program and a key delivery program for the Shepparton Irrigation Region Catchment Implementation Strategy. The Environment Program supports the main action programs including: Groundwater and Salt Management, Farm, Surface Water Management and Waterways.

The Environment Program provides a key service to the Groundwater and Salt Management and Surface Water Management Programs in particular by providing Environmental Assessments of planned and completed works.

The Environment Program has increasingly been involved in protecting natural assets through the modernisation and reconfiguration project, and ensuring that the natural assets of our catchment are incorporated into day-to-day farm management.

This year was a challenge for the Environment Program, with many highlights achieved throughout. For the first time, the program developed a Business Plan, outlining all the project work for the year in conjunction with its stakeholders. This was a major step for the program to take. The Business Plan provides investors with a clear outline of projects and targets to be achieved for the year, along with detail on the implementation of the recommendations from the five year review.

Activities and achievements

Environmental and Tree Growing Projects

The Environmental and Tree Growing Projects have provided advice to landholders throughout the Shepparton Irrigation Region relating to protection, enhancement and revegetation of native vegetation. Staff provided support to protect over 36ha of remnant vegetation (including three hectares of wetlands) and over eight hectares of revegetation for corridors and understorey.

Approximately 65 percent of remnant vegetation protection targets were achieved and 50 percent of revegetation targets achieved (no revegetation adjacent to Surface Water Management Systems was completed). The Drought Employment Program completed some areas of work that would have been covered through these projects (see Drought Employment Program section for details of other fencing, revegetation and protection activities).

In general the incentives progressed well with over double the amount of landholders signing up compared with last year. The direct seeding projects are set to be completed in late August (2009).

The review of these two projects was initiated this year. A steering committee has been formed. The review will be progressed in 2009-2010.

Drought Employment Program

The Environment Program hosted a Drought Employment Program crew for 10 weeks. The crew started on the 27th January and worked at Madowla Park where over 5km of creek frontage fencing was completed along with 2.6km of fencing to protect Yellow Box and Murray Pine remnants.

Approximately 4km of fencing was completed at a property near Picola to protect Grey Box and Buloke remnants and to allow for revegetation by direct seeding.

The crew spent five days in Kanyapella Basin removing old fences adjacent to new fences constructed in 2008, creating a wire stock pile which was to be collected by a scrap steel merchant.

In total the crew completed 18.4km of fence protecting 161.1ha of wetland, remnant and creek line vegetation. The crew finished fencing with Department of Primary

Industries supervision in April. All Drought Employment Program reporting required by the Goulburn Broken Catchment Management Authority (GB CMA) was completed and submitted.

Environmental assessments

The staff were involved in other projects across the Surface Water Management Programs and the Groundwater and Salt Management Program.

Surface Water Management Program

Staff were involved in re-addressing the Murray Valley 11 Environmental Protection and Biodiversity Conservation Act (EPBC) Referral issue. There were also some alignment inspections completed along Murray Valley Drain 11.

For the Stanhope Depression surface water management system, the aquatic vegetation for a constructed wetland was reviewed.

The Native Vegetation Removal exemptions for the Deakin 16 P Surface Water Management Systems were revised.

Environmental Program staff were involved in negotiations for the retention of a melaleuca planting adjacent to the Mosquito 8/25P community surface water management system.

Final alignment inspections were completed for the Muckatah 4P community surface water management system. A case study for "Boring Under Native Vegetation" policy was developed after construction of the Muckatah 4P community surface water management system, as this was the first time the policy had been used to bore under trees along a community surface water management system alignment.

High Value Environmental Features

This project was conducted in collaboration with Goulburn-Murray Water and involved an assessment of high value environmental features in the Shepparton Irrigation Region and prioritising those threatened by groundwater. A trial pump site was established at the Millewa Nature Conservation Reserve. This year soil testing and site investigations were completed for groundwater pump proposals at two sites, Millewa Reserve and Kanyapella Basin. This project will continue into 2009-2010.

Modernisation

Staff assisted the Northern Victoria Irrigation Renewal Project in their works by undertaking assessments on priority wetlands assessment across the Shepparton Irrigation Region. This included the Environmental Protection and Biodiversity Conservation Act reports for the Shepparton Irrigation Area and Future Flow.

Development and implementation of management plans for wetland and terrestrial features

The design and development of Environmental Management Plans for priority wetland and terrestrial sites in the Shepparton Irrigation Region is an important value-adding tool to support improved water management. Environmental Management Plans are developed with input and strong collaborative processes across multiple agencies. Key partners are the Department of Primary Industries (leading development of the plans), the Department of Sustainability and Environment, Goulburn-Murray Water, Parks Victoria, GB CMA and community groups. These plans provide the managing authority and community groups with a clear view of what the needs and priorities are of each site.

The development and sign-off of Environmental Management Plans allows the GB CMA and the Shepparton Irrigation Region Implementation Committee to support provision of Environmental Water Allocations.

An Environmental Water Allocation of 500ML was secured for Reedy Swamp, with delivery of the water starting in April 2008. The Environment Program staff have been using acoustic monitoring to ascertain what species of fauna are using the wetland as a refuge given the severe dry conditions across the Shepparton Irrigation Region. Acoustic monitoring will continue at Reedy Swamp until the water evaporates. The results of this monitoring will be submitted to the Shepparton Irrigation Region Implementation Committee in 2009-2010.

To further investigate Environmental Water Allocations for the wetlands in the Shepparton Irrigation Region, Jo attended a planning day with Paul O'Connor and Rolf Weber (Department of Sustainability and Environment), Keith Ward, Simon Casanelia and Carl Walters (GB CMA) to discuss Environmental Water Allocation delivery options to One Tree, Two Tree, Wallenjoe and Mansfield Swamps. They also visited Doctors Swamp and Stockyard Plain to look at water delivery options for the 2009–2010 Environmental Water Allocations.

Terrestrial Environmental Management Plans

The Nanneella Bushland Reserve, (28ha), Terrestrial Environmental Management Plans was completed and endorsed by Shepparton Irrigation Region Implementation Committee.

Wetland Environmental Management Plans

A review of the Brays Swamp Environmental Management Plan was undertaken, with this review scheduled to be completed in 2009-2010.

Floodplain Ecology Course

A very successful Floodplain Ecology Course was conducted at Moama in November. The course intended to increase participant awareness of aspects of floodplain ecology and dynamics (e.g. vegetation, flooding regimes). An evaluation conducted after the course indicated that it was very successful and would be a good course to continue into the future. A final report was developed and submitted to the GB CMA.

Biodiversity Action Planning

Biodiversity Action Planning is a structured approach to identify priority biodiversity features in the region and establish priorities for biodiversity conservation. Sites across the Shepparton Irrigation Region have been mapped at the landscape level, surveyed (to assess habitat quality and bird presence) and data developed on aspects of each priority site (e.g. Ecological Vegetation Class, threats, threatened species and flora and fauna). Recommendations for management are developed in consultation with community to aim to increase biodiversity values.

The Biodiversity Action Plans provide a way of prioritising on-ground works to target the highest priority sites and promote a strategic landscape plan. Funding was obtained to develop a small trial Biodiversity Action Planning project in the Barmah Landscape Zone to assist with implementation. This project was successfully completed by the end of September.

Floodplain Ecology Course

In November 2008, the inaugural Floodplain Ecology Course was run. It was funded through the Expression of Interest process with the Goulburn Broken Catchment Management Authority (GB CMA). The aim of the Floodplain Ecology Course was to provide participants with:

- A better understanding of the geomorphological, hydrological and ecological processes of floodplain ecosystems; and
- An understanding of flooding dynamics and the impact of human use on this process, past and present; and
- Examples of practical skills in observation, description, survey/assessment, analysis, interpretation, and assessment, of geomorphological features, hydrological regimes, soils and flora and fauna on floodplains.

Paula Tovey (left) & Vanessa Hughes meet "George" the Free-tailed Mastiff Bat, one example of the many mammals that rely on the floodplain for their survival.

The focus of the course was on the floodplains of the Goulburn-Murray system in the region of Echuca/Moama.

There were 22 participants in the course from a range of backgrounds and roles including landholders, Local Government, Catchment Management Authorities, Field and Game, Landcare groups, the Department of Primary Industries and the Department of Sustainability and Environment.

Mandatory Environmental Monitoring

Mandatory Environmental Monitoring was undertaken once in 2008-2009 at the seven allocated sites, four terrestrial sites and three wetland sites. Ongoing collation of data is stored for each site, including photo-points, species presence and absence and water/macro invertebrate (where applicable) sampling.

A review of all the environmental monitoring processes that occur in the Shepparton Irrigation Region was initiated this year and will be completed in 2009-2010.

Modernisation

The Environment Program has been involved in modernisation projects across the Shepparton Irrigation Region. Examples of the activities are highlighted below:

- An "Optional Environmental Watering Points for High Value Wetlands" report is being written for the Northern Victoria Irrigation Renewal Project. This will be completed in 2009-2010 and will provide data on alternative water supply points for wetlands across the Shepparton Irrigation Region when the Northern Victoria Irrigation Renewal Project is ready to rationalise that part of the irrigation infrastructure that may currently provide a supply point to these wetlands;
- The Reedy Swamp Environmental Watering Plan is currently being written. This plan will assist with the delivery of water to wetlands via channels and surface water management systems and highlight the issues that may arise from decommissioning or rationalising irrigation channels in these areas.

Landscape Links

The Environment Program has been assisting the Goulburn Valley Environment Group in developing the Landscape Links project. This will encourage planting of native vegetation on channels that are to be decommissioned as part of the implementation of the Northern Victoria Irrigation Renewal Project, to create and enhance links of native vegetation across the landscape. An information kit for use by landholders and consultants was developed.

Biodiversity

Written by Tim Barlow, GB CMA; Shelagh Kurmi, Trust for Nature; Filippa Schapper, Superb Parrot Project Group and Rolf Weber, Department of Sustainability and Environment

The Superb Parrot is an endangered bird, endemic to south-eastern Australia and listed under the Commonwealth's Environment Protection and Biodiversity Conservation (EPBC) Act. In Victoria, it is restricted to the Barmah region where some 200-400 birds are known to occur (numbers vary in different years according to mortality and breeding success). Whilst large old River Red Gums provide essential breeding sites (hollows), the Superb Parrot requires foraging habitat provided by a shrubby understorey in box woodland and secure flight paths to and from the nests. The Superb Parrot Group has been active for many years promoting awareness of the foraging needs and encouraging landholders to undertake direct seeding and revegetation to supplement available habitat. This has yielded dividends for the birds as well, with increasing numbers being sighted outside the breeding season, indicating more resources are becoming available in the area.

As a result of the continuing drought the committee decided to focus on direct seeding and remnant protection in 2008-2009 with 41.6ha fenced and 20ha direct seeded; the remainder ripped ready for planting in 2010. In addition 17 people participated in the annual population census of Superb Parrots in the Barmah area. The census located some 180 birds which is slightly down on 2007-2008 but there were reports of large flocks feeding on crops beyond the bird count range. The official count for the year (by all observers) recorded 315 birds, a slight increase from 2007–2008.

The high attendance of 42 members at the Annual General meeting warmly received keynote speaker Elisa Tack's report on her PhD work on the bush stone curlew. The Superb Parrot Project Group continues their long term commitment to work on habitat protection and development.

Threatened Species Recovery Plan implementation and monitoring

The Department of Sustainability and Environment undertake a range of activities on behalf of the Shepparton Irrigation Region Implementation Committee to implement actions recommended in recovery plans for terrestrial and aquatic flora and fauna.
During 2008-2009, this work included monitoring populations of flora species including Mueller's Daisy (Brachyscome muelleroides), Bald-tip Beard-orchid (Calochilus richiae), Nagambie Swamp Leek-orchid (Prasophyllum hygrophilum), Red Swainson-pea (Swainsona plagiotropis), Slender Darling-pea (Swainsona murrayana), Turnip Copperburr (Sclerolaena napiformis)

and Ridged Water-milfoil (Myriophyllum porcatum). The lack of effective rainfall continued to decimate the orchid populations and any leaves that did appear were soon withered.

In addition to annual monitoring, propagation trials and fencing to protect sites from inadvertent damage were implemented. Seed of Red Swainson-pea, Slender Darling-pea, and Turnip Copperburr has been collected and propagated at the Euroa Arboretum. Seed of Turnip Copperburr, Ridged Water-milfoil, and Slender Water-milfoil (Myriophyllum gracile) was also provided to the National Herbarium of Victoria for long term storage and propagation in the Victorian Millennium Seedbank Project.

The milfoils responded to the autumn-winter delivery of an environmental water allocation to Kinnairds and Moodies Swamps in 2008 that produced the largest known occurrence of Slender Water-milfoil in Victoria.

Ex-situ propagation trials advanced slightly with a successful germination of Bald-tip Beard-orchid seed that was sown with fungi from Purple Beard-orchid (Calochilus robertsonii). Unfortunately we were unable to raise the seedlings to become nursery plants. This work was done at the Royal Botanic Gardens, Melbourne.

Taxonomic work at the National Royal Botanic Gardens in Canberra confirmed the limited distribution of our local Prasophyllum species with new species descriptions published for specimens provided by the Department of Sustainability and Environment from Chesney Vale and Balmattum.

Local monitoring of Grey-crowned Babblers has indicated an apparent loss of groups south of the Rushworth-Murchison Road. One out of the nine groups remaining does not look good and is consistent with the decline from other small colonies. A review of the Grey-crowned Babbler Action Statement was completed to the stage where it may proceed to public comment.

There was no successful fledging recorded for Brolga (Grus rubicunda) in 2008-2009. Young at foot were recorded at Murchison in January 2009 but were absent in February 2009. A nest with two eggs was recorded at Moodies Swamp in August 2008 but young birds were not observed in September 2008 and October 2008 despite searches (Environmental Water Allocation monitoring). All other known breeding sites were dry, including re-use dams. Similarly no breeding was recorded for the threatened Egrets or Bitterns because the wetlands were dry.

Permanent Habitat Protection (Trust for Nature)

Trust for Nature is a not-for-profit Statutory Organisation whose charter is to place conservation covenants on land of high conservation value. Covenants are entered into voluntarily and the conditions and future management regimes for the covenant are negotiated together by the landholder and Trust for Nature. This ensures that the conservation goals for the land are consistent with the landholders' future wishes for that parcel. The establishment of these conservation covenants contributes substantially to the GB CMA targets for improved vegetation quality.

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During 2008-2009, Trust for Nature negotiated the permanent protection of 24ha of significant bushland and wetland across the Shepparton Irrigation Region, including the negotiation of the purchase of one property of 19ha for addition to the Broken Boosey Catchment Management Network and one property of 36ha for addition to the Lower Goulburn River National Park. Numerous properties were visited, involving the assessment of several hundred hectares of remnant vegetation and the provision of management advice, which will hopefully translate into permanent protection in the future.

