



**Shepparton Irrigation Region
Implementation Committee**

Water, Land and People
Annual Report
2010 - 2011



**GOULBURN
BROKEN**

CATCHMENT
MANAGEMENT
AUTHORITY

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www.gbcma.vic.gov.au

Cover image and page 7: Roger Wrigley, Chair of Shepparton Irrigation Region Implementation Committee.
Photographer: Peter Howard - 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. 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

Goulburn Broken Catchment Management Authority

The Goulburn Broken Catchment Management Authority (GB CMA) is a statutory authority established by the Victorian Government to coordinate land, water and biodiversity management. Under the Catchment and Land Protection Act 1994 the GB CMA was established as the peak natural resource management body in the Goulburn Broken catchment to develop and oversee the implementation of the Regional Catchment Strategy.

The GB CMA has two geographically based Implementation Committees: the Shepparton Irrigation Region Implementation Committee and the Broken Goulburn Implementation Committee. The Implementation Committees comprise community representatives appointed by the GB CMA and a non-voting representative from each of the Department of Primary Industries, Department of Sustainability and Environment and Goulburn-Murray Water.

The prime function of Implementation Committees is to support and communicate implementation of the priorities of the Regional Catchment Strategy and to provide feedback on the local community's view. The Implementation Committee members are appointed for a period of four years.

A charter established by the GB CMA sets out operational guidance and direction, an operational framework, together with roles and responsibilities for the Implementation Committees.

The Implementation Committee roles include:

- providing advice to the Board on GB CMA Policy, including the Regional Catchment Strategy;
- providing comment and feedback on proposed GB CMA works programs;
- involving others in decision-making (where relevant) and/or keeping them up-to-date about appropriate decisions and actions;
- listening to, understanding and passing on the regional communities' points of view;
- reporting to and/or providing feedback from various community committees to enhance the connection of the GB CMA to the community.

The Regional Catchment Strategy in the Shepparton Irrigation Region is funded jointly by the regional community, the Australian, Victorian and Local

Governments. The works program is delivered by government agencies and landholders working in partnership to implement the Regional Catchment Strategy.

Shepparton Irrigation Region Implementation Committee

The Shepparton Irrigation Region Implementation Committee (SIR IC) provides community engagement and supports the priorities and programs of the Goulburn Broken Regional Catchment Strategy in the Shepparton Irrigation Region. These programs are collectively referred to as the Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS).

The SIRCIS is a 30-year strategy that provides the framework for land, water and biodiversity management. Commencing in 1989, with whole community co-operation, the strategy aims to improve the condition of natural resources in the Shepparton Irrigation Region.

SIR IC community representatives have the opportunity to provide advice as members of working groups and technical support committees. The operational framework of SIR IC is illustrated in the chart on page 5.

Working Groups

SIR IC operates four Working Groups: 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

SIR IC is supported by an Executive Team and Partnership Agency representatives who provide executive support and technical advice. SIR IC community representatives have the opportunity to provide advice on issues through the Shepparton Irrigation Region Technical Support Committee, (SIRTEC).

Partnership collaboration

To deliver the SIRCIS works program, a collaborative partnership between government agencies and the GB CMA has been established. The partnerships operate under a memorandum of understanding. Agencies include: the Department of Primary Industries, Goulburn-Murray Water and the Department of Sustainability and Environment. "Service Level Agreements" are established

annually between the agencies and the GB CMA covering an agreed program of works.

SIR IC maintains close links with local government under formal arrangements with Greater Shepparton City Council, Shire of Campaspe and Moira Shire through the Municipal Catchment Coordinator role.

The Shepparton Irrigation Region - Our region

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

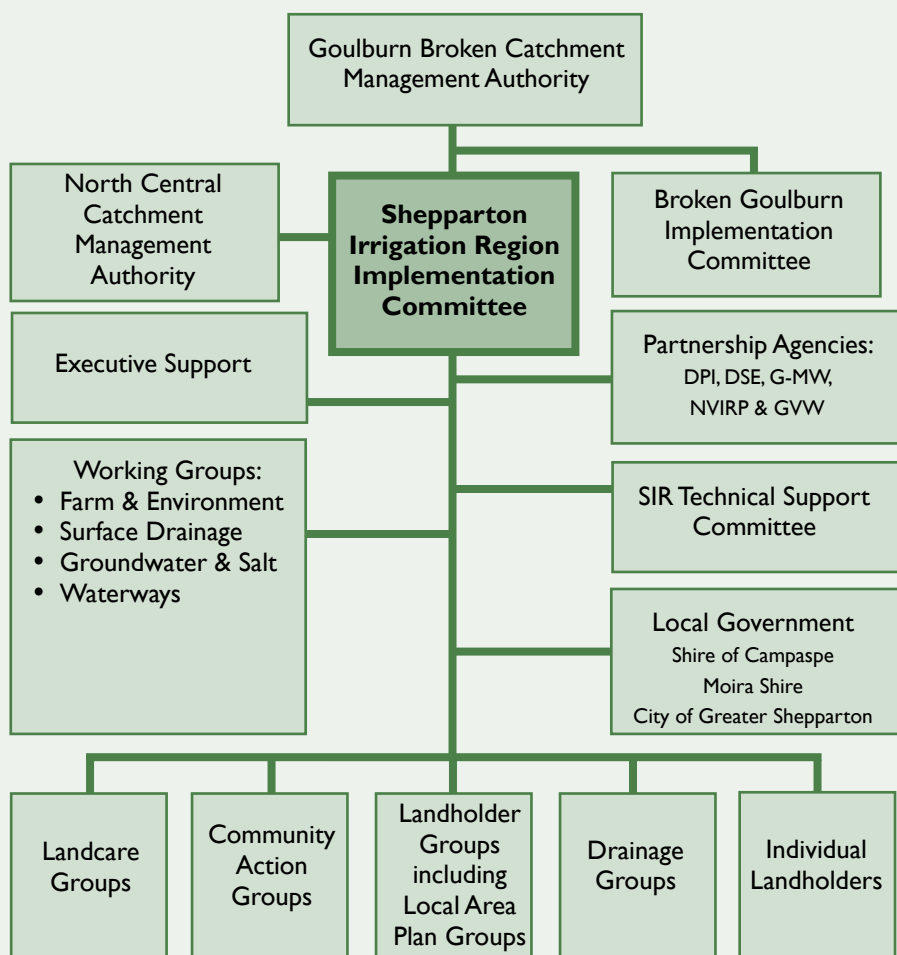
The irrigated area of 317,000 hectares within the Shepparton Irrigation Region utilises approximately 1.5 million megalitres of water each year.

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 population of the Shepparton Irrigation Region 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.

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



Community Representatives

Victoria



Goulburn Broken Catchment



Stephen Farrell

- Member since 2002
- Member of the Surface Water Management Working Group



Stephen is a dairy farmer from Echuca. 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.

Allen Canobie

- Member since 1990
- Past Chair
- Chair of the Surface Water Management Working Group



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 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.

Roger Wrigley Chair

- Chair since September 2010
- Member since 2006
- Member of the Waterways Working Group and Farm and Environment Working Group



Roger is a geotechnical and environmental engineer and soil scientist engaged as an academic by the University of Melbourne at Dookie College and Monash University. His research and practice is related to soil, water and waste management.

Peter Gibson

- Member since 1995
- Past Chair
- Member of the Surface Water Management Working Group



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. 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.

Nick Ryan

- Member since 2004
- Member of the Waterways Working Group and Farm and Environment Working Group



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.

John Gray

- Member since 2006
- Member of the Waterways Working Group and Farm and Environment Working Group



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.

Helen Reynolds Deputy Chair

- Deputy Chair since September 2010
- Member since 2006
- Member of the Groundwater and Salt Management Working Group



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.



SHEPPARTON IRRIGATION REGION

CHAIR'S MESSAGE



Roger Wrigley
Chair

Shepparton
Irrigation
Region
Implementation
Committee

The Shepparton Irrigation Region Implementation Committee (SIR IC) in collaboration with our partner agencies, Local Government, landholders and communities supports a program of works that align with the objectives of the Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS). This annual report details those works and the progress achieved during 2010-2011.

The Victorian and Australian Governments approved \$49 million for the Sustainable Irrigation Program through various initiatives. Of these funds, \$21.1 million was provided by the Federal Government Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) and \$16.4 million by the Northern Victoria Irrigation Renewal Project for the first round of the Farm Water On-Farm Irrigation Efficiency Program. The Farm Water Program funding was allocated over 2010-2011 and 2011-2012.

The amount of funds available for 2010-2011 for the SIRCIS was \$33.4 million for Environmental, Farm, Surface Water, Groundwater and Salt Management; \$11.9 million for the River Health programs and \$21.5 million for the Farm Water Program. In addition, SIR IC attracted over \$2.1 million of regional funds.

Reduced funding has limited the Groundwater and Salt and the Surface Water Management program activities. Farm Program activities have however increased as a means of encouraging landholders to use water more efficiently (integration with the irrigation modernisation program) and to find water savings (On-farm Irrigation Efficiency Program).

The result of the long dry period interspersed with periods of drought between 1997 and 2009 continues to have an impact on our works programs, especially the Environmental, the Surface Water, and the Groundwater and Salt Management programs. The heavy spring rains

and frequent storm events through summer brought significant flooding events and a return of water in the storages for a more normal irrigation season next year.

In 2010-2011 the risks of land salinisation, waterlogging and saline inflows into the River Murray have increased due to high spring and summer rainfall, the resulting rise in shallow watertables and more regular water quality issue responses.

Works undertaken through SIR IC's programs since 1990 mean that the Shepparton Irrigation Region programs are still the most effective means to manage a return to a run of wet years in terms of drainage, water table control and salinity mitigation.

During 2010-2011 the Goulburn Broken Catchment Management Authority (GB CMA) conducted a review of the Implementation Committee structure in recognition of changes in project delivery arrangements and the need for increased accountability.

As an outcome of this review, SIR IC will conclude operations and a new community engagement approach, adopted by the GB CMA Board will commence from August 2011.

The new community engagement structure will be aligned to support the delivery of the three GB CMA Programs plus a 'Whole of Catchment' community forum that will be established to advise the Board.

The three GB CMA delivery Programs are:

- Sustainable Irrigation,
- Land and Biodiversity, and
- River & Wetland Health and Floodplain Management.

The Sustainable Irrigation Program will establish a Community Engagement Advisory Group which will meet the community's desire to provide advice on natural resource management issues. It is proposed that this group will be formed in early 2012.

After chairing SIR IC for four years, Peter Gibson returned to SIR IC as a community representative. I was elected Chair and Helen Reynolds was elected Deputy Chair. The new advisory group will have the advantage of drawing on the experience of some ex-SIR IC members and building on years of successful community engagement conducted under the auspices of SIR IC.

This augurs well for their success.

I would like to thank my fellow committee members: Allen Canobie, Steve Farrell, Peter Gibson, John Gray, Helen Reynolds, Nick Ryan and John Wenske for their contribution to the Committee, Working Groups and individual community forums throughout the year.

As this is the last Annual Report from SIR IC, I would also like to acknowledge the tremendous contribution made by all the community members of the Implementation Committee during its 16 years in operation.

They are listed in the table below. Their wit, wisdom, experience and willingness to work together have provided a vital link with the people and communities of the Shepparton Irrigation Region.

Roger Wrigley
Chair
Shepparton Irrigation Region Implementation Committee

<i>Member</i>	<i>Position</i>	<i>Term of service</i>
John Avard	SIRIC Community Member	1995-2002
Ron Brooks	SIRIC Community Member	1997-1998
Morris Brown	SIRIC Community Member	1997-1998
Allen Canobie	SIRIC Chair	1995-2011
John Cornish	SIRIC Community Member	1995-1998
Ross Crawford	SIRIC Community Member	1997-1998
Stephen Farrell	SIRIC Community Member	2002-2011
Peter Gibson	SIRIC Chair/Deputy Chair	1995-2011
John Gray	SIRIC Community Member	2006-2011
Morice Holland	SIRIC Community Member	1995-1998
Ian Klein	SIRIC Community Member	1995-1998
Dennis Leavesley	SIRIC Community Member	1995-1997
Peter McCamish	SIRIC Deputy Chair	2000-2008
Athol McDonald	SIRIC Chair	1995-1998, 2000-2004
Murray McDonald	SIRIC Community Member	1995-1997
Stephen Mills	SIRIC Community Member	1998-2002
Russell Pell	SIRIC Chair	1998-2006
John Pettigrew	SIRIC Deputy Chair	1995-2000
Helen Reynolds	SIRIC Deputy Chair	2006-2011
Ann Roberts	SIRIC Community Member	2000-2006
Nick Roberts	SIRIC Community Member	2002-2006
Noel Russell	SIRIC Chair/Deputy Chair	1995-2000
Nick Ryan	SIRIC Community Member	2004-2011
George Trew	SIRIC Community Member	1995-1998
Gordon Weller	SIRIC Community Member	1995-1998
John Wenske	SIRIC Community Member	2008-2010
Geoff Witten (deceased)	SIRIC Community Member	1995-1998
Roger Wrigley	SIRIC Chair/Deputy Chair	1998-2000, 2006-2011

ACTIVITIES and ACHIEVEMENTS

Executive Team Report

Written by Carl Walters and Peter Howard, Shepparton Irrigation Region Implementation Committee and Rod McLennan, Goulburn Broken Catchment Management Authority

Implementation of the Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS) continues to progress despite the region enduring widely varying climatic conditions and changing funding priorities. Reduced commodity prices and an inability to meet community demand for drainage and therefore salinity control have impacted on the region.

The Victorian and Australian Governments approved \$49 million to the Sustainable Irrigation Program through various initiatives such as, Healthy Waterways, Large Scale River Restoration, Linking Farms, Salinity Infrastructure, Sustainable Irrigated Agricultural Land Management (SIALM), Victorian Water Trust – Water Smart Farms, Caring for Our Country and Natural Resources Investment Program and the On-Farm Irrigation Efficiency Program.

The emphasis again was to link implementation of the SIRCIS with the various modernisation programs, especially the Northern Victoria Irrigation Renewal Project (NVIRP) and the Farm Water Program, to optimise opportunities presented by changes to delivery systems.

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, NVIRP and most importantly the community. 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.

Irrigation Modernisation

Through NVIRP a \$2 billion works program is being undertaken to modernise Victoria's Foodbowl region by upgrading ageing irrigation infrastructure. An average of more than 800 gigalitres of water is being lost every year through leaks, system inefficiencies, evaporation and seepage.

Modernisation will improve efficiency and service to irrigators and will underpin future economic growth and regional prosperity. Modernisation will recover an

estimated 225 gigalitres of lost water by 2012. The water savings will be shared equally between irrigators, the environment and Melbourne. Modernisation will provide confidence for communities that are facing significant challenges because of the drought and uncertainty created by the draft Guide to the Murray-Darling Basin Plan and implications of Sustainable Diversion Limits

SIR IC has worked closely with NVIRP and other modernisation activities to ensure that water saving projects are consistent with and complementary to implementation of the SIRCIS.

In the latter stages of 2010-2011, significant efforts were devoted to developing the On-Farm Irrigation Efficiency Program Round 2 funding bid, locally known as the 'Farm Water Program', and the subsequent business case. The Farm Water Program started to roll out in 2010-2011. NVIRP approved \$16.4 million in September for 75 projects and the Australia Government approved \$21.1 million for 78 projects in November. As at 30 June 2011, 149 projects had been funded.

Works and operations - highlights

- Whole Farm Plans on 256 properties covering 21,388 hectares were completed, including 69 'revised modernised' plans, bringing the total number of whole farm plans under this incentive to 4,090 covering 283,636 hectares or 89.5 per cent of the irrigated area.
- Seven re-use systems draining 4,518 hectares were installed under the Farm Water Program, bringing the total number of reuse systems constructed with assistance from this scheme to 632 serving 40,384 hectares.
- No automatic irrigation systems were installed, but many are underway through the Farm Water Program. The total number of automatic irrigation systems constructed remains at 149, serving 8,710 hectares.
- Twenty-five landholders were supported to undertake environmental and tree growing projects. They fenced 18 kilometres of fencing helping protect 60 hectares of remnant vegetation, and enhanced 21 hectares.
- A total of 2.5 kilometres of fencing was erected to protect 440 hectares of remnant vegetation in Kanyapella Basin. Five hectares of open country was revegetated with the support of the Kanyapella-Koyuga Landcare Group. A four-week fox control program was conducted throughout the Basin helping reduce the fox population.

- Environmental site assessments completed across the Goulburn Murray Irrigation District for NVIRP comprised:
 - 1,245 assessments on meters and 133 on access to the meter sites
 - 139 assessments on channel regulators and 16 on access to the regulators
 - 177 connections' business cases; including 600 individual assessments (channel decommissioning, culverts, road crossings, subways, meters, regulators)
 - 6,079 field work hours.
- Highlights of the River Health and Wetland program included 41 hectares of revegetation, 5.0 kilometre of Lower Broken Creek (34 hectares direct seeding and 7.6 hectares of woody weed control and the reinstatement of 150 cubic metres of large woody debris (snags) in the Goulburn River below Toolamba.

Shepparton Irrigation Region Catchment Implementation Strategy Program reports

- Environment (including Biodiversity)
- Farm
- 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 Program and Surface Water Management Program 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.

Activities and achievements

Surface Water Management Program: Timmering Primary Surface Water Management System

A meeting at Corop on 25 November between Parks Victoria, Goulburn-Murray Water, Department of Primary Industries and landholders adjacent to Mansfield Swamp addressed some concerns over the operation and function of Timmering drain structures during the spring floods. Structures in the Timmering drain have been designed to divert flows (when desired) into Mansfield Swamp. The recent floods are the first time these structures have been seriously tested.

This was an opportunity to hear from landowners first-hand how the drain structures functioned over a wet spring, the impact on private land and the impact on Mansfield Swamp. It also helped inform landowners about how the drain supports Mansfield Swamp, while providing drainage service to irrigated farms. The issues raised as a result of the discussions will be followed up to ensure the drainage network achieves the best possible outcomes for both landowners and environmental assets.

Groundwater and Salt Management Program High Value Environmental Features bus trip

A bus trip to showcase some of the ongoing and completed works at the Millewa Nature Conservation Reserve and Kanyapella Basin was held on the 29th June. The trip included presentations by technical staff from Department of Primary Industries and Goulburn-Murray Water and also community representatives regarding managing social, groundwater and salinity impacts of the works. Twenty five community members were shown some of the significant environmental features of both Millewa and Kanyapella.



Attendees on the High Value Environmental Features Millewa – Kanyapella bus trip

Environmental and Tree Growing Projects

The Environmental and Tree Growing Projects provide advice to landholders throughout the Shepparton Irrigation Region relating to protection, enhancement and revegetation of native vegetation.

This year the Environment Project contributed to the protection of 39 hectares of remnant vegetation. Of this area, over 21 hectares were enhanced with new plantings. An additional 31 hectares of native vegetation was established. The protection, enhancement and establishment works required 5.6 kilometres of fence to be erected, 10,213 plants and 48.5 km of direct seeding. The Tree Growing Project completed 19 hectares of new plantings where 12.6 km of fence was erected and 17,029 plants were planted.

The Environmental and Tree Growing Project incentives were increased during 2010-2011 to more closely reflect the incentives offered in other parts of the Goulburn Broken Catchment. The new rates (applicable to all new incentives processed from 1st of July onwards) are \$8.00/m fence, \$3.00 /plant and \$366.66/km direct seeding.

Modernisation

Goulburn Murray Irrigation District:

Through aligning our service delivery with Northern Victoria Irrigation Renewal Project (NVIRP) the Environment Program successfully negotiated a contract with NVIRP for provision of Environmental Site Assessments (for four staff members) for works across the Goulburn Murray Irrigation District.

Environmental Site Assessment works for 2010-2011 were:

- 1,245 meter sites
- 133 meter site access
- 139 channel regulators
- 16 regulator access
- 177 connections business cases; including 600 individual assessments (channel decommissioning, culverts, road crossings, subways, meters, regulators)
- 6,079 field work hours

Wetland Management

The Environment Program provides services to partner agencies and farm businesses in the area of wetland management.

Achievements

Kanyapella Basin

The Kanyapella Basin Expression of Interest for funding through the Goulburn Broken Catchment Management Authority was successful. The project will be implemented over 2010-2011 and will see two inlet/control structures installed to assist with water management across the basin, fox control, revegetation and fencing, information signs erected and extension brochures developed.

The Koyuga Kanyapella Landcare Group conducted a tree planting day at Kanyapella Basin on 3rd October. Approximately three hectares of Black Box Woodland was planted by volunteers (1,300 plants). The work was funded by the Goulburn Broken Catchment Management Authority, through the Department of Primary Industries led Kanyapella Basin Steering Committee.

The Kanyapella Basin Steering Committee (facilitated by Department of Primary Industries), agreed to install fox bait stations and conduct a summer baiting program on Goulburn-Murray Water managed land at Kanyapella Basin. This expands the area controlled from approximately 500 hectares to 2,500 hectares and is part of a year round fox control strategy that includes an annual winter fox hunt managed by Field and Game Australia.

The four week fox baiting program was conducted from April 18th - May 18th. The contractors reported on the success of the baiting project to the steering committee meeting. A fox population survey prior to baiting estimated that Kanyapella Basin had approximately 200 foxes. Following the baiting program the estimated fox population has been reduced to approximately 22 foxes.

The significant rainfall events this year have resulted in increased volumes of surface water entering the Basin during December. High flows through the Tongala, Coram and Vyuna drainage networks, combined with the high Lower Goulburn River, have resulted in a greater area of flooding in the River Red Gum forest than occurred in September. Goulburn-Murray Water opened the Yambuna Creek structure again, as well as the inlet channels into Wildlife Bays 1 and 2 in the southern section of the Basin to maximise the flood event.



Flooding in Kanyapella Basin at the Tongala Primary Surface Water Management System outfall into Warrigal Creek.

There was 2.5km of new boundary fence constructed along Tehan Road in May and a cattle grid was also installed.

Gaynor Swamp Environmental Management Plan

The draft Gaynor Swamp Environmental Management Plan was presented to SIRTEC on 12 July and SIR IC on 30 July for comment. This document is undergoing its technical review process under the guidelines for the development of Environmental Management Plans in the Shepparton Irrigation Region.