Trust for Nature staff undertook management planning visits to five properties in the 2008-2009 year totalling 69ha. They also continued to be actively involved in the Broken Boosey Catchment Management Network and the Kinnairds Wetland Management Committee. In addition, a number of presentations were made to local government and community groups by Trust for Nature staff.

Farm Program

Written by David Lawler, Department of Primary Industries

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

Activities and achievements

Whole Farm Plan Project

The number of new or updated Whole Farm Plans in the Shepparton Irrigation Region increased significantly in the 2008-2009 year. Irrigators took advantage of the 85 percent rebate to develop a new or update existing plans to design on-farm irrigation delivery in line with Goulburn-Murray Water upgraded infrastructure.

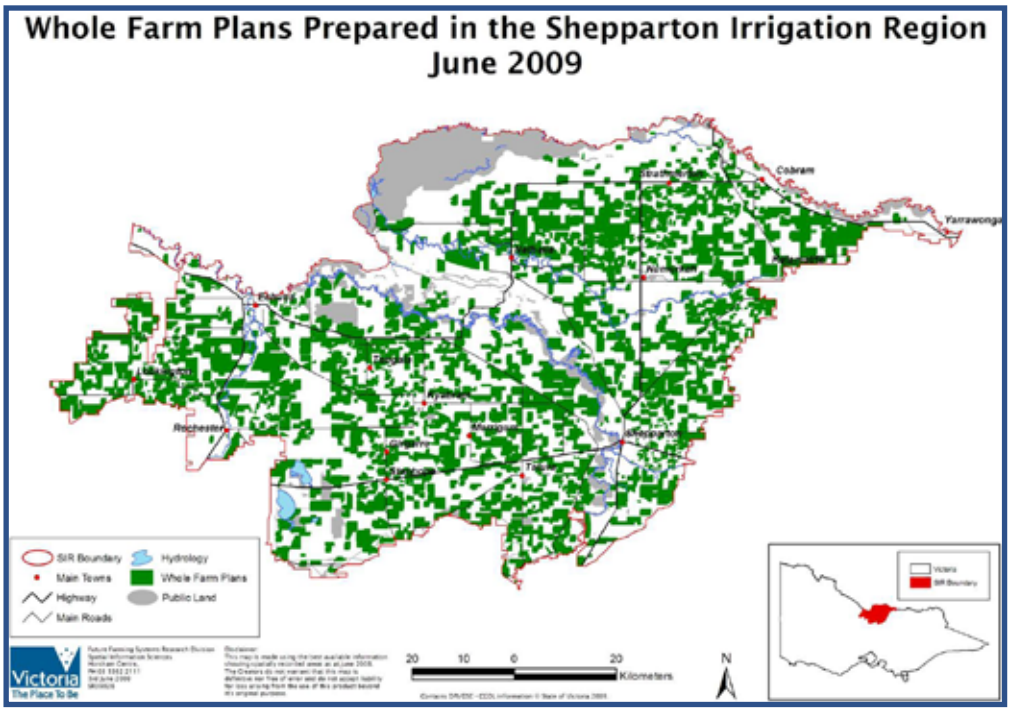
A record total of 237 new Whole Farm Plans were completed covering an area of 19,928ha during 2008-2009. In addition 10 Modernised Existing Whole Farm Plans were prepared covering 548ha.

The number of Whole Farm Plan Incentive applications was much higher than the average levels in past years. This included preparing plans on properties for the first time and those that had had a previous plan but needed it upgraded to reflect modernisation works on the ground. These plans were able to provide the irrigator with options and the costs associated with proposed works and justify requests to Northern Victoria Irrigation Renewal Project for appropriate financial assistance.

Whole Farm Plans were prepared for seven horticultural properties covering 306ha and 230 broad acre properties over 19,622ha. Over 80.2 percent of the irrigated area of the Shepparton Irrigation Region has now been 'whole farm planned'. A total of 73 plans were completed in areas covered by Local Area Plans, covering 5,863ha.

In 2008-2009 there were 359 Whole Farm Plans commenced, which is the highest number of plans commenced since the Whole Farm Plan project started. This eclipsed the previous highest of 280 plans in 2001-2002.

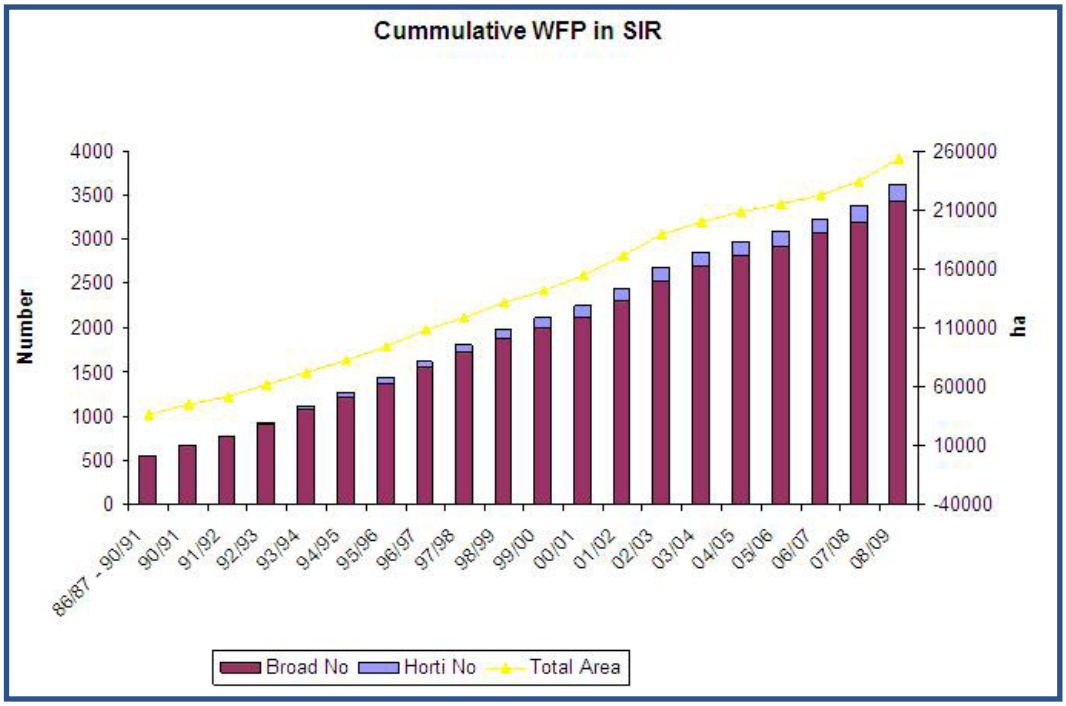
Grants totalling $1,151,818 (excluding GST) were paid to landowners for preparing their Whole Farm Plans. This was above the budgeted target of $1,000,000. Landowners paid $1,494,896 (excluding GST), for the preparation of these plans. A total of 112 grants were paid to landowners for having their plans certified by Local Government, resulting in 45 percent of all plans completed in 2008-2009.



Location of Whole Farm Plans prepared since 1987 to 30 June 2009

Irrigation Area	No	Area (ha)	Grant	Grant GST	Total Cost	Cost GST	Financial Assess	Plan Cert	Irrig Area WFP %	Irrig Area WFP (ha)
Murray Valley	855	64624	$1,760,001	$73,131	$3,645,806	$146,923	15	219	83%	77886
Murray Valley: Horti	21	1136	$82,098	$6,912	$168,693	$13,935	0	1	32%	3524
Rochester: SIR-GB	183	18173	$510,230	$25,772	$1,074,213	$50,691	2	21	88%	20570
Rochester: SIR-NC	523	31293	$843,653	$36,625	$1,752,406	$73,575	3	65	76%	41142
Central Goulburn	1136	73570	$2,138,946	$92,172	$4,532,474	$179,005	24	325	64%	115009
Central Goulburn: Horti	52	2458	$166,249	$6,930	$357,666	$14,250	0	5	54%	4582
Shepparton	509	30223	$913,166	$46,209	$1,799,479	$87,023	13	206	61%	49146
Shepparton: Horti	117	3537	$182,508	$5,019	$368,875	$10,244	4	3	71%	4994
GB CMA Div	83	9018	$233,228	$8,483	$502,269	$14,299	2	4		
TOTAL	3479	234032	$6,830,078	$301,252	$14,201,881	$589,945	63	849	73.9%	316853

Overall totals of Whole Farm Plans prepared per Irrigation Areas 1987 – 30 June 2009



Cumulative Whole Farm Plans totals 1986-1987 to 2008-2009

Drainage Re-use System Project

A total of 66 Drainage Re-use Systems were installed as part of the Drainage Re-use System Project in 2007-2008 servicing 3,643ha. This was an increase on the 48 systems installed in 2007-2008 and an increase in the area serviced 2,703ha.

Since the project started in 2001-2002, a total 12.94 percent of the irrigated area of the Goulburn Broken component of the Shepparton Irrigation Region is serviced by a Drainage Re-use System installed as part of this project.

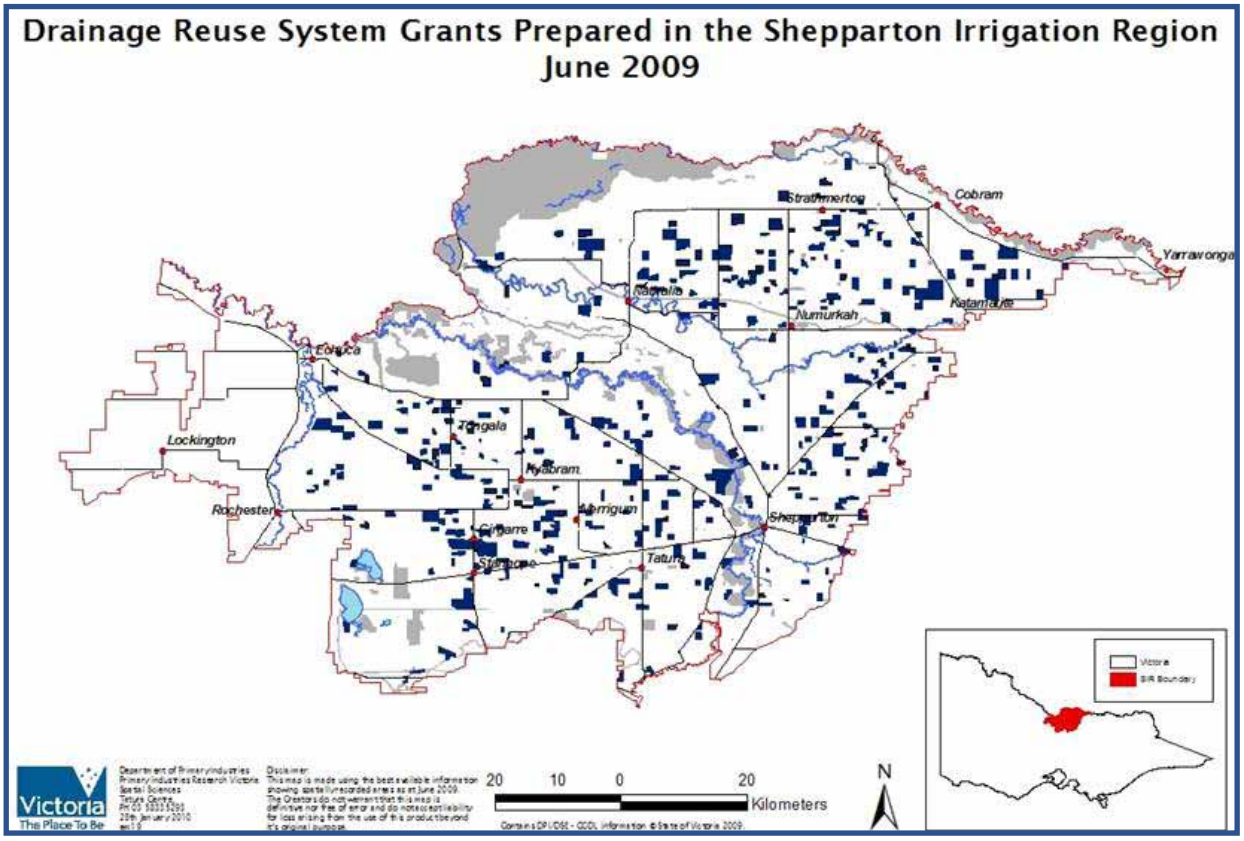
A total of 21 Drainage Re-use Systems were installed in areas covered by a Local Area Plan servicing over 1,198ha.

Some interesting facts relating to Drainage Re-use Systems installed in 2008-2009 were:

- The average time taken from application to payment of a grant following installation was 17 months;
- The average grant payment was 43.50 percent of the total costs.

Grants totalling $739,884 (excluding GST) were paid to landowners for installing Drainage Re-use Systems. This was above the budgeted target of $650,000. When broken down into the three components of the grant, expenditure was as follows: $292,583 for earthworks, $341,876 for pumps and motors, and $105,425 for electricity. Landowners paid $1,701,075 (excluding GST) for the installation of the Drainage Re-use Systems on their properties.

There was an increase in the average grant payment from $10,453 in 2007-2008 to $11,210 in 2008-2009.



Location of Drainage Reuse Systems installed

Automatic Irrigation Project

A total of 14 grants have been paid as part of the Automatic Irrigation Project covering an automated area of 560ha.

A total of three systems were completed in areas covered by Local Area Plans, covering 234ha.

Over 2.6 percent of the irrigated area of the Shepparton Irrigation Region has now had an Automatic Irrigation System installed with assistance from this project. The total number of Automatic Irrigation Systems completed in the GB CMA area with assistance from the incentive scheme is 142, automating 8,238ha.

Farm Irrigation Assessments: Central Goulburn Channel 4

Members of the Farm Team started Farm Irrigation Assessments in September 2008 as part of work with the Future Flow Alliance. This work was with landowners in the Central Goulburn No 4 channel system. Other Irrigation Surveyor and Designer Groups were doing the same work in other channels in the Shepparton and Central Goulburn Irrigation Areas. Future Flow provided 234 irrigators with 545 outlets that were to be assessed by the Farm Team. These assessments were finished in May 2009 and Future Flow commended the Department of Primary Industries Farm Team on their capabilities.

Farm Irrigation Assessments East Goulburn Main Channel 7 and 8

Future Flow Alliance requested the Farm Team conduct Farm Irrigation Assessments in the East Goulburn Main Channel No 7. These commenced in March 2009. This was a different experience to the work along Central Goulburn Channel 4 as it included a high number of lifestyle blocks and property owners working off-farm. The assessments also included some properties on the No 8 and No 9 channels. This work was completed in June 2009.

Farm Irrigation Assessment Information Kit

An Information Kit was put together for use by the Farm Team when conducting Farm Irrigation Assessments to explain to landholders about various aspects of the modernisation process. The kit included information about unbundling and delivery share, the irrigation assessment process, the new meters, how to use and read the new meters, and information about the Shepparton Irrigation Region Implementation Strategy projects. The kit has been well received by landholders.