Analysis of acoustic data

Professor Stuart Gage, Michigan State University, visited DPI Tatura on 24 November as part of a broader Australian visit. Professor Gage provided technical support and advice for a project to analyse two years of acoustic data collected from Reedy Swamp while it was

artificially flooded as a drought refuge in the Shepparton Irrigation Region between April 2008 and April 2010. The analysis will provide an assessment of the health of the Reedy Swamp ecosystem over time.

Biodiversity

Written by Steve Wilson, Goulburn Broken Catchment Management Authority

During 2010-2011 there was a suite of biodiversity-related activity across the Shepparton Irrigation Region. This included:

- Completion of the "Caring For Our Country" Multi-Regional Woodlands projects which has been running for the past two years; over 600ha of woodlands sites were protected in the past 12 months;
- The Caring For Our Country Biodiversity Incentives – Woodlands project is now active. The Department of Primary Industries is delivering the fencing and revegetation component and Department of Sustainability and Environment is driving the Bush Returns element. Through a Woodlands tender process, sites will be sourced across the catchment including the Shepparton Irrigation Region. This project will run through to June 2013; which is when the current "Caring For Country" project cycle ceases;
- The long standing Superb Parrot Project continues to deliver good on-ground revegetation works with 25 hectares of revegetation occurring in the past 12 months;
- Support to our local community groups that deliver good on-ground community outcomes at a local level such as activities by the Whroo Goldfields Catchment Management Network in the Goldfields area of the Shepparton Irrigation Region, coupled with the Goulburn Murray Landcare Network.

Permanent Habitat Protection (Trust for Nature)

Trust for Nature continues to work in the Shepparton Irrigation Region seeking permanent protection of remnant vegetation through conservation covenants.

Farm Program

Written by Rabi Maskey, Department of Primary Industries

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

Activities and achievements

Whole Farm Plan Project

There has been a high number of Whole Farm Plans prepared across all areas of the Shepparton Irrigation Region in the 2010-2011 year with many landowners developing new or updating existing plans to design on-farm irrigation delivery in line with Goulburn-Murray Water upgraded infrastructure.

A total of 256 Whole Farm Plans were completed covering an area of 21,388 hectares during 2010-11. This included the preparation of 69 modernised existing Whole Farm Plans covering 6,805 hectares. These modernised plans were prepared in response to modernisation activities on properties where a Whole Farm Plan had been prepared previously.

Incentives totalling \$1,492,800 (excluding GST) were paid to landowners for preparing their Whole Farm Plans. Landowners paid \$ 304,483, for the preparation of these plans. A total of 70 incentives were paid to landowners for having their plans certified by Local Government, resulting in 27 per cent of all plans completed in 2010-2011.

Farm Water Program

The Department of Primary Industries, through the Northern Rivers Irrigation team, helped in the delivery of the first and second rounds of the Farm Water Program during 2010-2011 with GB CMA. The Farm Water Program is the Australian Government funded program supporting irrigators in implementing on-farm infrastructure projects to improve the efficiency and productivity of water use and management.

In Round One, the team assisted 150 landowners to prepare Farm Water Program funding applications. The process included verifying the eligibility of the landowners for the program, calculating the water savings generated by proposed activities and assisting in completing the comprehensive application form.

Irrigation area	No	Area (ha)	Grant \$	Total cost \$	Plan Cert
Murray Valley	55	6,095	379,229	452,823	15
Murray Valley: Horticulture	9	647	141,783	166,804	0
Rochester - SIR-GB	21	1,822	114,821	139,229	7
Rochester - SIR-NC	11	744	63,435	74,824	7
Central Goulburn	46	2,933	190,833	235,780	12
Central Goulburn: Horticulture	9	379	72,812	85,661	1
Shepparton	31	1,830	128,443	156,749	19
Shepparton: Horticulture	5	134	29,808	35,068	0
Diversions	0	0	-	-	0
Totals	187	14,583	1,121,164	1,346,937	61

Whole Farm Plan Totals – Irrigation Area, 30 June 2011

Irrigation area	No	Area (ha)	Grant \$	Total cost \$	Plan Cert
Murray Valley	33	4044	175,480	213,971	3
Rochester - SIR-GB	2	354	18,095	21,288	0
Rochester - SIR-NC	2	466	12,937	15,220	0
Central Goulburn	19	1354	89,282	110,477	2
Shepparton	13	587	75,842	89,389	4
Totals	69	6805	371,636.35	450,345.95	9

Modernised Whole Farm Plans – Irrigation Area, 30 June 2011

In January 2011 the Federal Government announced Round Two of the Farm Water Program. The demand for the program has been very high with over 300 "Expression of Intent" forms submitted. A ballot process was used to select 91 projects as 'successful' and another 63 were selected as reserve projects. The team helped develop detailed application for 123 projects, 23 projects were put on hold and 8 projects have been withdrawn.

In order to promote the program, the team was also involved in running 15 Farm Water Program Round Two information sessions across the Goulburn Murray Irrigation District and the North East. These sessions were designed to update landowners and service providers on the status of the Farm Water Program Round Two, provide information on specific irrigation technologies, identify economic considerations which should be addressed prior to participating in the Farm Water Program and provide an opportunity for landowners to discuss any potential projects.

Department of Primary Industries prepared information notes on different forms of irrigation technology. These were prepared for drainage reuse systems, pipes and riser systems, centre pivot and lateral move sprinkler systems, surface irrigation automation systems and sub-surface drip systems. Landowners participating in Farm Water Program Round Two were able to use these information notes as part of their considerations before adopting a particular technology on their farms.

Evaluation of the Farm Water Program

An evaluation report has been prepared focusing on Department of Primary Industry processes within the Farm Water Program. The results are presented in a report entitled 'Review of Round 1 of the Farm Water Program: Department of Primary Industries Processes'.

Similarly, a series of semi-structured interviews were used to seek feedback from landowners as to their perceptions of how Round One of the Farm Water Program was implemented. The results are presented in a report entitled 'Landowner Perceptions of the Effectiveness of the Farm Water Program; round one implementation process'.

Farm Services Victoria Award

The Department of Primary Industries Northern Rivers Irrigation team won the Customer Service category in the Department of Primary Industries Farm Services Victoria Awards in 2010. The award was presented for the work that the team had carried out in the delivery of the Farm Water Program.

Surface Water Management Program

Written by Neil McLeod, 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

Goulburn-Murray Water delivered \$816,735 of surface drainage works, funded by the Goulburn Broken and North Central Catchment Management Authorities.

These works included work on Mosquito Drain 40 south of Tatura, Stanhope Depression Primary Surface Water Management System west of Stanhope and the start of the Deakin 16 Extension east of Stanhope. Goulburn-Murray Water also managed the construction of the Mosquito 8/25P Community Surface Water Management System at Byrneside.

Goulburn-Murray Water provided general drainage support and responses to several ministerial enquiries following heavy rain and floods at the start of 2011. Goulburn-Murray Water provided advice to the Northern Victoria Irrigation Renewal Project (NVIRP), through the Connections Environmental Infrastructure Committee, in relation to asset rationalisation and supply of water to environmental features.

Irrigation Drainage Memorandum of Understanding

The revised Irrigation Drainage Memorandum of Understanding was signed by partner organisations the North Central and Goulburn Broken CMAs, Goulburn-Murray Water, Environment Protection Authority, Department of Primary Industries and Department of Sustainability and Environment.

Wetland Reports and Works

The irrigation infrastructure around eight wetlands was assessed for its current and possible future ability to supply environmental water with the information to be presented in detailed reports to the GB CMA.

Whole Farm Plan Referrals

Whole Farm Plans are referred to Goulburn-Murray Water by the local shires under the Planning and Environment Act. Goulburn-Murray Water responded to 117 whole farm plans which were referred by the shires for assessment of their impact on Goulburn-Murray Water assets and drainage flows.

Community Surface Water Management Incentives

Targets

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

Progress

- Initiation of Community Surface Water Management Systems
 - The Muckatah 19P and 21P both began the initiation process during 2010-2011. Interest was expressed by landowners following heavy rainfall in early 2011.
- Survey and Design of Community Surface Water Management Systems completed or in progress:
 - Survey and Design completed for the Muckatah 22P, 18P and 4/8P
 - The final Survey and Design process continued for the Muckatah 2/3, 3/8 with plans to be finalised early 2011-12.
- Construction of Community Surface Water Management Systems:
 - Construction of the Mosquito 8/25 Community Surface Water Management System was completed. This system is 1.4 km in length and services 5 landowners.

Policy implementation

- The Community Surface Water Management Program completed Phase II of the Muckatah Scoping Study with a survey and information on the program sent to 70 landholders in the catchment. A 20 per cent response rate was achieved for the survey which did not indicate significant support for new Community Surface Water Management systems. However since this work was completed the catchment has received significant rainfall and as a result two new systems are currently completing the initiation phase with hope that they will progress to Survey and Design during 2011-2012.

Groundwater and Salt Management Program

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

Program Goal: To work with and unite community and all government agency stakeholders to provide adaptive groundwater and salt management services which support sustainable agricultural practices, foster viable communities and improve key environmental assets across the Shepparton Irrigation Region.

Team Leader Report

The past year has seen a return to wetter conditions which has again highlighted the significant risks associated with flooding, water logging, high water tables and salinity. The retention of Goulburn-Murray Water technical capacity in these areas greatly assisted in the response to requests for information from the community and government relating to the flooding and drainage requirements in the region. The assessment and communication of the groundwater response to the wetter conditions by Goulburn-Murray Water staff has been instrumental in raising stakeholder awareness of the re-emergence of salinity risk.

In these challenging times, the strategic approach and planning within the Groundwater and Salt Management Program enabled the program to be in a position to respond to the above-average rainfall observed over the past year. An example of this is the salt and water balance project being led by Goulburn-Murray Water to consider the combined impacts of variable climate and reduced recharge resulting from the transfer of water entitlement and the modernisation of farm and regional irrigation infrastructure. This detailed planning improves understanding of the processes occurring within our region and assists in the development of appropriate adaptive management strategies and tools to minimise the impact irrigation has on farm enterprises and the environment.

Activities and achievements

Public Groundwater Pumps

Due to the continuation of drought conditions, the public salinity control groundwater pumping program continued to consolidate outstanding works with no new works initiated. A total of 48 public salinity control groundwater pumps now protect more than 9,800 hectares.

Private Groundwater Pumps

Demand for the Private Groundwater Pumping Program in both the Farm Exploratory Drilling Service (FEDS) and Capital Grants Programs was reduced in 2010-2011 due to funding constraints. The return to wetter conditions also reduced landholder need to seek new sources of water. This saw the pasture FEDS complete six investigations with two being declared successful and four unsuccessful. There were four investigations still in progress and 15 properties on the waiting list.

There was no demand for horticulture FEDS investigations.

Capital Grants for Groundwater and Salt Management

No new groundwater pumps were installed or upgraded under the pasture private groundwater pumping program in 2010-2011 due to the wetter conditions experienced as landholders were reluctant to proceed with works. The cumulative total of pumps remains at 379 which include 302 new pumps and 77 existing pumps upgraded.

The overall Plan targets to the end of 2010-2011 were for 303 new installations and 71 upgrades to protect approximately 37,000 ha. The cumulative area protected from the works to date is estimated to be around 41,000 ha.