Local Area Plans

Local Area Plan groups throughout the Goulburn Broken Catchment had a productive year in 2008-2009. Highlights included the extended number of groups and schools involved in the Local Area Plan environmental education initiatives as well as the continued revegetation and rehabilitation work completed through major projects including the Cornella Creek Restoration, Crouching Emu Revegetation Project and the Muckatah Surface Water Management System Revegetation.

The 2008-2009 year has also seen developments in the functioning of the Local Area Plan groups with a number of groups choosing to combine with Landcare Groups and meet less often. This may be a result of the pressures from the on-going drought and water supply issues.

Tackling Pests Program

Information supplied by Greg Wood, Department of Primary Industries

During 2008-2009, the pest plant component of the Department of Primary Industries Invasive Pests Program continued to focus on the management of new and emerging species and species that are known to present a high threat to regional assets.

State Prohibited Weeds are considered to be the highest priority for the program and three State Prohibited species are known either to be present or have been previously recorded in the Shepparton Irrigation Region. All sites are inspected each year and where infestations are located, they are treated by registered contractors. The aim of the program is to eventually eradicate all known infestations from the region, and ultimately, Victoria.

Activities and achievements

The range of activities and achievements included the following:

- Thirty-nine State Prohibited Weeds infestations were assessed across the catchment (including the dryland area) and where necessary, treated by the Department of Primary Industries;
- Ivy-leaf Sida infestations have been detected in the Undera area;
- Over the past two months 3-400 Direction Notices were issued which have resulted in seven Penalty Infringement Notices ($440) for non-compliance;

- Stocks of the State Prohibited Weed "Mexican Feathergrass" have been found in retail and wholesale outlets;
- The Blackberry extension program was accelerated in the Shepparton Irrigation Region during the year;
- New gorse infestations were located in the Toolamba area and eradication will be undertaken via the Department of Primary Industries "satellite gorse project";
- Program staff are working with municipalities to treat roadside pests.

Surface Water Management Program

Written by Rebecca Pike, Department of Primary Industries and Sam Green, Goulburn-Murray Water

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.

Activities and achievements

Primary Surface Water Management highlights

- A total equivalent length of 5.2km was constructed which included works on Muckatah Drain 8, Stanhope Stage 2 and Murray Valley Drain 11 Stage 1A & 1B;
- Goulburn-Murray Water consultants designed an equivalent length of 13km of drain, and works continued, or commenced, on a number of Drainage Course Declarations;
- A Wetland Management Plan for both Greens Swamp and the depression upstream of the swamp within the Murray Valley Drain 11 catchment was released for comment in final draft form;
- The design of Mosquito 1/36 was amended to include a private wetland at the end of two Community Surface Water Management Systems;
- The Mosquito 36 design was extended to better service the Downer Rd community drainage scheme.

Irrigation Drainage Memorandum of Understanding

Work continued on the development of a Catchment and Asset Operation Plan (CAOP) for the whole of the Shepparton Irrigation Region and the Barmah-Nathalia sub-catchment.

Victorian Irrigation Drainage Program Review

The Department of Sustainability and Environment undertook a review of the statewide drainage program strategy. The review supported the extensive work done to date and recognised the continued need for active management of irrigation drainage in the Goulburn Murray Irrigation District. Wider public consultation of the strategic direction is to be undertaken next year with the new interim strategy, which will support continued government investment in irrigation drainage, to be released towards the end of 2009-2010.

Whole Farm Plan Referrals

Whole Farm Plans are referred to Goulburn-Murray Water by the local shires under Section 52 or Section 55 of the Planning and Environment Act. A total of 144 plans were referred to Goulburn-Murray Water with a number being amended plans caused by consultation regarding modernisation of Goulburn-Murray Water assets.

Co-ordination and Support for Community Surface Water Management Systems

Targets

- Provide technical support for the Community Surface Water Management Program as required.

Progress

- Attendance and input at various meetings including Community Surface Drainage Co-ordinating Committee, Technical Liaison Groups, Community Surface Water Management Systems Operating Group;
- Continual monitoring of design guidelines;
- Provision of technical advice to the Department of Primary Industries Surface Water Management Officers and Community Surface Water Management Groups;
- Goulburn-Murray Water oversaw the construction of Muckatah 4P, including 1.24km of Goulburn-Murray Water managed CSWMS and 2.11km of flexible spur;

- Transfers of CSWMS from the City of Greater Shepparton to Goulburn-Murray Water has progressed (Ardmona 1BP, Ardmona 1CP and Ardmona 7P); finalisation of these is expected in 2009-2010.

Community Surface Water Management Incentives

Targets

- Construction of 5.95km of Community Surface Water Management System;
- Initiation, Survey and Design of a number of Community Surface Water Management Systems.

Progress

- Initiation of Community Surface Water Management System:
  - Muckatah 18P

- Survey and Design of Community Surface Water Management Systems in progress:
  - Muckatah 4/8P
  - Muckatah 22P
  - Muckatah 2/3P and 3/8P.

- The Survey and Design of the Mosquito 8/25P Community Surface Water Management System was completed. The next step is for landholders to vote on whether to proceed to construction;
- Construction completed of the Muckatah 2/8P Community Surface Water Management System with a total length of 1.95km. This system was constructed under a Water Act agreement;
- Construction completed of the Muckatah 4P Community Surface Water Management System which is 4km in length. The main section of this system will be Goulburn-Murray Water managed with the flexible spur managed under a Water Act agreement.

Policy implementation

- A change in Community Surface Water Management guidelines to allow flexibility on the ends of spurs, known as the 'flexible spurs' option, was implemented for the first time with the construction of the Muckatah 4P. This change allowed a section of the system, running through the second last property, to be of a lower design standard, yet provides the same level of service, as the 'standard' section of drain. This helped to reduce the costs and land required to construct the Community Surface Water Management System and has been identified as instrumental in the Muckatah 4P proceeding to construction;
- The "Boring Under Trees Policy" was implemented for the first time on the Muckatah 4P Community Surface Water Management System. Rather than remove three large Grey Box trees, or divert the system around them, the drain was instead bored underneath which provided benefits to the environment as well as the landholders involved. A case study has been prepared comparing the efficiencies of this method which has proven that in this instance it was the most cost effective option.

Increasing Water Use Efficiency through Strategic Water Harvesting – Drainage Nutrient Removal Incentive Scheme

Scheme background

The Drainage Nutrient Removal Incentive Scheme (DNRIS) was introduced in April of 1998 to encourage landowners to construct strategically located storages (drainage nutrient removal systems) to collect and use regional drainage water. The water and nutrients collected can be used productively and are not lost to areas of the catchment where they may cause problems such as blue green algae blooms. These storages can increase the volume of water available to the landowner and reduce the amount of nutrient rich water entering our waterways.

Targets - long term:

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

Targets - short term:

The following short term targets are realistic for the Drainage Nutrient Removal Incentive Scheme and would be reviewed in 2010-2011, as part of the Surface Water Management Program review;

- Construct two storages per year, providing for 300ML of drainage diversion. Additional applications can be managed as expressions of interest, dependant on funding and expiry of current applications;
- Continue to record actual annual diversion volumes and estimate volumes of phosphorus and salt captured by testing storage water quality annually;
- Continue with extension and media activities promoting the incentive, specifically targeting the priority catchments as appropriate.

Progress

The drought conditions experienced in the Shepparton Irrigation Region over the past few years have resulted in below average water allocations and drain flows. This has put economic pressure on irrigators and has resulted in a reduced uptake of the Drainage Nutrient Removal Incentive Scheme.

In 2008-2009, no storages were constructed under the Drainage Nutrient Removal Incentive Scheme. The 2008-2009 target was two storages constructed. One application was carried over into 2008-2009 however this expired and was not renewed. One new application was approved - this will be carried over into 2009-2010.

Since the scheme commenced the total number of high flow storages built in the Shepparton Irrigation Region with assistance from the incentive scheme is 34, with a storage capacity of 6,003ML.

Drainage Nutrient Removal Incentive Scheme Results 2008-2009

At the completion of the 2008-2009 financial year, the majority of landowners with systems constructed with the assistance of the Drainage Nutrient Removal Incentive Scheme were contacted to determine the volume of water collected and used for irrigation during the year.

The past financial year saw almost no high-flow drain diversion for landowners with storages constructed under the Drainage Nutrient Removal Incentive Scheme. Sampling and analysis of salt and phosphorous concentrations of water held in storage was not undertaken, as the majority of the storages were dry. One Murray Valley high-flow diverter pumped small volumes (30ML) during the year. Generally, this water had not been utilised on farm, being lost to evaporation.

Water Services Area	*Constructed capacity (ML)*	*Volume diverted* (ML)*	*Salt saved (tonnes)*	*Phosphorous saved (tonnes)*
Central Goulburn	1,968	0	n/a	n/a
Murray Valley	2,590	30	n/a	n/a
Shepparton	1,295	0	n/a	n/a
Rochester (GB CMA Section)	150	n/a	n/a	n/a
Total	6,003	30	n/a	n/a

Drainage Nutrient Removal Incentive Scheme System Monitoring

*Note: *Volume diverted data (as at September 2009) was not obtained from all 34 storage's, therefore figures are not exact for each Water Services Area **

Other project team activities

Following an economic review of the Drainage Nutrient Removal Incentive Scheme that was undertaken in 2007-2008 a revision of short term targets based on the factors identified below took place and resulted in new short term targets identified at the beginning of this report.

Key issues currently affecting the application of the Drainage Nutrient Removal Incentive Scheme include:

- Reduced funding availability for salinity based works (medium to long term);
- Low levels of landowner economic security (short to medium term);
- Drought (short to medium term);
- Improved on-farm water use efficiency and management (long term);
- Climate change (long term - undefined);
- Modernisation of irrigation infrastructure (long term - emerging).

Month	Expected				Actual					
	No Const	Grants	Total (Ex GST)	ML constructed	No const	Grants Paid	GST	Total Grants Paid (Ex GST)	Total Cost - Landowner (estimates)	Total ML constructed
July	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Aug	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Sep	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Oct	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Nov	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Dec	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Jan	0	$0	$0	0	0	$0	$0	$0	$0	0 ML
Feb	1	$30,000	$30,000	200 ML	0	$0	$0	$0	$0	0 ML
March	0	$0	$30,000	0	0	$0	$0	$0	$0	0 ML
April	0	$0	$30,000	0	0	$0	$0	$0	$0	0 ML
May	1	$30,000	$60,000	200 ML	0	$0	$0	$0	$0	0 ML
June	0	$0	$60,000	0	0	$0	$0	$0	$0	0 ML
Totals	2	$60,000	$60,000	400 ML	0	$0	$0	$0	$0	0 ML

Drainage Nutrient Removal Incentive Scheme Grant Expenditure 2008-2009

Geographic Information Systems

This year has seen the continued use of Geographic Information Systems (GIS) to map where storages have been constructed within the Shepparton Irrigation Region in comparison to Water Services boundaries and Local Area Plan boundaries. At present 10 of the 34 constructed storages fall into Local Area Plan boundaries.

Local Area Plan	Actual Since 1998			
	Number	ML of storage	Total cost	Cost GST
Bunbartha/ Karimba/ Zeerust	2	180	$30,279.54	$3,027.95
Nathalia & District	4	1050	$80,000	$8,000
Cornella	0	-	-	-
Dhurringile	0	-	-	-
Invergordon	1	150	$20,000	$2,000
Nanneella	0	-	-	-
Muckatah/ Naring	2	140	$39,561.69	$3,956.17
Wyuna	1	250	$20,000	-
TOTAL	*10*	*1770*	*$189,841.23*	*$16,984.12*

Drainage Nutrient Removal Incentive Schemes in Local Area Plan areas

Conclusion

Interest in the Drainage Nutrient Removal Incentive Scheme remained low during 2008-2009, primarily due to the ongoing drought conditions. The Drainage Nutrient Removal Incentive Scheme is likely to remain as a low priority for irrigators until the drought ends, farm businesses are under less financial stress and the frequency of high-flow events in the drainage network increases.

Environmental Assessment for Primary and Community Surface Water Management Systems

Project Target

- Provide support, comment, reporting and report compilation from an environmental assessment perspective to the Primary and Community Surface Water Management Program and the Groundwater and Salt Management Program, as required.

Primary Program progress

- No detailed Environmental Assessments were completed;
- Murray Valley 11 Environmental Protection and Biodiversity Conservation Act Referral issue was re-addressed;
- Murray Valley 11 Alignment inspections were undertaken over four visits;
- Stanhope Depression – Reviewed aquatic vegetation for a constructed wetland;
- Deakin 16 – Revision of native vegetation removal exemptions;

- Brays Swamp Management Plan – s173 Clause included into the Management Plan document.

Community Program progress

Initial Environmental Assessments

- No initial Environmental Assessments were completed.

Community Surface Water Management Planning Works

- Mosquito 8/25P – Negotiations undertaken for the retention of a melaleuca planting adjacent to CSWMS;
- Muckatah 2/3P and 3/8P – four landholder and meetings attended;
- Muckatah 4P: Final alignment inspections completed over three visits;
- Case Study: A case study for "Boring Under Native Vegetation" policy was developed after construction of the CSWMS was completed.

Modernisation

Staff assisted the Northern Victoria Irrigation Renewal Project works by undertaking assessments on priority wetlands across the Shepparton Irrigation Region.

Staff had involvement in the Environmental Protection and Biodiversity Conservation Act (EPBC) reports for the Shepparton Irrigation Area and the Northern Victoria Irrigation Renewal Project.

Irrigation Drain Management

Written by Greg Smith, Goulburn-Murray Water

Targets

- Drain Management and Water Quality Coordination - Support Irrigation Areas; input to Drainwatch and IDMOU; participate in working groups.

Progress

- Supported Irrigation Areas in drain diversion management; input to Drainwatch community monitoring program; and participated in working groups;
- The total metered volume diverted from drains was 3.5GL, and it was estimated that a further 0.7GL was diverted through unmetered drainage diversion installations. High flow diversions accounted for less than 0.5GL of the total diverted;
- 3.6GL was diverted from monitored drains compared to 3.1GL outfalled, that is: 54 percent of the potential drain outfall was diverted (compared with Water Quality Strategy target of 50%);
- Prepared annual report on nutrient export from irrigation drains (refer to the Monitoring Program report for details of nutrient export from irrigation drains).

Groundwater and Salt Management Program

Written by James Burkitt and Stephen Feiss, Goulburn-Murray Water

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.