There are three new pumps currently in the process of being installed and no pumps in the process of being upgraded.

Strategic Plan support

The Groundwater and Salt Management Program Research & Investigation Strategic Plan Annual Report for 2009-2010 was produced. Management and support were provided as required. Significant effort and resources have been directed to the 'Salt & Water Balance Project' which was identified as the highest priority project resulting from the reprioritisation of the Research & Investigation Strategic Plan.

Strategic Plan implementation

The key outputs for 2010-2011 were:

- Eight management and 16 implementation projects being progressed over the 2010-2011 financial year. This included:
 - Five new projects being brought into the program for implementation based on 2010-2011 prioritisation.
 - Two implementation projects were completed (one as it became redundant). These two projects are:

- Project GI03 014 "Assessment of selected chemical elements and compounds in shallow SIR groundwater" (completed), and
- Project GG10 001 "Optimise the opportunities for the GSMP as part of the CMA reorganisation" (removed from program).
- One management project was completed. "Management of Consolidated SIR Salt and Water Balance Projects" was removed from the 2010-2011 Program as Projects GG10 008 "Water Balance Changes in the SIR" and GG09 002 "Investigation of salt mobilisation processes for various climate change scenarios" were combined into Project GG10 002 "SIR Salt and Water Balance". Incurred management costs associated with this project were included as one expenditure figure under the implementation component of the 2010-2011 Research & Investigation Program.

Winter/Spring salt disposal management

Salt disposal from private shallow groundwater pumps was terminated in 2006-2007. The process to remove the impact of private pump winter disposal from the Murray Darling Basin Authority Basin Salinity Management Plan Register has been submitted by Victoria and the Murray Darling Basin Authority has undertaken a peer review of the request.

Approval of the review by Murray Darling Basin Authority will see the salinity impact of works within the Shepparton Irrigation Region reduce to 1.3 EC debit based on implementation of works to 2007-2008.

Management and 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 committees and working groups
- Input to funding bids and various forms of annual reporting requirements (eg: GB CMA, SIRCIS, 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 Drainage Program (Moira, Campaspe and City of Greater Shepparton).

Waterways Program

Written by Mark Turner, Goulburn Broken Catchment Management Authority

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

The Goulburn Broken Catchment received above average rainfall for most of 2010-2011, with widespread flooding in September and December and in some rivers during January and February. The associated flows provided all environmental flow components for the Catchment rivers, connecting the floodplains and their wetlands to the river channel for the first time in many years.

A total of 211.2 gigalitres of the Environmental Water Allocation was released over six months to manage low dissolved oxygen levels in the Broken Creek and lower Goulburn River, to maintain minimum flows in the lower Goulburn River, and to ensure success of waterbird breeding events in the Barmah-Millewa Forest. Minimum flows in the Goulburn and Broken Rivers were reduced under qualification of rights from 1 July 2010 and returned to normal levels in August 2010 following high inflows and increased storage levels. As a result of high flows inundating the lower Goulburn River floodplain in December 2010 and poor quality water from the mid-catchment, dissolved oxygen levels at McCoys Bridge fell to between 0.5 and 0 milligrams per litre, resulting in fish deaths and crayfish leaving the water. The same problems were widespread in the Murray system.

Environmental water was deployed in the Goulburn River after the flood to speed recovery of river water quality, and it was deployed again after the January flood caused a second, but less severe, low dissolved oxygen event.

A total of 428 gigalitres of Environmental Water was delivered to Barmah-Millewa Forest over six months from the Victorian (184.5 gigalitres) and New South Wales shares of the Barmah-Millewa and The Living Murray environmental water accounts. The releases were made to maintain continuous wetland flooding by bridging natural flood peaks in the River Murray. The flooding stimulated over 40 waterbird species to breed, including the threatened Brolga, Eastern Great Egret, Intermediate Egret, Little Egret, Rufous Night Heron, Australasian Bittern and Musk Duck.

With the assistance of partner organisations, the GB CMA has delivered and managed environmental water since early 2000 to maintain and enhance ecological values of rivers, floodplains and wetlands.

The Wetland Working Group continued to provide community and agency input to the management of wetlands in the catchment. GB CMA supported development of an environmental watering plan for Broken Creek on behalf of NVIRP.

The Goulburn Broken regional refuge zonation project was commissioned to assist in identifying important refuge for fish in a drying climate. Fish surveys assessed the impact of flooding and blackwater in the Goulburn River.

Support continued for the Victorian Environmental Flow Monitoring and Assessment Program (VEFMAP) undertaken across the State at eight priority waterways, with work in this region focused on the Broken and Goulburn Rivers, and the Broken Creek.

Works continued at Tahbilk Wetland to secure and protect the Eel-tailed Catfish population.

GB CMA is a partner and project leader in an eWater Cooperative Research Centre project investigating how off-channel habitats might be affected under various water supply scenarios.

Environmental watering plans, including recommendations on water management, were prepared for Black Swamp, Doctors Swamp, Kinnairds Swamp, Reedy Swamp and One Tree and Two Tree Swamps (combined) following receipt of funding from the State Government.

The scoping of works to help deliver environmental water to key wetlands in the Shepparton Irrigation Region continued. The ecological response of waterbirds, frogs and aquatic vegetation to flooding was formally monitored at key wetlands across the catchment. Fish communities supported by lower Goulburn River floodplain wetlands were investigated to inform delivery of environmental flows.

Riparian and in-stream habitat and channel form

Significant effort and resources have been invested in recovering from damage along river frontages caused by the February 2009 Black Saturday bushfires and the series of unseasonal floods across the catchment from September 2010 to February 2011. The GB CMA partnered the community and government agencies in a range of natural resource and community based activities,

including fencing, revegetation, pest plant and animal control, sediment control, water quality monitoring and employment.

Works to improve instream habitat were investigated and commissioned on the Goulburn River and Broken Creek. Key monitoring projects to assess the impact of works included:

- ecological effects of the Tungamah pipeline on ephemeral systems
- the effects of the Lake Mokoan decommissioning on turbidity and fish communities in the Broken River
- the contribution of slackwater habitats to instream diversity in the Broken River
- riparian trend assessment (application of the State-wide rapid appraisal method at Large Scale River Restoration sites on the Goulburn River).

A program of works were funded by the Victorian Government (Large Scale River Restoration project, Fire and Flood Recovery Programs and Base Program) and the Australian Government (Caring for Our Country Program).

The statewide Securing Priority Riparian Areas project, which began in January 2011 and continues into 2011-2012, aims to improve management through better extension and engagement, more rigorous management agreements, and increased compliance with Crown water frontage licence conditions.

The GB CMA and partner agencies attracted funds to address 'Weeds of National Significance' in the Barmah Wetland and in spring wetlands of the upper Goulburn River catchment. These projects are supported by key regional Traditional Owner Groups, the Yorta Yorta Nations Aboriginal Corporation and the Taungurung Clans Aboriginal Corporation.

Other collaborative activities include:

- support of Department of Primary Industries and partners in developing the Goulburn Broken Fisheries Management Plan
- the launch of the 'Fish of the GB CMA Region' booklet during Native Fish Awareness Week, an initiative under Murray-Darling Basin Authority's Native Fish Strategy
- major input and resources into the Greater Shepparton City Council RiverConnect project.

Flooding reduced opportunities to help protect the ecological character of the Barmah-Millewa Forest via a Caring for Our Country initiative being undertaken with the Yorta Yorta Nations Aboriginal Corporation.

The GB CMA started planning for the region's Flood Employment Program after the Victorian Government announced financial support to employ primary producers and rural workers in fencing and repairing riparian areas, cleaning up flood debris and rubbish and controlling weeds, which will complement the erosion and public asset protection program that received support earlier in the year.

Instream habitat of the Broken Creek between Nathalia and Numurkah was assessed by Arthur Rylah Institute and plans for improving instream diversity were prepared for when site and climatic conditions improve.

The status of fish was reported in the Lower Goulburn Fish Communities project, part of a long term monitoring program being undertaken by Arthur Rylah Institute, with successful breeding of perch species, recorded for the first time in the monitoring program's history, thought to be linked to flooding and connection of the river to the floodplain for the first time in many years.

Impacts of turbidity on native fish communities in the Broken River are being monitored to assess the effects of decommissioning Lake Mokoan.

A PIT (Passive Integrated Transponder) tag reader was manufactured for the Shepparton weir to assess the migration and movement of native fish, including Murray Cod and Trout Cod, although high river flows meant that it could not be installed.

Large wood is being installed in the Broken River and the effect on native fish is being monitored.

Water quality (nutrients) in rivers and streams

In 2010-2011, the focus of water quality management shifted to the impact of floods on instream water quality, a stark contrast to the preceding years of focusing on dry inflow conditions and catastrophic fire events.

Research and investigations continued, including real-time monitoring and assessment of fires and floods on instream water quality. The frequency and type of monitoring within the Shepparton Irrigation Region was reviewed, resulting in changes that allow for low flow periods in particular and to create more efficient data gathering, while maintaining the integrity of records built up over many years.

Regional partners continued to actively participate in regional water quality forums. The GB CMA continued its involvement in the North East Water Quality Monitoring

Network, which merged with the North West Group in mid-year to form the Northern Partnership.

The River and Contingency Planning Group played important roles in flooding, blackwater and low dissolved oxygen events. The Goulburn Broken Waterwatch program continued to be highly successful in educating and providing water quality data and Waterwatch community actions were increasingly linked to the Goulburn Broken Regional River Health Strategy priorities.

Real-time, website accessible, water quality monitoring of the lower Broken Creek system and the lower Goulburn River provided important information in responding to blackwater and low dissolved oxygen events.

The GB CMA, Goulburn-Murray Water, Goulburn Valley Water, the Environment Protection Authority, Department of Primary Industries and Department of Sustainability and Environment are represented on the Goulburn Broken Drought Water and River Contingency Planning Group, which plans for potential hazards as a result of drought and low flows.

Collection of data on nutrient load volumes was hampered by extensive flooding throughout the year. Damage to monitoring sites and backflow effects at gauging sites within the Shepparton Irrigation Region required more detailed assessment than usual, but flow volumes following the rains were significant. The effect of our water quality improvement programs over the years will be apparent once we complete the analysis.

An evaluation of the requirements of water quality monitoring within the Goulburn Broken Catchment was commissioned in partnership with Goulburn-Murray Water and North Central CMA. A further State-commissioned project, managed by the GB CMA, is looking at the impact of climate change on aquatic ecosystem and river values, with the focus on water quality, which will increase our understanding of potential impacts so that priorities can be identified.

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

Water Monitoring Review

A review of water monitoring programs was undertaken to provide a better understanding of the groundwater and surface water monitoring programs within both the GB and North Central CMA regions to assist in improving effectiveness and efficiencies of the water monitoring programs.

The project scope was to collate monitoring data relevant to surface and groundwater monitoring in the North Central and GB CMA regions. Monitoring site information was collated and monitoring program information collected.

The final report included:

- an inventory of current monitoring, including funding sources and program costs, purpose of monitoring programs and site specific details;
- documentation of how the current water monitoring programs fit into the Monitoring, Evaluation and Reporting (MER) process for the respective CMA's and State Government reporting requirements;
- an "Access Database" as a tool for accessing collated information.

Preliminary Action plans have also been prepared for all water monitoring programs to assist program managers improve the monitoring programs. The aspects to be considered by program managers during the implementation of the program action plans are:

- refine the recommendations based on information obtained in stage 1;
- update program understanding as a result of program manager reviews of respective monitoring programs;
- develop criteria for site assessment and applicability;
- identify potential overlaps between and within various programs;

- identify opportunities for changing monitoring, particularly in regard to avoiding redundancy, improved efficiency (assess frequency and spatial extent) and therefore cost savings. The risk to catchment management objectives from changing monitoring programs will be highlighted;
- identify and document known critical gaps in existing monitoring and identify key knowledge gaps to assist in deciding where additional changes can be made.

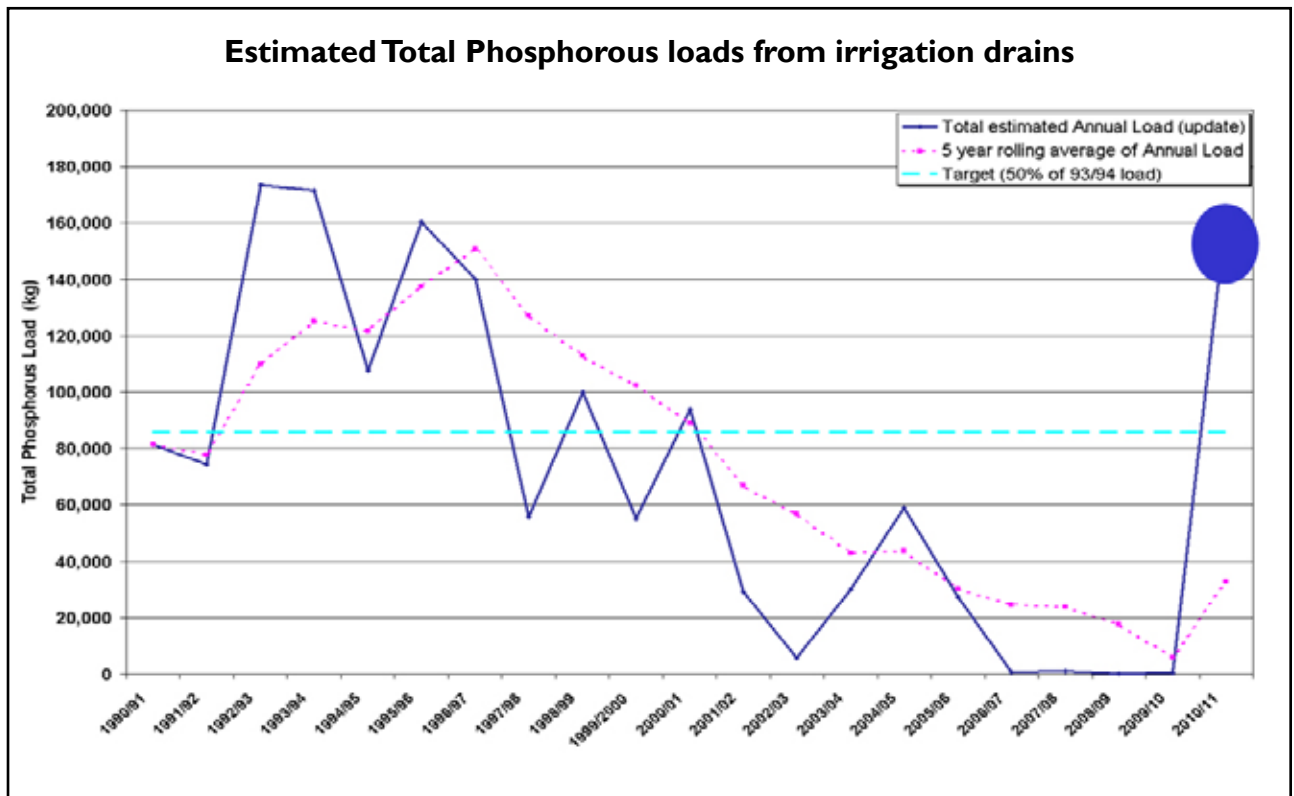
Preliminary analysis of 2010-2011 data indicates flows and nutrient loads were similar to the mid-1990s, a massive increase on recent years. While the 5-year rolling average, phosphorus load rose, it was still well below the long-term target (refer diagram following).

Analysis of the previous year's data was undertaken, published and reported to stakeholders.

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.

High rainfall, up to three times more than the average, caused extended periods of flooding across the region's waterways, which in turn impacted upon the reliability of data from many drain monitoring sites. This presents some challenges to infill flow data to enable nutrient load calculations.



Estimated Total Phosphorous loads from irrigation drains

Groundwater

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

- Samples analysed for nutrients, suspended solids, pH, turbidity, etc. Chlorophyll-A monitoring continued at Deakin Drain and MV Drain 6 sites. Data management
- Report prepared for 2009-2010 review and analysis

Irrigation Drain Management

Targets

- Coordinate project
- Fortnightly water sampling & field measurements at 15 sites
- Laboratory analysis of all samples
- Analyse and report on 2009-2010 monitoring data.

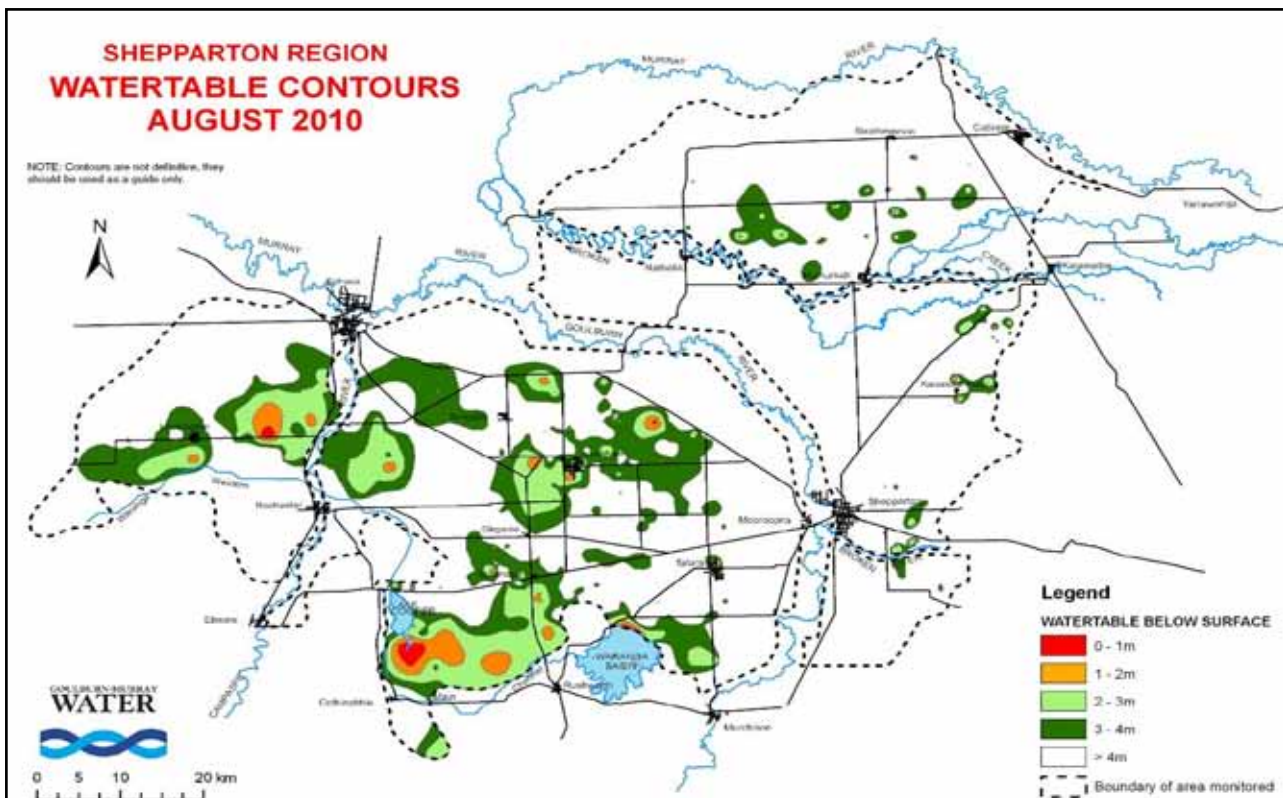
Drain flow leaving the Shepparton Irrigation Region in 2010-2011 was at least 30 per cent of water delivered into the Shepparton Irrigation Region. It was expected that most of the drain flow was local rainfall runoff.

Phosphorus export from drains in 2009-2010 was similar to the previous three years.

Progress

- Quarterly calculation and reporting of phosphorus loads against strategy targets continued during 2010-2011. Coordination of analysis reports. Manage contractors and database. Periodic data reviews and checks
- Water samples and field measurements taken from drains fortnightly

The 5-year rolling average Total Phosphorous load continued to decline and remained well below the target value for reduction of nutrient loads from irrigation drains (see figure).



Shepparton Region August watertable contours 2010

Program Support

Written by Terry Batey, Department of Primary Industries, Rachael Spokes, Goulburn Broken Catchment Management Authority and James Burkitt, Goulburn-Murray Water.

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

Salinity Program Management, Department of Primary Industries

In April 2009, the Department of Primary Industries-Farm Services Victoria released the Better Services to Farmers Strategy. Following its release, Farm Services Victoria, after consultation with key stakeholders and industry, restructured its business to more closely align with an Analysis-Design-Delivery operating model. The restructure, taking effect from November 2010 saw Sustainable Irrigated Landscapes-Goulburn Broken project split across industry branches including Dairy, Horticulture and Community and Natural Resource Services.

Within the Dairy Services Branch, irrigation, water-use efficiency and whole farm planning projects were consolidated while environmental, community surface water management and broader support functions were located in different programs.

Multicultural services were located in the Horticulture Services Branch and Landcare moved into the Community and Natural Resource Services Branch.

During the restructure and change management, our program was able to deliver the first round of the Australian Government On-Farm Irrigation Efficiency Program (Farm Water Program) and secure funding from the Northern Victoria Irrigation Renewal Project for conducting Environmental Site Assessments.

Agricultural and natural emergencies dominated 2010-2011 with locusts, mice, fruit fly and severe flooding across northern Victoria in December 2010 and January 2011.

Our engagement with Culturally and Linguistically Diverse farming communities following severe frosts concluded. This was a two year project working with Ethnic Councils and horticulture industry groups in areas including Sunraysia, Werribee and the Goulburn Valley.

Goulburn-Murray Water Program Management

Staff provided support to the Shepparton Irrigation Region Implementation Committee by ensuring the coordination of many functions including management of existing works and delivery of strategic planning projects.

Staff also supported promotion and communication of project 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.

SIR IC attracted an integrated budget of close to \$35 million in 2010-2011 for the Environmental, Farm, Surface Water, Groundwater and Salt Management programs. 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 Management Plan in 1989, and has been embraced by the current, broader, Regional Catchment Strategy introduced by the Goulburn-Broken Catchment Management Authority.

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

SIR IC allocated \$19,638 of grants to schools, Landcare and community groups to undertake community awareness projects that increase awareness and understanding of salinity, biodiversity, water quality, pest plants and animals and climate change. These grants will be distributed in the 2010-2011 financial year.