Team Leader Report

The continuing dry again saw a reduction in accessions to the shallow groundwater system/Upper Shepparton Formation. This led to a Mid Term Review of the Sub surface Drainage Program Research & Investigation Strategic Plan. The review identified changes to the drivers which influence the direction of the Sub surface Drainage Program Research & Investigation Strategic Plan Program and revised the Sub-surface Drainage Program focus to:

a) Salt management
- Generation
- Mobilisation
- Impacts

b) Environment

c) Groundwater management (harmonisation of nuisance and resource)

d) Communication of integrated delivery

Other outcomes of the review were:

- To change the name of the program to the 'Groundwater and Salt Management Program';
- Amendments to the Programs vision, mission and objectives;
- Initiation of the following new and critical projects:
  - Understanding water balance changes in the Shepparton Irrigation Region;
  - Investigation of salt mobilisation processes and impacts for various Climate Change Scenarios;
  - Develop a strategic approach to meeting the key environmental feature objectives of the Shepparton Irrigation Region Groundwater and Salt Management Program.

Other highlights of the program were:

Millewa High Value Environmental Feature Groundwater Investigation
Environmental assets across the Shepparton Irrigation Region are at threat from remobilisation of large near surface salt stores from elevated groundwater levels. Although groundwater levels have fallen across the region, locally this threat remains high.

Environmental assets were priority ranked for investigation based upon on-site habitat quality assessments conducted by the Department of Primary Industries and groundwater salinity data. The Millewa Conservation Nature Reserve was ranked the highest priority site for further investigation which were undertaken so as to sufficiently well define the threat to develop and implement management options.

Investigations undertaken at the reserve included drilling, gamma logging, down-hole electromagnetic logging and soil sampling.

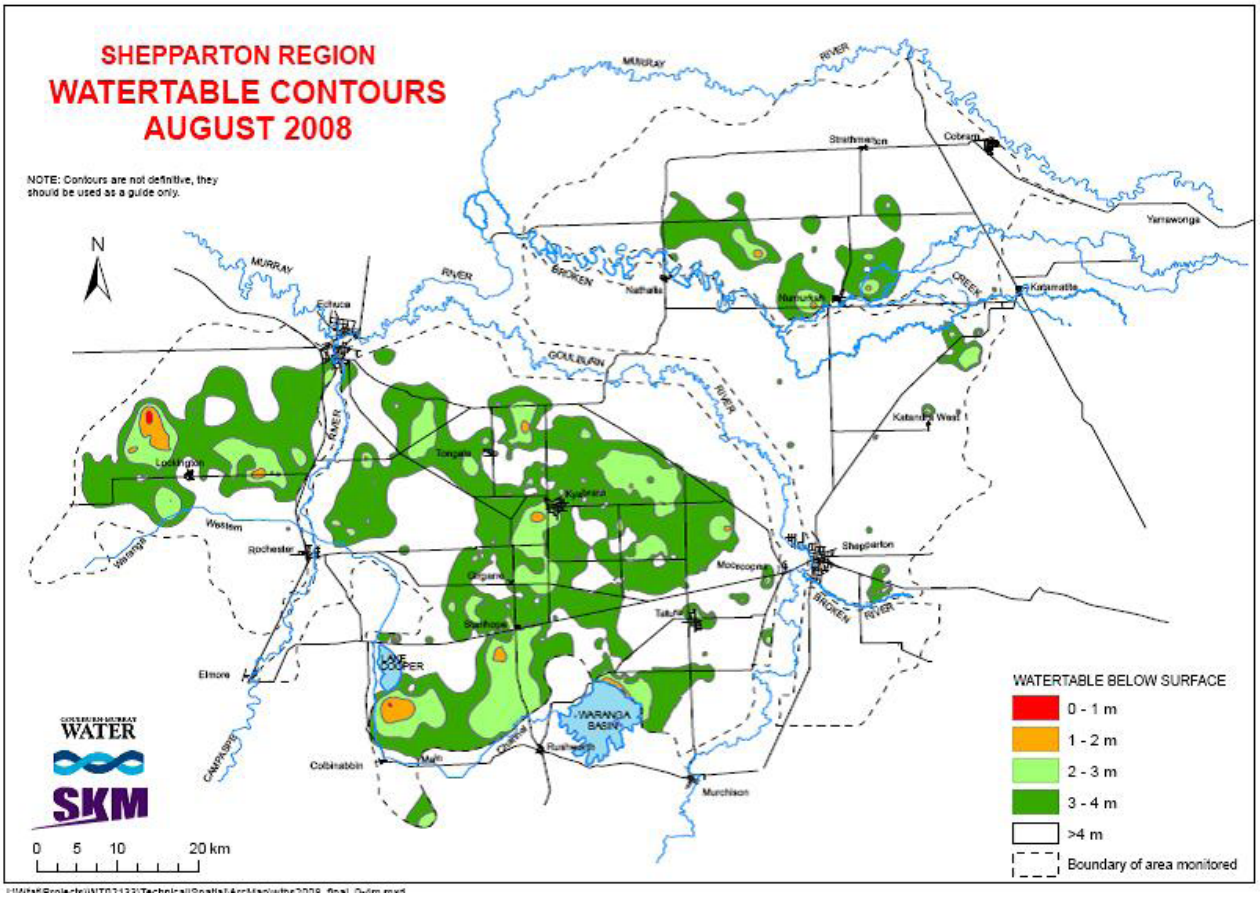
The investigation delineated a large salt store at the reserve above groundwater and provided information for understanding spatial and temporal groundwater level changes at the reserve. Groundwater levels at and near the reserve vary with changing pedology (soil attributes), climate and land-use and these factors influence current and future threat of a persistent elevated groundwater level. Groundwater is currently at approximately three meters depth within the reserve.

Management options developed included groundwater pumping and facilitation of land-use change. Ongoing monitoring of both groundwater and salinity threat and plant health has been proposed with defined trigger levels for implementing an appropriate management option if reached. The level of service required to protect this asset was determined.

New Prioritisation Process for Private Groundwater Pumping Program
A new approach to prioritise implementation works using rolling five year watertable behaviour as the basis for determining risk from salinity was developed. The approach includes giving priority to high value environmental assets and group investigations in high risk areas.

An approach for targeting applicants in the remnant high risk areas has also been developed.

A salinity control pumpsite



August 2008 Watertable map

Given the challenging circumstances, the Groundwater and Salt Management Program has been able to continue to implement planned works and adapt its programs to meet the requirements of key stakeholders.

Activities and achievements

High Value Environmental Features Project

Drilling and soil testing was completed to establish a trial pump site at the Millewa Nature Conservation Reserve.

Public Groundwater Pumps

Due to the continuation of drought conditions, the public salinity control groundwater pumping program concentrated on consolidating outstanding works with no new works initiated. This approach saw one previously constructed pump handed over in 2008-2009 (CG 24) but was not rated for area served. The total of 48 public salinity control groundwater pumps are protecting more than 9,800ha. Two feasibility investigations were completed but will not progress to a new pump site.

Private Groundwater Pumps

Demand for the Private Groundwater Pumping Program in both the Farm Exploratory Drilling Scheme and Capital Grants programs was steady in 2008-2009. The Pasture Farm Exploratory Drilling Scheme completed 43 investigations with one being declared successful and another 10 identified as having potential to be public pump sites. There were three investigations still in progress and 11 properties on the high priority waiting list.

There was no demand for horticulture Farm Exploratory Drilling Scheme investigations.

Capital Grants for Sub-surface Drainage

Four new groundwater pumps were installed along with six being upgraded under the pasture private groundwater pumping program which are estimated to protect an additional 1020ha. This brings the cumulative total of pumps to 370 which includes 297 new pumps and 73 existing pumps upgraded. The overall Plan targets

to the end of 2008-2009 were for 287 new installations and 67 upgrades to protect approximately 36,000ha. The cumulative area protected from the works to date is estimated to be 39,000ha. There are 10 new pumps currently in the process of being installed and five pumps in the process of being upgraded.

Strategic Plan support

The Groundwater and Salt Management Program Research and Investigation Strategic Plan Annual Report for 2007-2008 was produced. Management and support were provided as required. A Mid Term Review of the Plan was undertaken and we continued to use the Grouped Salt Projects to coordinate Groundwater and Salt Management Program inputs to strategic plan projects that relate to salt management.

Strategic Plan implementation

The key Groundwater and Salt Management Program Research and Investigation Strategic Plan outputs for 2008-2009 were:

- The completion of two projects:
  - o 'Review Potential Impact of Projected Changes in Groundwater Levels and Salinity';
  - o 'Procedures Manual for Salt Administration and Reporting in the GB CMA';

- New issues were identified via the Mid Term Review and included in the Groundwater and Salt Management Program Research and Investigation Strategic Plan.

Winter/Spring Salt Disposal Management

Salt disposal from private shallow groundwater pumps was terminated in 2006-2007. However, until advice is received from the Murray Darling Basin Authority on how to manage the removal of private pumps from the Murray Darling Basin Authority and GB CMA Salt Disposal Registers they will still be included in GB CMA reporting.

River Murray trigger levels were not reached and therefore no disposal from public salinity control pumps was available.

The total salt disposal impacts from the Shepparton Irrigation Region surface and sub-surface drainage works is 3.2 which includes a negative disposal impact from Community Surface Drains and Arterial Drains of -0.6. The salt disposal impact from sub-surface works is 3.8 which includes 1.9EC from public groundwater pumps, 1.7EC from Private groundwater pumps and 0.18EC from horticultural protection via pumps and tile drains. The removal of the option for private pump disposal means that there is a pending action to review the modelling outcomes to revise the overall salinity impacts in the near future.

Committee support

The Groundwater and Salt Management Program continues to provide significant support to the Shepparton Irrigation Region Catchment Implementation Strategy in the form of:

- Support, participation and engagement of Shepparton Irrigation Region Catchment Implementation Strategy committees and working groups;
- Input to funding bids and various forms of Annual reporting requirements (eg: GB CMA, Shepparton Irrigation Region Catchment Implementation Strategy, Murray Darling Basin Salinity Management Strategy – Victoria);
- Budget planning and management;
- Capacity building of staff and resources;
- Strategic Planning.;
- Coordination of Local Government funding contributions to the Groundwater and Salt Management Program (Moira, Campaspe and City of Greater Shepparton).

Extension

An information kit for the community members of the Groundwater and Salt Management Working Group was updated and maintained.

Management and coordination

The provision of Groundwater and Salt Management Program management included:

- Management, Reporting and Program coordination of the Groundwater and Salt Management Program;
- Ongoing development of business management systems;
- Systems for new consultancy agreements;
- Development and training;
- Management of Occupational Health and Safety requirements for the Groundwater and Salt Management Program.

Waterways Program

Written by Mark Turner and Carl Walters, GB CMA

Program Goal: Protection and enhancement of the environmental, economic, recreational and aesthetic values of the rivers and waterways (stream health). Protection of public and private assets from stream-related impacts.

Activities and achievements

Water supply and environmental flows

Works and extension

Between April 2008 and December 2009 over 1000ML of environmental water was delivered to Reedy, Black and Kinnairds Swamps from the Victorian River Murray Flora and Fauna Bulk Entitlement. In addition, 50ML of surplus irrigation flows in the Broken Creek were opportunistically diverted to Moodies Swamp.

The environmental water:

- Stimulated the growth and germination of aquatic plants including the threatened River Swamp Wallaby-grass, Ridged Water-milfoil and Slender Water-milfoil;
- Provided habitat for a number of frogs including Common Froglet, Plains Froglet, Spotted Grass Frog, Barking Marsh Frog, Pobblebonk, Perons Tree Frog and Painted Burrowing Frog;
- Attracted a variety of waterbirds including the threatened Freckled Duck, Australian Shoveller, White bellied Sea-eagle, Musk Duck, Glossy Ibis, Latham's Snipe, Intermediate Egret, Little Egret, Great Egret, Australian Little Bittern and Brolga. Over 3,500 waterbirds were recorded at Reedy Swamp alone including over 1000 Hardhead. The concentration of such large numbers of Hardhead is now unusual in Victoria and is considered to be of state significance. Sixteen bird species were observed breeding at the wetlands including Black Swan, Australian Shelduck, Australian Wood Duck, Grey Teal, Pacific Black Duck, Swamp Harrier, Whistling Kite, Australian White Ibis, Brolga, Musk Duck and Australian Reed Warbler.

A further 265ML of environmental water has been delivered to Reedy Swamp since February 2009 to provide ongoing drought refuge in the catchment. Additional environmental water will hopefully be secured for Reedy Swamp to improve the site's drought refuge benefits through winter and potentially stimulate a large colonial bird breeding event in early spring.

Monitoring the ecological response of the wetlands to the delivery of the environmental water has been undertaken by GB CMA, the Department of Sustainability and Environment, Goulburn-Murray Water, Field and Game Australia and local bird enthusiasts. The Department of Primary Industries has also been trialling a new acoustic monitoring technique that is showing tremendous promise.

An Environmental Watering Plan is being developed by the GB CMA with support from the Department of Primary Industries, and Goulburn-Murray Water to ensure that the delivery of environmental water is able to continue following changes to the irrigation system within the Shepparton Irrigation Area. The development of this plan has been done outside of the agreed Northern Victoria Irrigation Renewal Project process but has followed the same format to ensure consistency into the future.

Knowledge

The GB CMA together with the North East CMA and Goulburn-Murray Water has developed a project to apply key outputs from the eWater CRC Toolkit.

The eWater CRC are undertaking activities to discern the ecological value and benefits (and disbenefits) of rewetting off-channel habitats (e.g. terrestrial vegetation, aquatic vegetation, birds, resident fish, spawning/ recruitment habitats and refuge). Also, the project will discern how these assets are affected by potential changes to the watering of off-channel habitats under various water supply scenarios.

This project will support eWater and provide knowledge for CMAs to manage flows within the major regulated systems.

An environmental expert panel was convened by Goulburn-Murray Water to advise on Goulburn River, Broken River and lower Broken Creek drought management issues.

The 2008-2009 Dry Inflow Contingency Plan was completed and a draft 2009-2010 Dry Inflow Contingency Plan was completed and circulated for comment.

Carl Walters and Corey Wilson of the GB CMA

Riparian and in-stream habitat and channel form

Works and extension

A significant upgrade to the Shepparton Weir Fishway took place through the Goulburn Large Scale River Restoration Project with an innovative design aimed at providing a variety of flow velocities and depths across the stream to cater for the broad range of native species found within the Goulburn River.

Drought Employment Program

The Drought Employment program remained the main focus with staff and over 80 community participants, mainly within the Shepparton Irrigation Region, involved in work teams or across the catchment. This years' program was highly successful with major on-ground action being achieved.

A significant lateral erosion point on the Goulburn River adjacent to Raftery Road was addressed using a low flow pipe and a high flow rock chute as a trial to address this problem which is found at many sites on the lower Goulburn.

A design was completed for the most significant avulsion risk (the removal of land by flood or sudden change in watercourse) identified on the Lower Goulburn. The site on You You Creek comprises a significant head cut moving up the creek towards the Goulburn River.

Relationships, partnerships and community capacity

The region was recognised as a leader in waterway management through its acceptance of the 2008 Banksia Environmental Foundation Water Category Awards. The vision for the Broken River project has been recognised in this announcement.

The delivery of this year's Drought Employment Program involved the engagement of many of the catchment partners to assist in the direct supervision of drought affected farmers to deliver environmental projects right across the region. Initial project proposals from partners were reviewed to ensure co-contribution and joint benefits to the region.

A joint project with the Department of Sustainability and Environment Crown Land Management has seen the employment of a River Health officer within Crown Land Management to implement improved practices and review crown frontage licences in priority areas prior to the 2009 Licence Renewal process. This position has been working closely with GB CMA staff to ensure improved management and amended licence conditions are implemented where possible as part of the 2009 renewal. Funding for this position and additional fund to support this role has been sourced through the Department of Sustainability and Environment with management through the GB CMA.

Victorian Environmental Flows Monitoring and Assessment Program

The Victorian Environmental Flows Monitoring and Assessment Program (VEFMAP) evaluates river and ecosystem responses to the delivery of environmental flows. There are eight rivers across Victoria which are part of the program including the Broken system and Goulburn River. Monitoring commenced in 2008 with macro-invertebrate monitoring conducted in May 2008 for autumn sampling. Further monitoring was carried out in, or around, October 2008 of physical habitat, vegetation, macroinvertebrates (spring sampling) and fish. These monitoring results provide baseline data for continuous monitoring of the same sites over a minimum three year time frame. Final Victorian Environmental Flow Monitoring Assessment Program reports (1 x macros, vegetation and fish and 1 x physical habitat and form) have been completed. Additional macroinvertebrate monitoring occurred in Autumn 2009 and further monitoring is scheduled for Spring 2009.

Two monitoring sites have been established in the lower section of the Goulburn River in deep pools to detect water quality issues resulting from dry inflows as soon as possible. The site data is available live to enable real time management.
A management plan was prepared for the lower Cornella Creek. The plan was instigated with the support of the Colbinabbin Local Area Planning Implementation Committee (CLAPIC).

Water quality (nutrients) in rivers and streams

Works and extension

A Gross Pollutant Trap was installed in Tom Collins Drive, Shepparton in a joint project with the City of Greater Shepparton.

Relationships, partnerships and community capacity

Regional agencies supported the hosting of the Department of Water, Heritage and Arts 2008 Water Quality Workshop. The workshop led to a reinvigoration of a Water Quality Committee, which involves team leaders from the key water quality program areas.

Support has been provided for eWater's Northern Application Project. The project focuses on the Ovens and Goulburn rivers in Northern Victoria and proposes to model and report on the likely response of key ecological indicators to alternative future flow scenarios. The project will utilise a range of eWater Tools and will extend into 2009-2010.

Planning and responding

Real time monitoring of the lower Broken Creek system commenced in 2008. This information provides up to date information on water quality and azolla presence to improve management of the systems.

The Goulburn Broken Drought Water and River Contingency Planning Group continued to meet on a regular basis to ensure we are ready for potential hazards to water assets as a result of continuing drought and low flows. The group comprises representatives of GB CMA, Goulburn-Murray Water, Goulburn Valley Water, Environment Protection Authority, the Department of Primary Industries and the Department of Sustainability and Environment. A "GovDex wiki page" has been established for the Water and River Contingency Planning Meeting Members to allow sharing of documents, management of meetings and keeping contact details up to date.

Knowledge

Broken Creek and Broken River Ecological Risk Assessments.
This project examined risks to the environmental values of upper Broken Creek and lower Broken River due to the consistent failure of these waterways to attain State Environment Protection Policy (Waters of Victoria) water quality objectives for nutrients, dissolved oxygen and turbidity. The areas under investigation were:

- upper Broken Creek between its origin at Caseys Weir and its confluence with Boosey Creek near Katamatite;
- lower Broken River from its confluence with Holland Creek at Benalla, down to its confluence with the Goulburn River at Shepparton.

Real Time Water Quality Monitoring – Goulburn River

Using the information gained from the Goulburn River Bathometric Survey, (underwater mapping), two deep pools were targeted to establish real time water quality monitoring. Deep pools were chosen to monitor water quality in times of reduced or low flows which provide critical habitat to species such as Murray Cod. Probes measuring dissolved oxygen, Electrical conductivity, pH and temperature were installed at three levels and can be accessed in real time via a website.

Department of Sustainability and Environment Arthur Rylah Institute electro fishing the Goulburn River

Community Waterwatch

The year 2008-2009 saw the continuation of the highly successful Goulburn Broken Waterwatch program. The project, headed by David Hodgkin and his dedicated team from Goulburn Valley Water, continued to be a highly valued community based activity and over time has closely integrated its activity with on-ground works and activities. Additional community funds were provided to enable further training for Waterwatch staff, expansion of adult salinity actions and enhancement of linkages between Regional River Health Strategy and Waterwatch through the inclusion of Regional River Health Strategy targets into Waterwatch reports, plans and assessment of water quality results.

Threatened species recovery

Lower Goulburn Fish Communities Project

The Lower Goulburn Fish Communities Project continued in 2008-2009 with the submission of progress and final year reports. The reports present the findings of boat electro-fishing and larval fish surveys that have been conducted on an annual basis since 2003. The electro-fishing surveys are conducted twice per year (spring and autumn) to monitor year class strength and allow an ongoing assessment of the status of fish populations in the lower Goulburn River.

Community – River Health

The final draft of the RiverConnect Waterway Health Action Plan for the Goulburn through the Shepparton Mooroopna precinct was submitted and communicated to all stakeholders involved. Activities such as weed control, erosion issues, frontage management, rubbish dumping and pollution issues were considered a priority for future years.

Thompson and Berrill Landscape Design were engaged to prepare a Master Plan for the Yielma property, which is situated within the Barmah Wetland. The Master Plan was prepared on behalf of the Yorta Yorta Nation Aboriginal Corporation. Planning has continued and initial implementation has commenced.

The GB CMA continued to support State related activities to support the river health program. This year the focus was on Streamlining and forecasting projects, review of RiVERS I and the review of the Victorian River Health Strategy.

Implementation outputs

Activity	*No. of outputs*
Alternative watering points (number)	58
Bank Stabilisation (kms)	0.25
Bed stabilisation (kms)	2
Fencing remnant vegetation (ha)	74
Fencing of River (kms)	86
Fencing of Wetland	5.5
Length of stream open to fish passage (kms)	122
Channel and drain weed management (G-MW DEP) (ha)	827
Riparian Revegetation (ha)	92
Urban stormwater (GPT) (No.)	1
Pest plant control (ha)	8170

Monitoring Program

Written by Greg Smith, Goulburn-Murray Water

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

Activities and achievements

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.

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

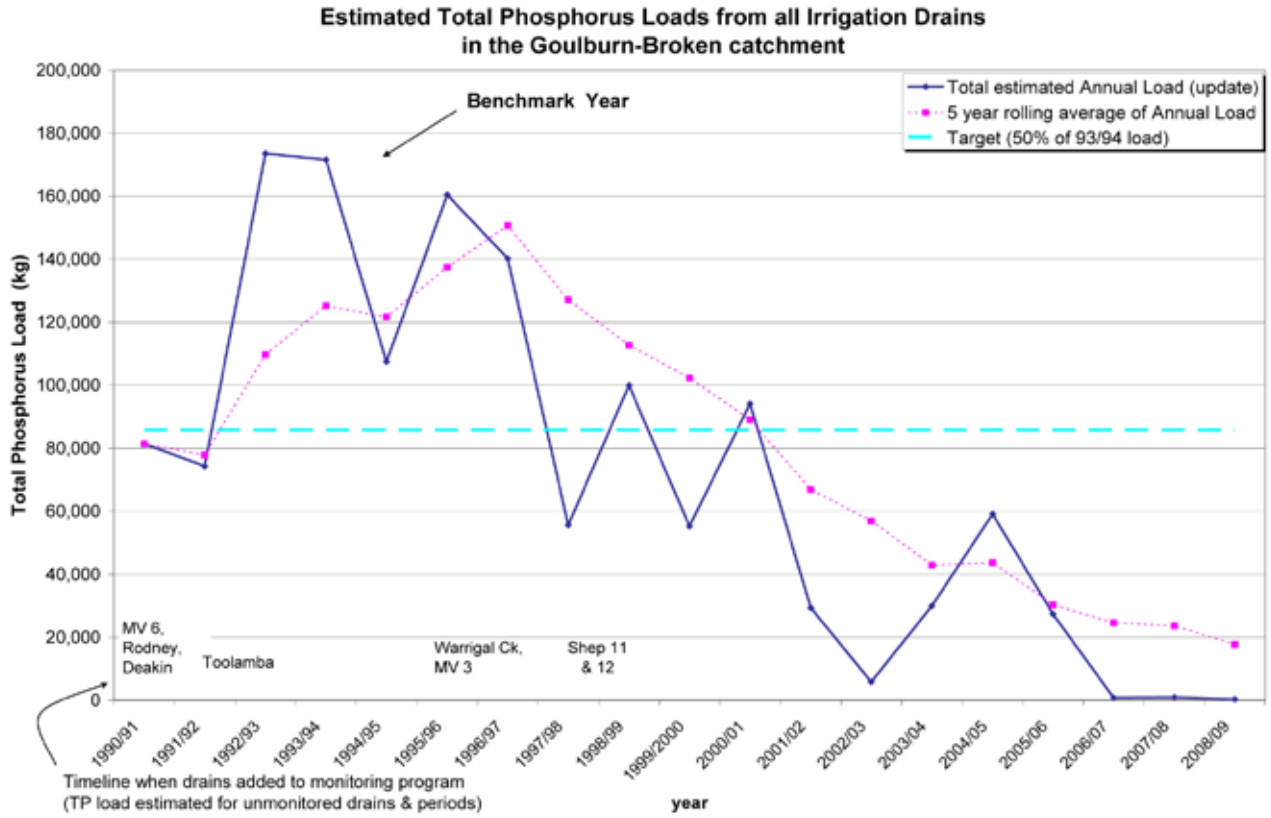
The 5-year rolling average phosphorus load continued to decline and remained below the target value for reduction of nutrient loads from irrigation drains.

A review of the Biological monitoring program (in streams near surface drain outfalls) was undertaken and concluded that no consistent long-term environmental impact from irrigation drain discharges could be determined. As a result the program has been suspended.

An annual report on nutrient export from irrigation drains was prepared including the following graph showing estimated Total Phosphorous (TP).

Groundwater

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



Estimated Total Phosphorous loads from irrigation drains

Program Support

Written by Terry Batey, Department of Primary Industries and Rachael Spokes, GB CMA

Program Goal: To provide the framework to manage and coordinate the Shepparton Irrigation Region Catchment Implementation Strategy.

This component of the Shepparton Irrigation Region Catchment Implementation Strategy 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 Shepparton Irrigation Region Catchment Implementation Strategy and partners.

Salinity Program Management, Department of Primary Industries

The Department of Primary Industries, Sustainable Irrigated Landscapes-Goulburn Broken Project is critical to maintaining ongoing community support, participation and confidence in catchment management across the Shepparton Irrigation Region.

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

Community Surface Water Management Program

People in the Community Surface Water Management Program work with landowner communities and government agencies to improve regional drainage within the Shepparton Irrigation Region.

Farm Team

Local Area Planning

The people in the Farm Team 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

In this program the people work with private landowners to support development and implementation of sustainable action plans and works using facilitation, communication and incentive methods to achieve change.

Environmental Management Program

People in this program provide services to the community to protect and enhance bio-diversity within the region primarily on private land. These activities are carried out consistent with the GB CMA priorities.

Goulburn-Murray Water Program Management

Staff provide support to the Catchment Implementation Strategy by ensuring the coordination of many functions including management of existing works and delivery of strategic planning projects. Staff also support promotion and communication of Catchment Implementation Strategy objectives through production of annual reports, performance indicators, media information and contribution to catchment partnerships.

Catchment Implementation 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 $16 million in 2008-2009. Funding was coordinated across some 50 projects and three 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

Catchment Education and Awareness Grants

The Catchment Education and Awareness 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 Salinity Management Plan in 1989, and has been embraced by the current, broader, Regional Catchment Strategy introduced by the GB CMA.

The purpose of the Catchment Education and Awareness Grants program is to encourage non-profit organisations to undertake activities that increase community awareness and understanding of salinity related issues in the catchment.

The total available funding for 2008-2009 was $30,000, contributed by the Shepparton Irrigation Region Implementation Committee.

Municipal Coordination

Formal links with Local Government has been a key strategy of the Shepparton Irrigation Region since 1989. This link, through the role of the Municipal Catchment Coordinator supports an effective partnership between the municipalities of Greater Shepparton City Council, Shire of Campaspe, Moira Shire Council and the Shepparton Irrigation Region Implementation Committee.

The Municipal Catchment Coordinator provides a liaison and coordination role to strengthen common ownership and commitment to natural resource management and regional development issues across the Shepparton Irrigation Region and to facilitate local government participation in the delivery of the Shepparton Irrigation Region Catchment Implementation Strategy and vice versa.

Key activities for this reporting period included:

- Continuation of annual Council briefings and Shepparton Irrigation Region Implementation Committee meetings held with each municipality;
- Submissions to key local government strategies and plans;
- Commencement of a review of the Uniform Planning Controls for Earthworks in the Shepparton Irrigation Region;
- Engagement of local government in the Irrigation Modernisation program through Landscape Links project and representation on Northern Victoria Irrigation Renewal Project forums;
- Submissions to the "Modernising Victoria's Planning Act" and the "Future Farms: Providing for Victoria's Future Rural Land Use" discussion papers.

Research Program

Written by Bruce Gill and Mike Morris, Department of Primary Industries

Program Goal: The overall program goal is to provide sound, up-to-date science to support the ongoing implementation and evolution of the Shepparton Irrigation Region component of the Goulburn Broken Regional Catchment Strategy.

As the drought and low water allocation years have continued, there has been a continuing focus on the two key issues of improving the productivity of irrigation water and understanding the changing irrigation landscape.

Water shortage is driving rapid changes in farming practices. There is a new focus on annual crops and pasture and an increasing interest in new irrigation technologies. This poses new opportunities and challenges for the irrigation research program, which has historically focused research effort on surface irrigation of perennial pastures. New information is urgently needed to support irrigators attempting to further improve water productivity and adapt to new on-farm irrigation systems while remaining viable businesses.

Research effort is also focused on improving our understanding of the changes occurring across the landscape, why they are occurring, when and where. Research projects include new spatial science methods to capture and map changes in land and water use across the region. This work is an important source of information for regional program managers and policy makers.