Municipal Coordination

A formal link 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 include:

- continued engagement with the Greater Shepparton City Council, Shire of Campaspe, and Moira Shire Council through meetings with each Council, council briefings and Municipal Catchment Coordinator Steering Committee meetings;
- support for local government funding applications to the Strengthening Basin Communities Program and, conversely, local government supported the GB CMA On-Farm Irrigation Efficiency Program (Farm Water Program) funding bid;
- input into various local government plans including Greater Shepparton City Council's RiverConnect Strategic Plan, its Kialla Landfill Rehabilitation Concept Plan and its Shepparton South East Growth Corridor Development Plan and the Shire of Campaspe Roadside Conservation Strategy.



Field trips are regularly conducted by program staff

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.

Activities and achievements

Linking Spatial Sciences to Extension – Shepparton Geographic Information System services

Background

The Shepparton Geographic Information System (GIS) project is a key project that supports the Dairy Services Northern Rivers Irrigation (Eastern) Group, Surface Water Management Group and Sustainability Services (Eastern) Group in the implementation, monitoring and review of the SIR CIS. The objectives of this project are:

- to improve information management, leading to better land and water management policy decisions, more effective targeting of effort and expenditure, and improved effectiveness monitoring;
- to develop a strategic suite of datasets, information management tools and expertise applied to the range of land and water management and associated issues.

Project activities

The project takes a structured approach to the delivery of corporate and local spatial information to the SIRLWMP, the components of which are training, technical support, information tools development, map production and information delivery.

Achievements and implications

- Deployment of an upgraded Geographic Information Systems (GIS), supporting spatial data
- GIS training
- Farm Program 2010-2011 Incentives capture
- Compilation and reporting of farm program activities across the entire Goulburn Murray Irrigation District

The Spatial Information Sciences group has created a user friendly GIS interface that has allowed staff to successfully use a GIS to make informed decisions and spatial products for farm planning and management. This is delivered with a user specific training course, deployment of GIS and support system.

The updated interface has been instrumental in the delivery of the Water Smart Farms Project. Allowing easy access to assess field sites before going into the field,

streamline information for land-holder visits and calculate incentive data.

Irrigation in dry conditions

Background

In the past decade a dry climate, water buy-back and reductions in irrigation water allocations have driven widespread change from perennial pasture to farming systems based on annuals, with consequent increased production costs for the dairy industry. The performance and efficiency of border-check irrigation is well understood under the conditions that prevailed in the 1990s – perennial pasture, winter rainfall excess, saturated subsoils, high watertables and legacy irrigation infrastructure. How well bordercheck systems perform under current conditions is less certain.

Our existing knowledge needs to be validated under current conditions and, if necessary, modified. The objectives for this project are:

- knowledge of water losses from surface irrigation under changed climatic conditions, the current range of soil types and irrigated crops and modernised irrigation delivery system in northern Victoria;
- development of appropriate guidelines for farm irrigation design, irrigation system selection and management on major soil types under dry conditions, annual and perennial crops.

Project activities

Fast flow surface irrigation is being investigated by measurement of surface irrigation events throughout the irrigation season on paired “high” and “normal best practice” irrigation bays on a representative range of soil types and crops. Surface irrigation models are being used to assess the efficiency of irrigations, and to develop best practice guidelines for border-check irrigation flow rate and duration under different soil types, crops and moisture conditions.

Irrigations were measured on paired bays throughout in the 2010-2011 irrigation season at two sites – perennial pasture on a medium soil (Lemnos loam) near Kyabram, and lucerne on a light soil (Cobram loam) near Katunga. Surface irrigation modelling could not be applied to the Kyabram site because of the use of spinner cuts down the entire length of irrigation bays. Modelling has been used at the Katunga site to evaluate and optimise irrigation performance.

Results

At the Kyabram site, soil moisture measurements throughout the season revealed an impermeable subsoil below about 0.6 m. Irrigations in both the high flow and

low flow bay fully replenished soil moisture above this depth and had no impact on soil moisture below it. The advantage of high flow at this site was therefore limited to reductions in the duration of irrigations, reducing labour costs.

At the Katunga site, surface irrigation modelling has been used to examine the trade-offs between soil moisture deficit, irrigation flow rate and infiltration depth. Under the soil moisture conditions that prevailed at the site prior to each irrigation, an irrigation depth of about 80 mm could be applied using high flow while achieving good uniformity and limiting runoff. Attempting to apply lighter irrigations using even higher flow rates quickly compromised irrigation uniformity. The low irrigation flow rate provided an irrigation depth of 110 mm, with good uniformity and limited runoff. High flow could not apply this depth without significant runoff.

Achievements and implications

The data for the last season shows that adoption of higher flow rate irrigation may not necessarily improve irrigation efficiency, which is also influenced by soil properties, site layout and required irrigation depth. Efficient irrigation at higher flow rates requires concurrent improvements in irrigation management, supported by automation, improved scheduling, and surface drainage and reuse systems of adequate capacity.

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

Background

The management of salt is an integral part of sustainable irrigated agriculture in Northern Victoria. This project, the only one of its type in the Shepparton Irrigation Region, provides a substantial record of the effects of groundwater pumping from pre-drought times (1998) to the present. It measures groundwater levels and salinity both inside and out of the “area of influence” of a groundwater pump. It also records regular (including in 2010) soil salinity, pH, and cation data from the same area.

In the past, landholders have been encouraged to manage their salt by exporting it ‘off farm’ via the many drains and rivers that exit the Shepparton Irrigation Region into the River Murray. This has resulted in significant increases in the salt load leaving the region which impacts on downstream water users. To reduce the amount of salt that leaves the Shepparton Irrigation Region, systems that retain salt ‘on farm’, such as the one employed at this site are required.

This project developed, established and examined a system that employs a conventional groundwater pump with partial conjunctive re-use and disposal of the pumped groundwater to a salt tolerant tree plantation.

Project activities

A groundwater pump was installed to lower watertables to stop salt accumulating in the root-zone and allow leaching. The pumped water was disposed of in two ways. About 60 percent of the pumped groundwater was disposed of to a 4 hectare mixed species, salt tolerant, tree plantation which was established in an already salt affected area. The remaining 40 percent was conjunctively re-used (mixed with fresh channel water) across the property on pastures and crops within the 'area of influence' of the groundwater pump

Achievements and implications

A number of major changes in groundwater levels and soil salinities have occurred at the site over the 13 years of Study. Initial watertable levels across the property were around 1 metre (1998 to 2001) from this time these levels declined to below 3 metres across most of the study area 2006 to 2009. This decline was due to the groundwater pumping and the continuing drought. In early 2010 water levels began to rapidly rise to currently be about 1.5 to 2 meters below the surface. This has primarily been due to a large increase in rainfall over the past 18 months.

Soil salinities have slowly declined across the salt affected areas of the property, with the remainder of the property, except in the tree block staying relatively constant. In the tree block soil salinities have increased as a result of saline irrigation.

Groundwater salinities have changed little, except under the trees where groundwater salinity has increased from 15dS/m to 20dS/m. The increase in soil salinity has affected tree survival and growth rates amongst the species planted, with the eucalypt (*Eucalyptus occidentalis*) significantly outperforming both species of *Casuarina* (*C. glauca* & *C. cunninghamiana*) trialled at the site.

The overall results of the study indicate that the "Scobie" system of salt management is a viable system for the management of high salinity and high watertable locations where off-site disposal of groundwater is not preferred or available. From a regional perspective, this system provides a way to minimise the loss of salt downstream. It also offers a system of salinity control to farms that have higher groundwater salinities, as well as having measurable habitat, biodiversity, carbon capture and aesthetic benefits.

Service Design Research

Background

DPI's Service Design Research (SDR) design frameworks to help find answers to five enduring problems:

1. What is the best use of government resources to deliver on the given policy objective?
2. What policy instruments would be best suited to achieve the desired policy objective?
3. What are landholders likely to do and why?
4. What are the consequences for the organisations involved in implementation?
5. What management tools would support organisations to achieve implementation?

Project activities

The SDR Group works in partnership with a range of clients who are responsible for the implementation of policy in regional Victoria. Our long term clients include Catchment Management Authorities, other government departments (such as DSE and DPI) and regional bodies involved in natural resource management and agricultural policy.

The group also conducts a collaborative research program with organisations such as Environment Waikato in New Zealand, and the University of New England. These collaborations provide opportunities to develop comparative policy case studies and further refine our frameworks.

Achievements and implications

Understanding landholder behaviour and organisational factors enables programs to be designed and resourced effectively. This ensures effective implementation and delivery of policy objectives.

Implementing policy objectives

- Improving water use efficiency,
- Modernisation of irrigation infrastructure,
- Assisting primary producers adapt to climate change.

Landholder behaviour

- Mapping water trade behaviour,

Organisational behaviour

- Organisational relationships to implement irrigation policy in the GB Shepparton Irrigation Region
- Role of partnerships in the Linking Farm and Catchment initiative in regard to modernisations
- Organisational issues in the implementation of new or modified programs including irrigation incentive programs, bush tender and bush broker, and water quality and water policy.

APPENDICES

Notes. Outputs achieved 2010-2011

- i Includes 59 ha of remnant protection from the Mega Murray catchment wide project.
- ii In 2010-11, the area achieved was established from the area that has been put under Whole Farm Plan for the year including modernised Whole Farm Plans and achievements from the Farm Water Program of 297 hectares.
- iii Surface water management enables the removal of excess rainfall run-off from irrigated lands, alleviating soil salinity. Nutrient loads collected by the drains are managed through drainage reuse and management plans, and monitored against the resource condition target.
- iv Fencing and laneways are relocated along primary drains to control stock. Drains are also hydromulched and seeded to provide vegetative cover on bare batters. 6 kilometres were constructed during 2009-10 and 3 kilometres were prepared for handover to Goulburn-Murray Water for it to manage. Handed-over drains not accounted for in 2005-06 and 2006-07 were recorded in 2007-08.
- v Reuse dams allow for the collection and re-irrigation of high nutrient run-off, reducing the water and nutrient loads leaving the farm. Target was 0 in 2010-11 as incentives are no longer offered while Farm Water Program is running.
- vi High flow diversion. None completed because of dry conditions.
- vii Improved irrigation systems includes laser grading, automatic irrigation and micro-irrigation. These results include improved irrigation activities as a result of the Farm Water Program (801 ha).
- viii Target cannot be set with any confidence because achievement is prone to extreme variation, being affected by seasonal conditions.
- ix Pest Plant and Animal achievements do not include those for the Second Generation Landcare program as community groups are usually collated every five years (the last time they were included was in 2004-05).
- x Results include achievements from DPI Farm Services Victoria and River health programs.
- xi Fox control works were achieved through the Broken Boosey Conservation Management Network.
- xii Includes 181.5 ha of re-vegetation achieved under the Mega Murray and Large Scale River Restoration catchment wide projects.