Activities and achievements

Linking spatial sciences to Extension – Shepparton Geographic Information System Services

Background

The Shepparton Geographic Information System (GIS) project establishes and maintains information systems that support the implementation, monitoring and review of the Shepparton Irrigation Region Catchment Implementation Strategy. The objectives of this project are to:

- Develop a strategic suite of datasets, information management tools and expertise applied to the range of land and water management and associated issues such as nutrient management, environmental management, regional development, irrigation management and industry support;
- Improve information management, leading to better land and water management policy decisions, more effective targeting of effort and expenditure, and improved effectiveness monitoring.

Project activities

The project takes a structured approach to the delivery of corporate and local spatial information to the Shepparton Irrigation Region Catchment Implementation Strategy. This has included a number of activities, such as:

- The Spatial Sciences team has up-skilled Shepparton Irrigation Region Catchment Implementation Strategy program support staff to the latest GIS package (ArcGIS 9) and developed a training Manual to meet staff needs;
- Development of a tool for use in linking landholders to property and water supply outlets;

- The various types of Farm Program Incentives have been digitised to facilitate reporting and mapping;
- Created map documents to help staff easily create spatial documents;
- Provide technical support through telephone, email, site visits and one-on-one support;
- Provide GIS information to support project and Landcare group activities and reporting.

Achievements and implications

Spatial Information Sciences are building capacity for staff to use the tools to collect data in an efficient and effective manner and give staff the confidence to create and understand spatial data.

This project allows Shepparton Irrigation Region Catchment Implementation Strategy support staff to create spatial products easily, collect data, store the data, easily access it and carry out spatial analysis of that data. This will also improve data quality over time, as well as enable data that might once have been seen only in table format to be presented in more easily understood map formats.

Feasibility and sustainability of sub-surface drip irrigation in pasture production

Background

Ongoing water shortages and potential future reductions in water supply highlight the need to make best use of the available water. Sub-surface drip (SSD) irrigation can deliver water directly to the plant rootzone and thus reduce potential evaporation, runoff and drainage losses. Installation of SSD on dairy farms may also benefit regional water quality by reducing irrigation run-off. However, dairy farmers are unlikely to invest in SSD irrigation if they are not confident it can withstand cattle grazing and be economically viable.

The project has established two field experiments located on two dairy farms in northern Victoria, testing how SSD performs on a 'light' and a 'medium' soil. The experiment is testing SSD design (tape spacing) and management (irrigation frequency) on pasture production and the pathways of water and solute movement.

The three main objectives of this project are to:

- Assess the practical and economic feasibility of SSD irrigation on dairy farms;
- Evaluate the economic, environmental and social consequences of SSD irrigation on dairy farms, at both the farm and catchment scales;
- Produce information about SSD irrigation on dairy farms for irrigators, irrigation service providers, and irrigation extension and policy programs.

Project activities

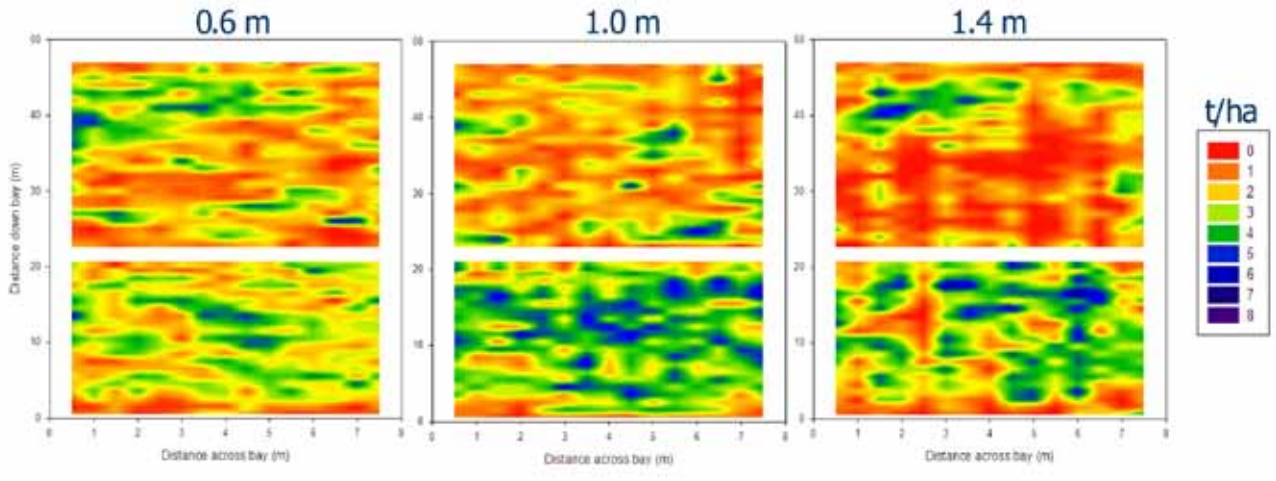
Sub-surface Drip has maintained pasture production under grazing throughout the 2006-2007, 2007-2008 and 2008-2009 seasons. Pugging issues due to grazing have not occurred. The dry spring of 2006 showed that SSD can be used to germinate pasture on a medium soil, but SSD should not be used for pasture establishment on light soils. The results have also shown that the performance of SSD in achieving uniform spread of water and hence pasture growth is strongly influenced by soil structure and water behaviour in that soil. On the medium soil, pasture production is unaffected by tape spacing or irrigation frequency, but on the light soil pasture production decreased as tape spacing increased from 0.6 to 1.0 and 1.4m (see Figure below).

Results from these experiments are being used to show how SSD would work in other situations to identify the best combinations of system design and management for different soils. This will ensure the technology is used for maximum benefit. The implications for catchment level management of water and water quality are also being considered.

A recent desktop economic analysis showed that SSD for pasture production could be profitable, provided that significant improvements in pasture production and consumption and water savings are achieved, with the grown pasture highly valued. The investment is not wise if only water savings will be made.

Achievements and implications

The work to date has shown that while sub-surface drip irrigation can maintain pasture production under grazed conditions, it will not be suitable for every dairy farm. Its success is greatly dependant on the soil of the site. SSD will achieve most uniform irrigation and best pasture growth on duplex soils with low permeability subsoil. On light soils, gravity drainage beneath the dripper tapes allows too much downward movement of water which prevents uniform irrigation, reduces pasture production and leads to inefficient water use as water escapes below the plant root-zone. From an economic viewpoint, sufficient gains in pasture production and water savings over conventional irrigation would be needed for it to show a positive return on investment.



Spatial variability in pasture production for the different tape spacings at the light soil site, January 2009

Farm Salinity Management (Mt Scobie Partial Conjunctive groundwater re-use study)

Background

A salinity management system called 'Partial conjunctive groundwater re-use' has been under investigation at Mount Scobie on a commercial dairy farm since 1999. In this system, a groundwater pump protects about 60ha of the farm by extracting an average of 60ML of 10,000EC (10 dS/m) groundwater per year. Of the total pumped volume of groundwater, approximately 35ML is diluted with channel water and used on pastures. The other 25ML is used undiluted to irrigate a four hectare salt tolerant tree lot established within the area of influence of the pump.

The project has undertaken detailed analysis of the results from the last 10 years to find out how sustainable the practice is and the fate of the average 60 tonnes per hectare of salt in the groundwater and deposited under the trees. The data collected to date has been analysed to test the main hypothesis 'that the salt is being concentrated into a high salinity 'plume' in the soil and groundwater under the tree block and will migrate back towards the pump, thus developing a new dynamic equilibrium within the system'. However, due to the lower rainfall, reduced watertable and diminished salinity problem now found across the Shepparton Irrigation Region, the study has changed somewhat from the original intent.

Project activities

The major change that has occurred at the site is the decline in watertable levels over the past 10 years. Initial watertable levels were around one metre. Since 2001-2002 these have declined to below two metres in 2006-2007, with heavy pumping and the drought resulting in watertables declining to the current level of 2.5 to 3 metres. Groundwater salinities have remained relatively unchanged across the property except under the trees, where groundwater salinity has increased from 15,000EC (15dS/m) to 20,000EC (20dS/m). The total salt load redistributed by the groundwater pumping is approximately 2600 tonnes since 1999, of which 1600 tonnes was irrigated onto the tree block. Soil salinities have remained relatively unchanged except in the tree block where they have increased as a result of the application of the saline groundwater. Despite this increase in soil salinity, tree growth among the salt tolerant hybrids and species trials has shown good performance, particularly of the best hybrids species.

Achievements and implications

The overall results of the study indicate that the partial conjunctive re-use system (Mt Scobie system of salinity management) is a viable system of high watertable salinity management suitable for locations where off-site disposal of groundwater is not an available option.

From a regional perspective, this system provides a potential scenario whereby less salt is mobilised downstream. It also offers previously hard to protect areas (due to high groundwater salinities) a potential form of salinity protection, as well as having biodiversity and aesthetic benefits. If watertables rise again, such a system is a low cost and effective option available to high salinity areas.

Practice Change Research

Written by Fiona Johnson, Helen Murdoch and Brigette Keeble, Department of Primary Industries

The Practice Change Research group has undertaken an extensive research program over the past eight years with the GB CMA and Shepparton Irrigation Region Implementation Committee. The focus of this program is to provide research approaches that support the GB CMA and their partners to implement irrigation policy outcomes. We have developed many approaches including the Policy Choice Framework – to support policy instrument selection, understanding landholder responses to intervention (both adoption & compliance) and the organisational implications of policy outcomes.

The Practice Change Research role is threefold:

1. To undertake research projects to inform priority irrigation issues;
2. To provide technical expertise and advice to regional partners on priorities for the state and regional irrigation programs; and
3. To develop research approaches of world standing that support our stakeholders to decide how best they will achieve the practice change required for irrigation policy.

Irrigation system modernisation continued to be a priority in 2008-2009 for Practice Change Research. Researchers continued to apply learnings from previous projects, supporting the GB CMA and partners to develop policy responses and policy instruments that account for the landholder, organisational and technical implications proposed modernisation changes create. The achievements of these three focus areas are reported on in detail.

Policy Choice Framework

In 2008, the GB CMA and the Sustainable Irrigation Program of the Department of Sustainability and Environment engaged Practice Change Research to apply the Policy Choice Framework to the Northern Victoria Irrigation Renewal Project to:

1. Reveal critical landholder and organisational issues that may influence the package of policy interventions aimed at supporting and driving decision-making around modernising the irrigation infrastructure;
2. Outline the implications for the GB CMA programs and targets.

The research found that the critical landholder issues were related to landholders whose properties were not located adjacent to the backbone. The target for these landholders was unlikely to be met without a package of policy interventions to ensure that enough landholders will receive a benefit from changing to the modified connection and the cost of changing is low enough so that they adopt within the five year timeframe. The package could include a range of connection options to generate benefits and financial payments and decision support service to reduce the costs.

The research found that the critical organisational issues were related to addressing the changes that the organisations will need to make to ensure they are able to play their role in the implementation of the Northern Victoria Irrigation Renewal Project. These changes arise when there is a misalignment between the principles that underpin the Northern Victoria Irrigation Renewal Project policy interventions and the organisational principles already in use. The types of changes that could be required include investment in skill development, new structures and procedures; management of a mismatch of values and the phasing out of now redundant competencies.

The research also indicated that the implementation of the Northern Victoria Irrigation Renewal Project for the GB CMA programs and targets are likely to have implications concentrated on the management of:

- Appropriate watering regimes for environmental features;
- The salinisation of soil and water;
- Nutrients entering water bodies.

In response, the GB CMA and the Sustainable Irrigation Program of the Department of Sustainability and Environment need to invest in understanding the impact of the Northern Victoria Irrigation Renewal Project on each of these areas of responsibility to ensure the implementation of the Northern Victoria Irrigation Renewal Project does not generate unacceptable impacts.

Understanding landholders in an era of regulatory change

The Practice Change Research team undertook research in 2008 to investigate landholder attitudes and the factors that influence these attitudes to assist in predicting likely responses to modernisation of the irrigation supply system.

The findings of the research confirmed that the importance of four critical on-farm irrigation components (level of service delivery, commandability, negotiating water delivery with other users and service delivery costs) investigated depends very much on the landholder's situation; their business needs, where they are located on the supply system, and the physical contextual options and limitations of their farm. Therefore if these components are important in decision-making it is essential that any intervention, such as system modernisation, take account of these critical variables to refine and design complementary implementation strategies. The research reinforces the difficulties in designing generalised strategies targeting groups of landholders. The findings support the need for a flexible and customised program and approach that considers the benefits and costs for individual landholders and responds accordingly.

Further research was also undertaken in 2009 exploring the responses of landholders to system modernisation in the Macalister Irrigation District. This research builds on the Practice Change Research regional body of knowledge in the area of modernisation, which can assist the GB CMA in understanding the generic issues for natural resource management, as well as the issues particular to the Shepparton Irrigation Region.

One Policy - different organisational responses

The GB CMA funded the Department of Primary Industries Practice Change Research to apply a new approach, the Relationship Choice Framework (RCF) designed to understand how the GB CMA and the Department of Sustainability and Environment Sustainable Irrigation Program manage their relationship to implement irrigation policy in the Shepparton Irrigation Region. We used a case study method to explore the merits of the Relationship Choice Framework and it offers insights about this specific relationship under study. Revealing why this relationship works well could provide insights for other policies and programs.

The case study showed the partnership approach is fundamental as it enables both parties the required flexibility and assurance to undertake irrigation policy together. Given the complexity of irrigation policy and the associated programs this type of relationship seemed essential. Additionally because both organisations share core activities that are critical to their survival, there are risks for both organisations that are minimised because of the established management responses including committees, structures and planning processes. These enable organisations to share intelligence, align their priorities and ensure program quality is maintained. Finally, given that staff are the primary asset for achieving the irrigation policy program, and they have specialised skills, a soft human resource approach where staff are considered as assets, offered autonomy, responsibility and development was predicted to be critical. We found many examples of this human resource style present both within and between organisations.

Spatial Market Segmentation and Healthy Landscapes

This project was undertaken in conjunction with staff from the Department of Primary Industries Future Farming Systems Research Spatial Sciences group (Andy McAllister and Liz Morse-McNabb). The final report for this project was completed in 2009.

Here is a summary of key findings from the project:

- An increasing proportion of farmers were participating in the market over time;
- An increasing proportion of farmers were trading temporary water;
- Only a very small proportion of farmers traded permanent water;
- There is considerable variation in the frequency of farmer's participation in the water market. Frequency ranges from regular (at least annually) to occasional (based on seasonal conditions);
- Trading behaviour varies considerably amongst farmers. Some farmers were regular sellers of water whilst others were regular buyers. Relatively few farmers were buyers and sellers;
- Water tended to be traded away from grazing and mixed farming enterprises to dairy and horticulture enterprises. This finding is consistent with previous research about water movement between industries and between districts;
- We have been able to identify market segments for water trading over time. These segments indicate farmer's trading behaviour is dynamic over time;
- By mapping water trading behaviour we can understand the impact of trade on key environmental assets.