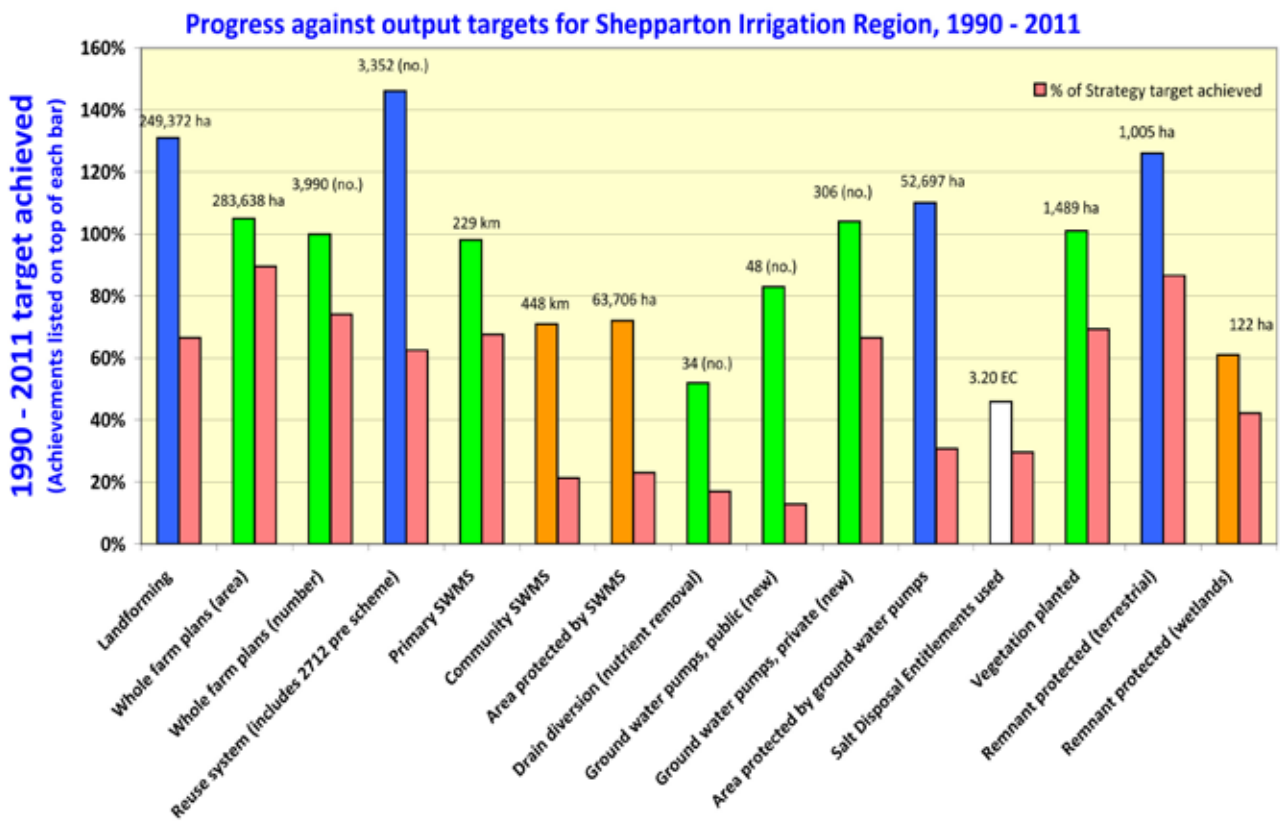
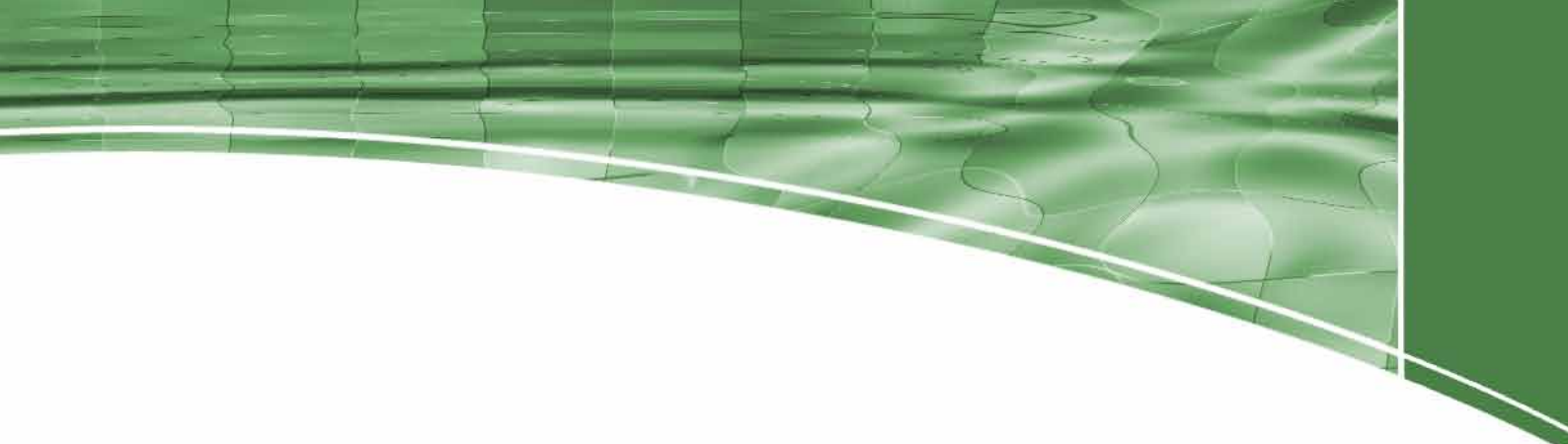
Outputs achieved 2010-2011

<i>Threat</i>				
<i>Land and water use practices</i>		<i>Target</i>	<i>Achieved</i>	<i>Achieved %</i>
Stock grazing: • ha = terrestrial • km = riparian	Fence terrestrial remnant vegetation (ha) ⁱ	193	559	32
	Fence wetland remnant(ha)	5	0	0
	Fence stream/river remnant (ha)	48	118	246
	Fence	48	49	102
	Off-stream watering (no.)	21	14	0
	Binding Management Agreement (license, Section 173, covenant) (ha)	59	50	84
<i>Induced threat</i>				
<i>Saline water and high watertables</i>		<i>Target</i>	<i>Achieved</i>	<i>Achieved %</i>
Surface water	Landform/lasergrading (ha) ⁱⁱ	10,080	19,546	194
	Drain – primary (km) ⁱⁱⁱ	2	1.1	55
	Drain – community (km) ^{iv}	5.95	1.4	67
	Farm reuse system (no.) ^v	0	7	
	Drain – additional water diverted from regional drains (ML) ^{vi}			
	Irrigation systems – improved (ha) ^{vii}	10,080	20,050	199
Groundwater and salt management	New groundwater pumps – public (no.)			
	New groundwater pumps – private (new and upgrade no.)	4	0	0
	Volume water pumped (ML)	400	0	0
Nutrient-rich & turbid water & suspended solids	Stormwater management projects (no.)	1	0	0
In-stream and near-stream erosion	Bed and bank protection actions (km)	8	3	33
	In-stream & tributary erosion controlled (km)	2	0	0
Changed flow pattern	Water allocated – e.g. wetlands (ML)	100	238,943	viii
Weed invasion	Weeds - aquatic weeds controlled/eradicated (km)	24	326	1,358
	Targeted infestations of weeds in high priority areas covered by control programs (ha) ^x	63	121	192
Pest animals ^{ix}	Area of high priority rabbit infested land covered by control programs (ha) ^x	3	3	100
	Area of high priority fox infested land covered by control programs (ha) ^{xi}	2	1	100
<i>Impact</i>				
<i>Habitat</i>		<i>Target</i>	<i>Achieved</i>	<i>Achieved %</i>
Habitat loss - terrestrial	Revegetation – plant natives within or next to remnants (ha) ^{xii}	430	267	62
	Threatened Species Recovery Plan and Action Statements (no. of projects)	1	1	100
<i>Planning</i>		<i>Target</i>	<i>Achieved</i>	<i>Achieved %</i>
Whole Farm Plans	Whole Farm Plans (no.)	140	256	183

Salinity targets achieved since 1990

<i>SIRCIS Targets v Outputs 1990-2011</i>	<i>1990-2011 target</i>	<i>1990-2011 Output achieved</i>	<i>% Target completed</i>	<i>Strategy target</i>	<i>% Strategy target achieved</i>
Landforming (ha)	190,080	249,372	131	375,000	66
Whole farm plans (ha)	269,646	283,638	105	316,853	90
Whole farm plans (no.)	3,984	3,990	10	5,384	74
Reuse systems (no.) - includes 2712 pre scheme	2,301	3,352	146	5,360	63
Primary SWMS (km)	234	229	98	339	68
Community SWMS (km)	630	448	71	2,102	21
Area protected by SWMS (ha)	88,484	63,706	72	276,200	23
Drain diversion- nutrient removal (no.)	65	34	52	200	17
Ground water pumps, public-new (no.)	58	48	83	375	13
Ground water pumps, private-new (no.)	295	306	104	460	67
Area protected by ground water pumps (ha)	47,959	52,697	110	171,300	31
Salt Disposal Entitlements used (EC)	6.9	3.2	46	10.8	30
Vegetation planted (ha)	1,470	1,489	101	2,145	69
Remnant protected-terrestrial (ha)	800	1,005	126	1,160	87
Remnant protected-wetlands (ha)	200	122	61	290	42
Area served by automatic irrigation systems (ha)	4,900	8,710	178		
Whole farm plans modernised ¹ (no.)	-	131	-		
Whole farm plan modernised (ha)	-	12,296	-		

¹ Modernised Whole Farm Plans: Modernised Whole Farm Plans take advantage of modernisation activities in the area. These are undertaken by landholders who already, in most cases, have a Whole Farm Plan for their property but would need updating to reflect the modernised supply system or a proposed change to the farm irrigation system. The incentive contribution to these types of Whole Farm Plans would depend upon weighing up of the private and public benefits. For the past three years the Northern Victoria Irrigation Renewal Project have recognised the importance of this aspect and have contributed significantly to the cost-share funding of these modernised plans where they complement modernisation works.



Salt Disposal Report

Activity	Salinity debits (EC)		
	Up to 2009-2010	Incurred in 2010-2011	Total to 2010-2011
Surface Water Management Systems	-0.53	0.00	-0.53
Public Groundwater Pumps	1.69	0.00	1.69
Horticultural Sub-surface Drainage	0.16	0.00	0.16
Total	1.32	0.00	1.32

Winter disposal from private groundwater pumps was ceased in 2007 and has been endorsed by the Murray Darling Basin Authority Basin Salinity Management Advisory Panel for removal as a component of the Shepparton Salinity Management Plan (SSMP) action. This has reduced the register entry to 1.3 EC based on 2007-2008 levels of development. Given that the scenarios used for the 2007-2008 levels of development assessment did not allow for a breakdown of the individual activities/components of the SSMP, a proportioning approach has been used in the table as the assumptions used have not changed since the previous 5 year review. This breakdown will be updated during the next 5 year review.

Additional work since 2007-2008 is estimated at 0.02 EC.

There was no disposal opportunity for public groundwater pumps during the 2010 winter-spring period. In addition, very little disposal from horticultural systems occurred, and drain flows to the River Murray continued to remain low. However 32 public groundwater pumps (including horticultural systems) operated during the 2010-2011 summer period with 1,560 ML being pumped.

Summary of Cost Sharing

<i>Partners</i>	<i>2010-11 Expenditure</i>	<i>Accumulated Expenditure</i>
	\$	\$
Government	27,309	387,471
Community	43,442	954,276
<i>Totals</i>	<i>70,752</i>	<i>1,347,748</i>

Government expenditure

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 SIRCIS and the On Farm Irrigation Efficiency Program.

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

Community expenditure

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

Accumulated expenditure

Accumulated expenditure is expressed in 2010-11 dollars. Previous expenditure was adjusted by applying the Victorian CPI increase of 3.3% in 2010-11.

Catchment Education and Awareness Grants

Catchment Education and 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.

SIRIC allocated \$19,638 of grants to schools, Landcare and community groups to undertake community education and awareness projects that increase awareness and understanding of salinity, biodiversity, water quality, pest plants and animals and climate change.

The Catchment Education and Awareness Grants are being transferred to a whole of catchment program in 2011-2020 and these funds will be allocated to groups as part of that process.

SIRCIS Budget & Final Expenditure 2010-2011

Programs	State funds \$'000s	NVIRP State funds \$'000s	SEWPAC & CFoC \$'000s	DSE Direct & Regional \$'000s	Carried forward 2009- 2010 State \$'000s	Total funds \$'000s	Expended \$'000s
Environmental Protection	137			278	234	649	633
Farm	2,472	640	150	966	-161	4,067	3,063
Surface Water Management	1,286			152	156	1,594	1,351
Groundwater and Salt Management	1,597			139	122	1,858	1,769
Monitoring	374			323		697	746
Program Support	523	761	1403	244	200	1,830	1,445
Research	190			54	5	249	335
River Health - Waterways	947		78		462	1,487	961
Biodiversity					11	11	11
Large Scale River Restoration	1,169		8		377	1,554	1,055
Farm Water Program		9,754	11,743		-42	21,455	21,455
Total SIRCIS	8,695	11,155	12,082	2,156	1,363	35,451	32,824

Committees and Working Group Members 2010-2011

Shepparton Irrigation Region Implementation Committee Members

<i>Community members</i>	<i>Non-voting members agency representatives</i>	<i>Executive Support agency staff</i>
Roger Wrigley – Wangaratta (Chair from 17/9/10) Helen Reynolds – Congupna (Deputy Chair from 17/9/10) Allen Canobie - Numurkah Stephen Farrell - Echuca Peter Gibson– Nanneella (Chair to 17/9/10) John Gray - Toolamba Nick Ryan - Lancaster John Wenske - Katandra West (Resigned 20/10/10)	Terry Batey - DPI James Burkitt - G-MW Rob Steel - DSE	Carl Walters - GB CMA Peter Howard - GB CMA Rachael Spokes - GB CMA Mark Turner - GB CMA Steve Wilson - GB CMA David Lawler – DPI/CMA Jen Pagon - DPI Sam Green - G-MW Rhonda McKie - DPI Rabi Maskey – DPI Neil McLeod - DPI

Attendance Record

<i>Name</i>	<i>10-5</i>	<i>10-6</i>	<i>10-7</i>	<i>10-8</i>	<i>11-1</i>	<i>11-2</i>	<i>11-3</i>	<i>11-4</i>
Roger Wrigley	Yes	Yes	Yes	Yes	Yes	Apology	Yes	Yes
Helen Reynolds	Yes	Yes	Yes	Apology	Yes	Yes	Yes	Yes
Allen Canobie	Apology	Yes	Yes	Yes	Yes	Yes	Apology	Apology
Steve Farrell	Yes	Yes	Yes	Yes	Yes	Yes	Apology	Yes
Peter Gibson	Yes	Apology	Yes	Apology	Yes	Yes	Yes	Yes
John Gray	Yes	Yes	Apology	Apology	Yes	Yes	Apology	Apology
Nick Ryan	Yes	Yes	Apology	Yes	Yes	Apology	Apology	Yes
John Wenske	Yes	Apology	-	-	-	-	-	-

Working Group Members

<i>Group</i>	<i>Community members</i>	<i>Agency representatives</i>
<i>Shepparton Irrigation Region Technical Support Committee (SIRTEC)</i>	Allen Canobie Peter Gibson Helen Reynolds Roger Wrigley	Carl Walters - GB CMA James Burkitt - G-MW Sam Green - G-MW John Mansfield – G-MW Greg Smith - G-MW Craig Dyson - DPI NC Terry Batey - DPI David Lawler – DPI/CMA Jen Pagon - DPI Neil McLeod – DPI Rhonda McKie - DPI Brigitte Keeble – SDR DPI Helen Murdoch - SDR DPI Alister Terry - FFSR DPI Peter Howard - GB CMA Rachael Spokes - GB CMA Mark Turner - GB CMA Wayne Tennant - GB CMA Steve Wilson - GB CMA

<p><i>Groundwater and Salt Management Working Group</i></p>	<p>Roger Wrigley (Chair) Heather du Vallon Ian Klein Murray McDonald Bill McMinn Menon Parameswaran Helen Reynolds Ian Whatley</p>	<p>Carl Walters - GB CMA Terry Hunter - G-MW James Burkitt - G-MW John Mansfield – G-MW Bruce Gill - FFSR DPI Terry Batey- DPI Louissa Rogers - DSE</p>
<p><i>Surface Water Management Working Group</i></p>	<p>Allen Canobie (Chair) Max Baker Ron Brooks Steve Farrell Kevin Fitzsimmons Peter Gibson John Horder Hank Sanders Ken Wood</p>	<p>Carl Walters - GB CMA Craig Rath - DPI Neil McLeod - DPI John Bourchier - DPI Chris Guthrie - G-MW Sam Green - G-MW Rob O'Meara - G-MW Greg Smith - G-MW Neville Atkinson - GB CMA Rachael Spokes - GB CMA</p>
<p><i>Farm and Environment Program Working Group</i></p>	<p>Roger Wrigley (Chair) Gerado Fasano John Gray Alfred Heupermann Bill Jones John Laing Alan Lavis Athol McDonald Bill Probst Eril Rathjen Craig Reynolds Nick Ryan Bo Silverstein Graeme Talarico</p>	<p>Julie Engström - DPI Terry Batey - DPI David Lawler – DPI/CMA Rabi Maskey - DPI Chris Nicholson – DPI/CMA Jen Pagon - DPI Joel Pike - DPI Eamon Reeves - DPI Carl Walters - GB CMA Rachael Spokes - GB CMA</p>
<p><i>Waterways Working Group</i></p>	<p>The Waterways Working Group did not convene during 2010-11 due to Drought Employment Program and Fire Recovery Program commitments of the Waterways staff.</p>	

Partnership Agency Staff 2010-2011

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

Biodiversity

Tim Barlow	GB CMA
Jim Begley	GB CMA
Melanie Haddow	GB CMA
Vanessa Keogh	GB CMA
Janice Mentiplay-Smith	GB CMA
Jenny Wilson	GB CMA
Steve Wilson	GB CMA
Rolf Weber	DSE

Environment

Vanessa Campbell	DPI
Keith Chalmers (to Jan 11)	DPI
Jo Wood (to Sep 10)	DPI
Nickee Freeman (to Dec 10)	DPI
Andrew Morrison (from April 11)	DPI
Jen Pagon	DPI
Joel Pike	DPI

Farm

Julie Engström	DPI
Joel Fitzgerald	DPI
Chris Kooloos (from May 11)	DPI
David Lawler (to Oct 10)	DPI
Rabi Maskey	DPI
Chris Nicholson (to June 11)	DPI
Jeremy Patt	DPI
Eamon Reeves	DPI
Brendan Stary	DPI
Ingrid Thomas	DPI

Farm Water

David Lawler (from Oct 10)	GB CMA
Megan McFarlane	GB CMA
Vicki McKenzie	GB CMA
Chris Nicholson (from June 11)	GB CMA

Surface Water Management

John Bouchier	DPI
Andrew Morrison (to April 11)	DPI
Neil McLeod	DPI
Rebecca Pike	DPI
Craig Rath	DPI
Sam Green	G-MW
Chris Guthrie	G-MW
Robert O'Meara	G-MW

Groundwater and Salt Management

James Burkitt	G-MW
Josh Cimera	G-MW
Kate Cockroft	G-MW
Terry Hunter	G-MW
John Mansfield	G-MW
Lisa O'Dea	G-MW
Mark Potter	G-MW
Tom Russell	G-MW
Luke Stacey	G-MW
Louissa Rogers	DSE

Monitoring

Anne Graesser	G-MW
Stephen Lamb	G-MW
Nadene Perry	G-MW
Greg Smith	G-MW

Program Support

Lyndall Ash	DPI
Raechel Ballinger	DPI
Terry Batey	DPI
Rhonda McKie	DPI
Olive Montecillo	DPI
Melly Pandher	DPI
Peter Howard	GB CMA
Menon Parameswaran	GB CMA
Rachael Spokes	GB CMA
Carl Walters	GB CMA

Research

Department of Primary Industries

	Branch
Peter Clayton	FFSR
Tony Cook	FFSR
Rick Dabrowski	FFSR
Bruce Gill	FFSR
Sherridan Greenwood	FFSR
Dave Haberfield	FFSR
Amjed Hussain	FFSR
Tracey Jones	FFSR
Hayden Lewis	FFSR
Richard Maxwell	FFSR
Andrew McAllister	FFSR
Mike Morris	FFSR
Georgina Nunn	FFSR
Nick O'Halloran	FFSR
Abdi Qassim	FFSR
Abdur Rab	FFSR
Susan Robson	FFSR
Alister Terry	FFSR
Cinzia Ambrosio	FSV
Neil Barr	FSV
Lisa Cowan	FSV
Nadine Edwards	FSV
Patricia Fitzsimmons	FSV
John Ford	FSV
Megan Hill	FSV
Geoff Kaine	FSV
Chris Linehan	FSV
Samantha Longley	FSV
Ruth Lourey	FSV
Helen Murdoch	FSV
Ben Rowbottom	FSV
Eloise Seymour	FSV
Jo Vigliaturo	FSV
Roger Wilkinson	FSV
Brigette Keeble	Consulting Researcher
Vic Wright	Consulting Researcher

Waterways

Simon Casanelia	GB CMA
Jim Castles	GB CMA
Keith Chalmers (from Jan 11)	GB CMA
Steve Collins	GB CMA



Meegan Judd	GB CMA
Tom O'Dwyer	GB CMA
Gaye Sutherland	GB CMA
Wayne Tennant	GB CMA
Mark Turner	GB CMA
Richard Warburton	GB CMA
Keith Ward	GB CMA
Corey Wilson	GB CMA
Jo Wood (from Sep 10)	GB CMA

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
F&EWG	Farm & Environment Working Group
GIS	Geographical Information System
GMLN	Goulburn Murray Landcare Network
G-MW	Goulburn-Murray Water
GSMWG	Groundwater and Salt Management Working Group
MDBA	Murray-Darling Basin Authority
NHT	Natural Heritage Trust
RCS	Regional Catchment Strategy
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
SSDWG	Sub-surface Drainage Working Group

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Goulburn Broken Catchment Management Authority

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Mark Turner
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Raechel Ballinger
Terry Batey
Bruce Gill
Fiona Johnson
Brigitte Keeble
Rabi Maskey
Andy McAllister
Neil McLeod
Olive Monticello
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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