Findings from this project provide additional detail on water trading and helpful insights into the effects of irrigation system reforms and seasonal conditions on water trade. Due to the dynamic nature of water trade there may be additional benefits for natural resource managers from re-analysing water trade data using similar methods on an annual basis.

APPENDICES

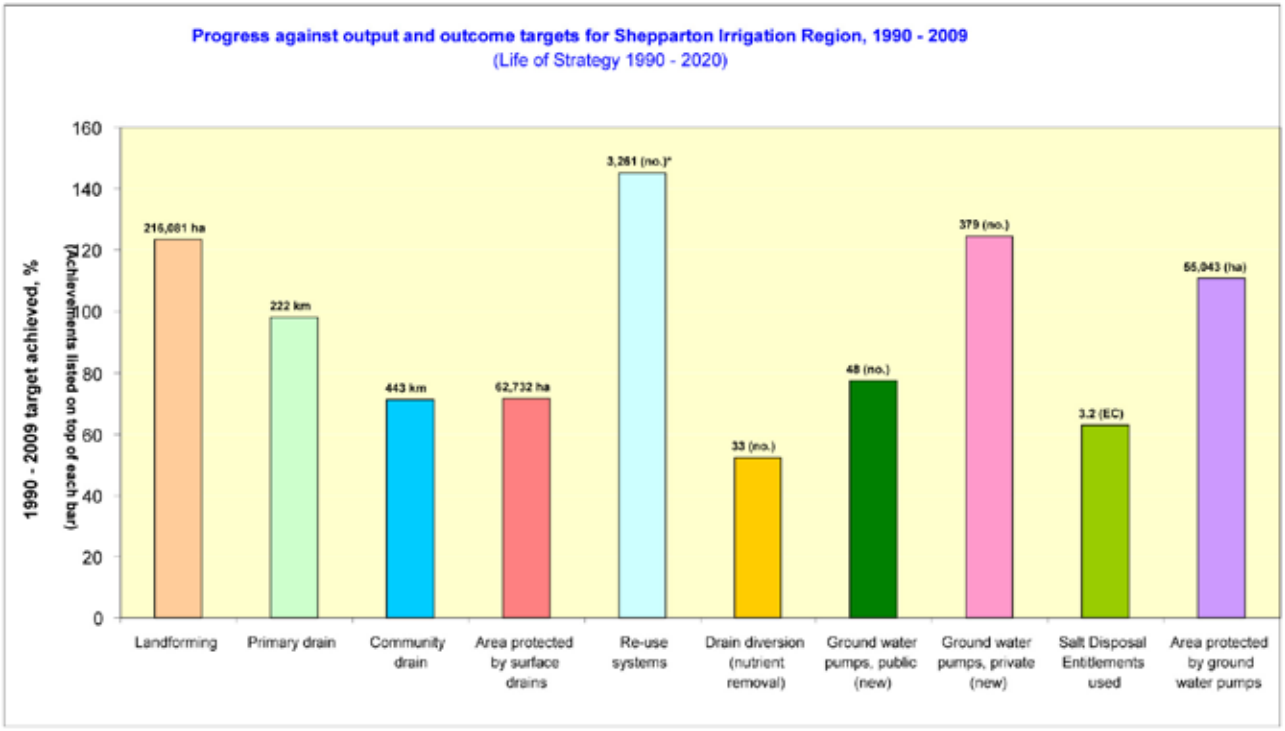
Outputs achieved 2008-2009

Standard threat or impact managed	*Output*	*Shepparton Irrigation Region*		
		Target	*Achieved*	*% achieved*
Threat				
Land and water use practices				
Stock grazing (ha = terrestrial; km = riparian)	Fence terrestrial remnant vegetation (ha)	50	27	53
	Fence wetland remnant (ha)	11	467	4,245
	Fence stream/river remnant (ha)	32	1,470	4,550
	Off-stream watering (no.)	37	54	146
	Binding Management Agreement (license, Section 173, covenant) (ha)	225	53	24
Induced Threat				
Saline water and high watertables				
Surface water	Landform/lasergrading (ha)	7,000	20,476	293
	Drain – primary (km)	2	5.5	275
	Drain – community (km)	3	5.3	177
	Farm re-use system (no.)	44	66	151
	Drain – additional water diverted from regional drains (ML)	200	0	0
	Irrigation systems – improved (ha)	7,500	21,083	281
Sub-surface water	New groundwater pumps – public (no.)	1	1	100
	New groundwater pumps – private (new and upgrade no.)	12	11	92
	Volume water pumped (ML)	1,400	1,794	128
Nutrient-rich & turbid water & suspended solids	Stormwater management projects (no.)	2	1	50
In-stream and near-stream erosion	Bed and bank protection actions (km)	1	2	200
Weed invasion	Weeds - aquatic weeds controlled/eradicated (km)	10	19	187
	Targeted infestations of weeds in high priority areas covered by control programs (ha)	4,090	8,952	219
Pest animals	Area of high priority fox infested land covered by control programs (ha)			
Impact				
Habitat loss - terrestrial	Revegetation - plant natives within or next to remnants (ha)	125	131	105
Habitat loss – in-stream	Fish barrier removal (no.)	0	1	100
	Establish SEAR (Significantly Enhanced Aquatic Refugia) (no.)	2	50	2,500
Habitat loss – Threatened species	Threatened Species Recovery Plan and Action Statements (no. projects)	7	7	100
Planning	Whole Farm Plans (no.)	207	247	119

Salinity targets achieved since 1990

Several actions to combat land salinisation and waterlogging have a negative impact on river salinity. However, the actions need to be completed as a package simultaneously to warrant investment from landholders. The net result is progress towards Regional Catchment Targets. These are listed as 'accountable actions' on the Murray Darling Basin Authority Salinity Register.

The levels of government funding have declined in real terms since targets were set in the 1990 Shepparton Irrigation Region Land and Water Salinity Management Plan (SIRLWSMP). At the current rate of investment implementation targets will not be met until approximately 2030 (rather than 2020 as forecast in the 1990 SIRLWSMP).



** Total includes 2712 re-use systems installed pre-scheme*

Long-term strategy implementation progress

- Farm works (landforming, re-use systems, private groundwater pumps) are ahead of schedule;
- Regional infrastructure (public drains and public groundwater pumps) is behind schedule due to declining government investment;
- Works targets set in 1990 and reviewed in 1995, 2001 and 2006 are again being reviewed because of the likely large and unforeseen decline in salinity threat;
- Tasks to establish management systems (stakeholder forums, partnerships, technical input, review processes etc) have been thoroughly completed;
- The Shepparton Irrigation Region community's Foodbowl Modernisation project, which began implementation in 2008 through the Northern Victoria Irrigation Renewal Project, is also helping to reduce salinity threats (it is primarily aimed at achieving water savings for the benefit of the environment, irrigators and Melbourne's water supply).

Salt Disposal Report

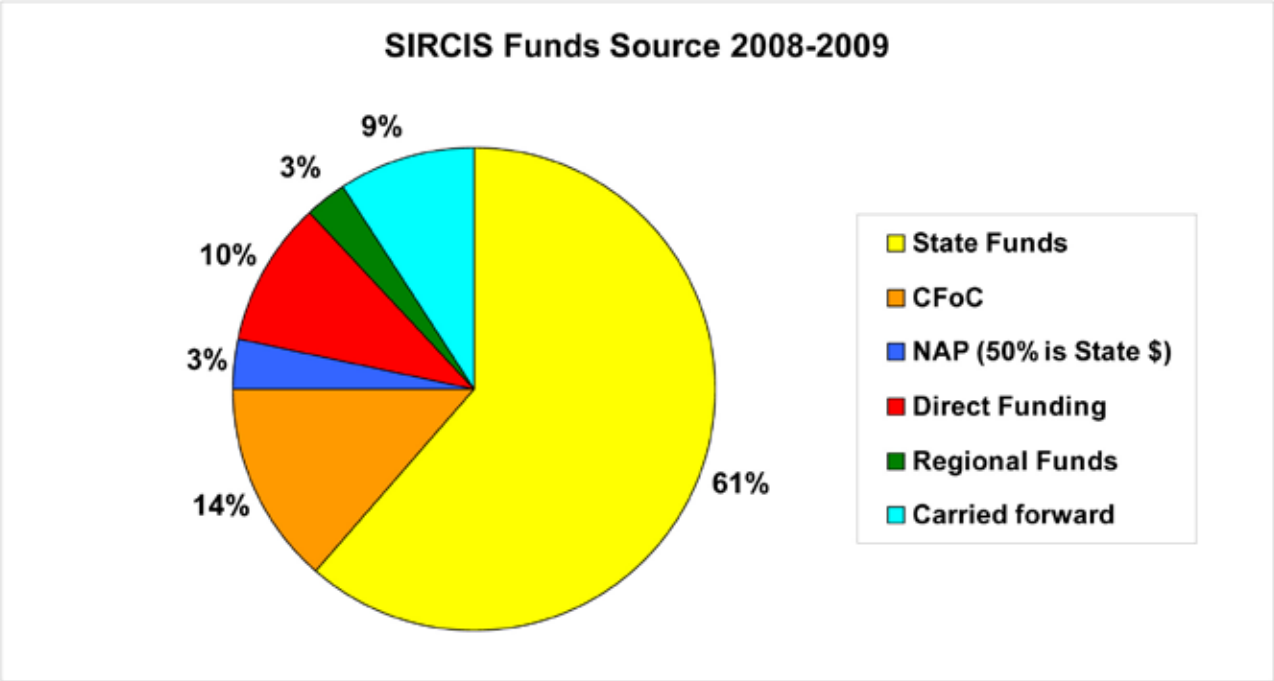
Activity	*Uptake of Salt Disposal Entitlements (EC)**			
	Pre-2004	*Total 2004 to 2007-2008*	*Uptake in 2008-2009*	*Total to 2008-2009*
Surface Water Management Systems	-0.055	-0.06	-0.005	-0.61
Public Groundwater Pumps	1.64	0.28	0.02	1.94
Private Groundwater Pumps	1.15	0.55	0.00	1.69
Horticultural Sub-surface Drainage	0.18	0.00	0.00	0.18
Total	2.42	0.77	0.02	3.20

**Notes:*
Includes pre-1991 impacts
Revised to account for the review. Not yet endorsed by the MDBA.
The impact of increasing dryland salinity in the Goulburn Broken Catchment is now on the MDBA Register as 3.592 EC or $931,684 with no mechanism for reassessment from the benefit of on-ground works.

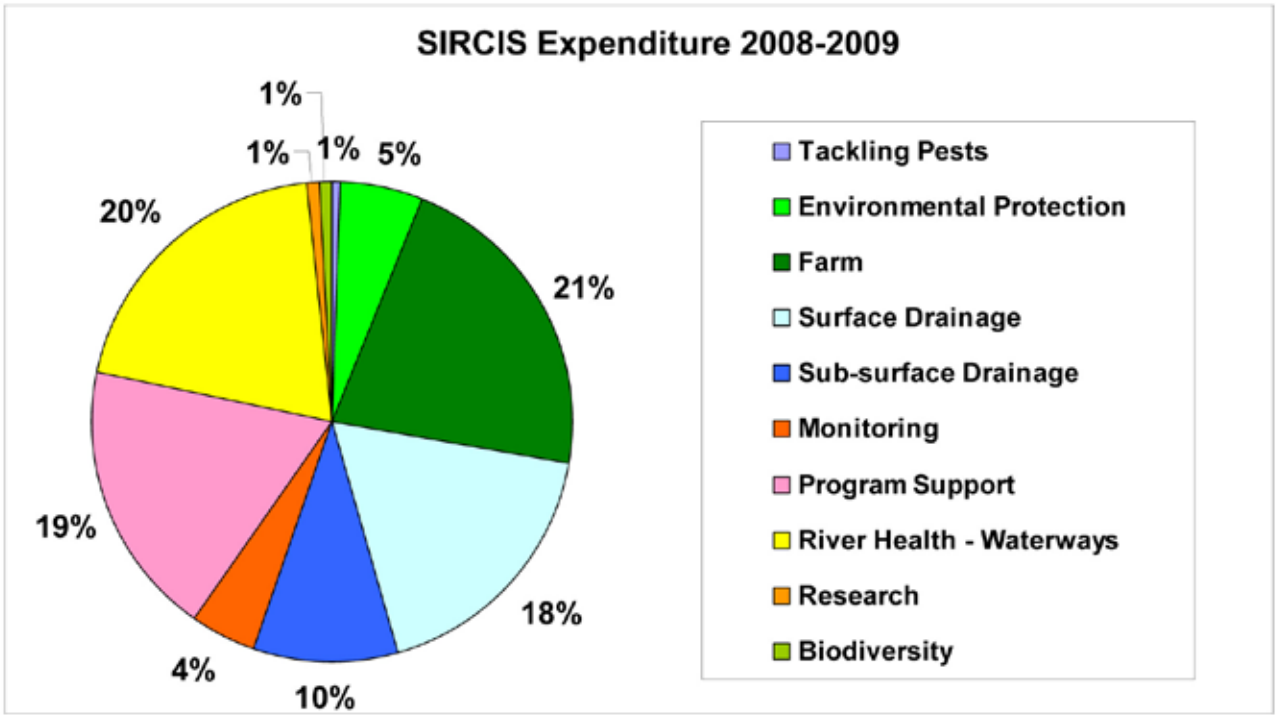
Budget and Final Expenditure 2008-2009

Programs	*State funds $'000s*	*NAP (50% is State $) $'000s*	*NHT $'000s*	*Direct funding $'000s*	*Regional funds $'000s*	*Brought forward $'000s*	*Total funds $'000s*	*Expended $'000s*
Tackling Pests				100			100	100
Environmental Protection		250		200	34		484	860
Farm	2,095	465	275	830	414	392	4,079	3,434
Surface Water Management	1,690	140		140	708	1,638	2,678	2,788
Groundwater and Salt Management	1,129		250	211		100	1,590	1,538
Monitoring	440						753	707
Program Support	12,737	1,085	50	270	753	-32	5,104	2,923
Waterways	2,847	400			-282	1,680	2,968	3,156
Research	120						120	120
Biodiversity		130			23	33	153	140
Total SIRCIS	11,058	2,470	575	1,751	525	1,651	18,029	15,767

SIRCIS funds source 2008-2009



SIRCIS expenditure 2008-2009



Summary of Cost Share

Partners	*Annual expenditure 2008-2009 $*	*Accumulated expenditure $*
Government	15,767,420	332,258,663
Community	33,870,444	823,390,275
Totals	49,637,864	1,155,648,938

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 Shepparton Irrigation Region Catchment Implementation Strategy.

Government expenditure has been obtained from reports on each project, provided by the 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 Shepparton Irrigation Region, and from records of government administered assistance programs.

Accumulated expenditure

Accumulated expenditure is expressed in 2008-2009 dollars. Previous expenditure was adjusted by applying the Victorian CPI increase of 2.77% in 2008-2009.

Community Education Awareness Grants

Community Education Awareness 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.

Group	*Project Title*	*$*
Goulburn Murray Landcare Network	Education Across the Catchment	3,770
Goulburn Murray Landcare Network	Local Area Planning Community Newsletter Publication & Distribution	6,675
Goulburn Murray Landcare Network	The Landcare Travelling Roadshow	2,500
Greater Shepparton City Council	Education & Awareness Signage at Lake Barlett Wetland, Tatura	2,000
RiverConnect Education Working Group	Enhancing RiverConnect Adopt-a-Reach Habitat Restoration	7,220
St Mary of the Angels Secondary College Nathalia	Student Excursion to Investigate Local Environmental Issues	2,683
The Goulburn Broken Greenhouse Alliance C/o Resource GV	The Goulburn Broken Greenhouse Alliance – Shepparton Irrigation Region Climate Change Travelling Display	7,500
	Total Grants	$32,348

Committees and Working Group Members 2008-2009

Shepparton Irrigation Region Implementation Committee

Community Members	*Non-voting members Agency representatives*	*Executive support Agency staff*
Peter Gibson (Chair) - Nanneella Roger Wrigley(Deputy Chair) - Wangaratta Allen Canobie - Numurkah Stephen Farrell -Echuca John Gray - Toolamba Helen Reynolds - Congupna Nick Ryan - Lancaster John Wenske - Katandra West	Terry Batey - DPI James Burkitt - G-MW Tony Long - DSE	Ken Sampson (dec'd) - GB CMA Peter Howard - GB CMA Pam Collins - GB CMA Rachael Spokes - GB CMA Carl Walters - GB CMA David Lawler - DPI Jen Pagon - DPI Sam Green - G-MW

Attendance Record

Name	*07-5*	*08-6*	*08-7*	*08-8*	*09-1*	*09-2*	*09-3*	*09-4*
Peter Gibson	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roger Wrigley	Yes	Yes	Yes	Apology	Yes	Yes	Yes	Yes
Allen Canobie	Yes	Yes	Yes	Yes	Yes	Yes	Apology	Yes
Stephen Farrell	Apology	Yes	Yes	Yes	Yes	Yes	Yes	Yes
John Gray	Yes	Yes	Yes	Yes	Yes	Yes	Apology	Yes
Helen Reynolds	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nick Ryan	Yes	Yes	Yes	Yes	Apology	Apology	Apology	Apology
John Wenske	Yes	Apology	Yes	Yes	Yes	Apology	Yes	Yes

Working Group Members

Group	*Community members*	*Agency representatives*
Shepparton Irrigation Region Technical Support Committee (SIRTEC)	Allen Canobie - SIR IC Peter Gibson - SIR IC John Wenske - SIR IC Roger Wrigley - SIR IC	Ken Sampson (dec'd) - GB CMA James Burkitt - G-MW Sam Green - G-MW Terry Hunter - G-MW Chris Solum - G-MW Greg Smith - G-MW Terry Batey - DPI David Lawler - DPI Steve Lottkowitz - DPI Jen Pagon - DPI Bruce Gill - FFSR DPI Fiona Johnson - FFSR DPI Alister Terry - FFSR DPI Pam Collins - GB CMA Peter Howard - GB CMA Wayne Tennant - GB CMA Rachael Spokes - GB CMA Carl Walters - G-MW Elita Briggs - EPA

Budget Sub-Committee	Peter Gibson Stephen Farrell Roger Wrigley	Ken Sampson (dec'd) - GB CMA James Burkitt - G-MW Sam Green - G-MW David Lawler - DPI Pam Collins - GB CMA Dee Ludlow - GB CMA Peter Howard - GB CMA Megan McFarlane - GB CMA Carl Walters - GB CMA

Groundwater and Salt Management Working Group	Roger Wrigley (Chair) Kelvin Bruce Paul Quirk Heather du Vallon John Wenske Ian Whatley	James Burkitt - G-MW Terry Hunter - G-MW Terry Batey - DPI Bruce Gill - FFSR DPI Mark Cotter - GB CMA Ken Sampson (dec'd) - GB CMA Rachael Spokes - GB CMA

Surface Water Management Working Group	Allen Canobie (Chair) Ron Brooks John Horder Hank Sanders Stephen Farrell Glen McAliece Morris Brown Ross Crawford Max Baker	Keith Chalmers - DPI Neil McLeod - DPI John Tunn - AAV Sam Green - G-MW Greg Smith - G-MW Neville Atkinson - GB CMA Pam Collins - GB CMA Ken Sampson (dec'd) - GB CMA Rachael Spokes - GB CMA Elita Briggs - EPA

Farm & Environment Program Working Group	Roger Wrigley (Chair) Gerado Fasano John Gray Alfred Heupermann John Hewlett John Laing Alan Lavis Graham Lawless Athol McDonald Bill Probst Helen Reynolds Rien Silverstein Graeme Talarico	Julie Engström - DPI David Lawler - DPI Ken Sampson (dec'd) - GB CMA Rachael Spokes - GB CMA

Waterways Working Group	Russell Pell (Chair) Terry Court John Gray Tait Hamilton Lanie Pearce Bill Probst Nick Ryan Peter Sargent Alan Sutherland Roger Wrigley	Daniel Haslop - G-MW Melissa Turpin - G-MW David Trickey - DPI Fisheries Neville Wells - DSE Jo Deretic - DPI Andrew Morrison - DPI Jen Pagon - DPI Pam Collins - GB CMA Peter Howard - GB CMA Tom O'Dwyer - GB CMA Ken Sampson (dec'd) - GB CMA Rachael Spokes - GB CMA Wayne Tennant - GB CMA Carl Walters - GB CMA Richard Warburton - GB CMA

Publications and presentations

Environment Program

Presentations:

- "Monitoring an Environmental Water Allocation using Acoustic Monitoring Techniques"; Biodiversity Celebration day, September, 2008. Department of Primary Industries, Tatura;
- "Ecosystem Health Assessment" to "acoustic sensors as environmental monitoring tools" workshop at Queensland University of Technology; McLeod, N and Morrison, A; Department of Primary Industries, Tatura.

Publications:

- Three posters were developed for the Catchment Partners Day on modernisation and acoustic monitoring of Reedy Swamp.
- Article on acoustic monitoring for Birds Australia.

Farm Program

Publications:

- "The process and method for evaluating Farm Irrigation Assessments" paper; Maskey R, Lawler D, and Batey T, Department of Primary Industries, Tatura;
- "Linking Farm Irrigation Systems to the Modernisation Delivery System" paper; Irrigation Australia conference, October 2009; Maskey R, and Nicholson C Department of Primary Industries, Tatura;
- "Informed Decision Making about Irrigation Related Changes on Farm" paper; Irrigation Australia conference, October 2009; Maskey R, and Nicholson C, Department of Primary Industries, Tatura.

Groundwater and Salt Management Program

Presentations:

- "Shepparton Irrigation Region Drain Nutrients Annual Review 2007-2008", Lamb S, Smith G; Goulburn-Murray Water (2009),
- "Biological Monitoring of the Impacts from Irrigation Drain Discharges: A Review of Five Years of Monitoring Data 2003-2007"; Ecowise Environmental (2009)
- "Sub-surface Drainage Program Key Performance Indicators Annual Report 2007/2008"; Goulburn-Murray Water, 2009.

Waterways

- Technical papers on the review of the Water Quality Strategy have been prepared by the Authority and accepted at key symposiums/conferences:
    - 12th International Conference on Integrated Diffuse Pollution Management (IWA DIPCON 2008), Research Centre for Environmental and Hazardous Substance Management (EHSM), Khon Kaen University, Thailand;
    - International River Symposuim, Brisbane;
    - AWA OzWater09, Melbourne.

Research

Presentations:

- "Sub-surface Drip Irrigation Project overview"; Irrigation Expo, Wodonga, February 2009, Department of Primary Industries, Tatura;
- "Sub-surface Drip Irrigation Project overview"; Department of Primary Industries Dairy Extension Irrigation Course, April 2009; Department of Primary Industries, Tatura.

- "2009 Shepparton Irrigation Region Implementation Committee and Department of Primary Industries Research Reporting Day", Department of Primary Industries Future Farming Systems Research, Tatura, 19th June;
- "Sub-surface Drip Field Day", Byrneside, 28 November 2008. Future Farming Systems Research, Department of Primary Industries, Tatura.
- "Policy Choice Framework and landholder project findings" to the Shepparton Irrigation Region Implementation Committee meeting 31st October 2008; Future Farming Systems Practice Change Research Department of Primary Industries;
- "Landholder project findings" to, Farm and Environment Working Group of the Shepparton Irrigation Region Implementation Committee 5th November 2008; Future Farming Systems Practice Change Research Department of Primary Industries;
- "Policy Choice Framework and landholder project findings" to the Department of Primary Industries Irrigation Modernisation Sub-committee; December 2008 and January 2009; Future Farming Systems Practice Change Research Department of Primary Industries
- "Case study of relationships to implement irrigation policy" to SIRTEC January 2009; Future Farming Systems Practice Change Research Department of Primary Industries
- "Relationship Choice Framework" case study to Environment Waikato (NZ) on the June 2009; Future Farming Systems Practice Change Research Department of Primary Industries
- "Partnership approach and Relationship Choice Framework" case to the Water Cluster July 2009; Future Farming Systems Practice Change Research Department of Primary Industries
- Goulburn-Broken Catchment Partners day on 4th March 2009; Future Farming Systems Practice Change Research Department of Primary Industries
- 2009 SIRIC/DPI Research Reporting Day on 19th June 2009

Publications:

- Kaine G, Rowbottom B, Morse-McNabb L and McAllister A (2009) Spatial market segmentation & healthy productive landscapes framework - Transaction types and trading segments in the water market. Department of Primary Industries, Tatura;
- Keeble, B, Kaine, G and Hunter, J. A new approach to investigating how organisations share responsibilities to implement natural resource policy: A case study of the implementation of irrigation policy (2008). Department of Primary Industries, Tatura;
- Johnson, F, Kaine, G, Sandall, J and Murdoch, H.Policy responses to ensure the delivery of public benefits from the modernisation of irrigation infrastructure (2009). Department of Primary Industries, Tatura;
- Murdoch, H, Lourey, R, Kaine, G and Johnson, F. Understanding landholders in an era of regulatory change – Final Report to GBCMA (2009). Department of Primary Industries, Tatura;
- Kaine G, Rowbottom B, Morse-McNabb L and McAllister A. Spatial market segmentation & healthy productive landscapes framework - Transaction types and trading segments in the water market (2009). Department of Primary Industries, Tatura.

Partnership Agency Staff 2008-2009

The Shepparton Irrigation Region Implementation Committee acknowledges the valuable contribution and dedication of the staff of our Partnership Agencies throughout the past year.

Tackling Pests

Drew Gracie	DPI
Greg Wood	DPI

Biodiversity

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Vanessa Keogh	GB CMA
Carla Miles	GB CMA
Rolf Weber	DSE

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Keith Chalmers	DPI
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Nickee Freeman	DPI
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Andrew Morrison	DPI
Jen Pagon	DPI
Joel Pike	DPI

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Julie Engström	DPI
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Ian Oppy	G-MW
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Olive Montecillo	DPI
Rhonda McKie	DPI
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Peter Howard	GB CMA
Ken Sampson (dec'd)	GB CMA
Andrea Smith	GB CMA
Rachael Spokes	GB CMA

Research

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Peter Clayton	FFSR
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Rick Dabrowski	FFSR
Tracey Davies	FFSR
Lucy Finger	FFSR
Bruce Gill	FFSR
Amjed Hussain	FFSR
Kevin Kelly	FFSR
Hayden Lewis	FFSR
Richard Maxwell	FFSR
Andrew McAllister	FFSR
Mike Morris	FFSR
Elizabeth Morse-McNabb	FFSR
Susan Robson	FFSR
Alister Terry	FFSR
Nadine Edwards	FSV PCR
Fiona Johnson	FSV PCR
Brigette Keeble	FSV PCR
Helen Murdoch	FSV PCR
Ben Rowbottom	FSV PCR

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Steve Collins	GB CMA
Christine Glassford	GB CMA
Fleur Jaques	GB CMA
Tony Kubeil	GB CMA
Scott Morath	GB CMA
Tom O'Dwyer	GB CMA
Andrew Pearson	GB CMA
Peta Ritchie	GB CMA
Gaye Sutherland	GB CMA
Wayne Tennant	GB CMA
Carl Walters	GB CMA
Richard Warburton	GB CMA
Keith Ward	GB CMA
Corey Wilson	GB CMA
Paul O'Connor	DSE

ABBREVIATIONS

AAV	Aboriginal Affairs Victoria
ANCID	Australian National Committee of Irrigation and Drainage
CaLP	Catchment and Land Protection
CMA	Catchment Management Authority
CRC	Cooperative Research Centre
DPI	Department of Primary Industries
DSE	Department of Sustainability & Environment
EMS	Environmental Management System
EPA	Environment Protection Authority
FEDS	Farm Exploratory Drilling Scheme
GIS	Geographical Information System
GMLN	Goulburn Murray Landcare Network
G-MW	Goulburn-Murray Water
GSMP	Groundwater and Salt Management Program
MDBA	Murray-Darling Basin Authority
NHT	Natural Heritage Trust
NVIRP	Northern Victoria Irrigation Renewal Project
SIR	Shepparton Irrigation Region
SIR IC	Shepparton Irrigation Region Implementation Committee
SIRCIS	Shepparton Irrigation Region Catchment Implementation Strategy
SIRTEC	Shepparton Irrigation Region Technical Support Committee
SKM	Sinclair Knight Merz
SPC	Shepparton Preserving Company
SSDP	Sub-surface Drainage Program

ACKNOWLEDGMENTS

The preparation of this report has been made possible by the contribution of the following people. Their contributions are greatly appreciated.

Implementation Committee
Peter Gibson, Chair
Roger Wrigley, Deputy Chair

Goulburn Broken Catchment Management Authority
Ken Sampson (dec'd)
Tim Barlow
Peter Howard
Rod McLennan
Mark Turner
Carl Walters

Department of Primary Industries
Lyndall Ash
Raechel Ballinger
Terry Batey
Bruce Gill
Fiona Johnson
Brigette Keeble
David Lawler
Mike Morris
Helen Murdoch
Jen Pagon

Goulburn-Murray Water
James Burkitt
Sam Green
Greg Smith

Department of Sustainability and Environment
Rolf Weber

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The GIS Group at the Department of Primary Industries Tatura produced maps used in this report.

Consultants / Contractors used
Sinclair Knight Merz
URS
GHD
Hydro Environmental
TJC Solutions
Geotech Pty Ltd
Thompson and Berrill Landscape Design