



Shepparton Irrigation Region Catchment Implementation Strategy

**2011 Update**



**GOULBURN  
BROKEN**

CATCHMENT  
MANAGEMENT  
AUTHORITY

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**Shepparton Irrigation Region Catchment Implementation Strategy  
Review 2005-2006 and Implementation Plan 2010-2011**

Published by  
Goulburn Broken Catchment Management Authority  
PO Box 1752  
Shepparton  
Victoria 3632

May 2010

Find more information about the Goulburn Broken Catchment Management Authority on the web at:  
[www.gbcma.vic.gov.au](http://www.gbcma.vic.gov.au)

**Acknowledgment**

This project is funded as part of the Goulburn Broken Catchment Management Authority Regional Catchment Strategy in the Shepparton Irrigation Region and is provided with support and funding from the Australian Government and Victorian Government through Water Smart Farms, Our Water Our Future, the National Resource Investment Program and Caring for Our Country. 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, the North Central Catchment Management Authority and other bodies.



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## 2011 Update of the Shepparton Irrigation Region Catchment Implementation Strategy

The Shepparton Irrigation Region (SIR) is a highly productive, intensively irrigated region, producing much of Victoria's and indeed Australia's agricultural production. Approximately 317,000 of its 500,000 hectares are irrigated for dairy, cropping, stone and pome fruit production. The SIR uses around 1.5 million megalitres of water a year and created agriculture products worth an estimated \$1.38 billion in 2006 and, in turn, supports a large food processing industry. The region is heavily dependent on agriculture and food manufacturing for employment.

The SIR's natural assets are its soils, biodiversity, good quality water resources and fresh air. These assets are interconnected and collectively support the region's social and economic assets. The interconnectedness means that for example, a decline in the health of the soil asset can contribute to a decline in the biodiversity and water assets.

The SIR faces threats that include: salinity, biodiversity loss, climate change, pest plants and pest animals, and issues of water quality and quantity decline. Activities which can pose some threats if not appropriately managed include: stock grazing, irrigation practices, management of irrigation infrastructure such as culverts, regulators and in-stream water storage management, and cropping and pasture management.

The Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS) is a 30-year Land and Water Management Plan to protect and enhance the natural assets of the SIR. The most recent review of the Strategy was done in 2006, after 15 years of its implementation. Full details of this review can be found in the *Review* and the *Background Report* and at the GB CMA website.

This update will explore the renewal of the Catchment Strategy during the review process and outline how the Strategy is evolving to respond to the recent projects and initiatives announced by the Victorian Government under a rapidly changing water policy environment. The major changes include: the Foodbowl Modernisation, Water buy-back, Farm Water Program and other on-farm water use efficiency measures.

### The Strategy

The Shepparton Irrigation Region Land and Water Salinity Management Plan (SIRLWSMP) was introduced in 1989 and broadened over time. It is now referred to as SIRCIS. From a largely salinity-focused plan, the SIRCIS now also covers issues of biodiversity, river health and climate change. The Strategy was reviewed in 1995, 2001 and 2006.

The SIRCIS has evolved throughout the years of implementation from a land and salinity plan to a whole of catchment approach incorporating issues such as biodiversity. As the Strategy moves forward more evolution is anticipated to ensure that it continues to meet the needs of the catchment community. The SIR Implementation Committee (SIRIC) has adopted the following vision:

"The natural resources of the SIR are being managed sustainably for current and future generations:

- With abundant and well maintained environmental assets delivering a range of ecosystem services.
- With recognition locally and internationally for its high quality produce.
- With an enthusiastic and progressive community that is actively engaged in care of its natural resources".

The SIRCIS is made up of five key programs and each has developed a goal:

#### Environment Program

*“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 program targets biodiversity loss by providing incentives for remnant protection and biodiversity plantings.

#### Farm Program

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

The program has been oriented to tackle salinity and high watertable issues on farms by preventing or reducing groundwater recharge. Actions included developing and implementing a whole farm plan (WFP), installing reuse systems and automatic irrigation systems. Water quality decline has been targeted by preventing loss of nutrient rich water from farms through irrigation management and layout improvements.

#### Groundwater and Salt Management Program (GSMP)

*“To work with community to provide innovative groundwater and salt management services which support sustainable agricultural practices and protect environmental assets across targeted areas of the Shepparton Irrigation Region.”*

The program has been aimed at providing strategic use of pumped groundwater to prevent rising groundwater levels.

#### Surface Water Management Program (SWMP)

*“By 2020, improve the health of natural resources and improve the productivity in the Shepparton Irrigation Region by providing an appropriate Surface Water Management service in areas where the total economic, social and environmental benefits, exceed the cost.”*

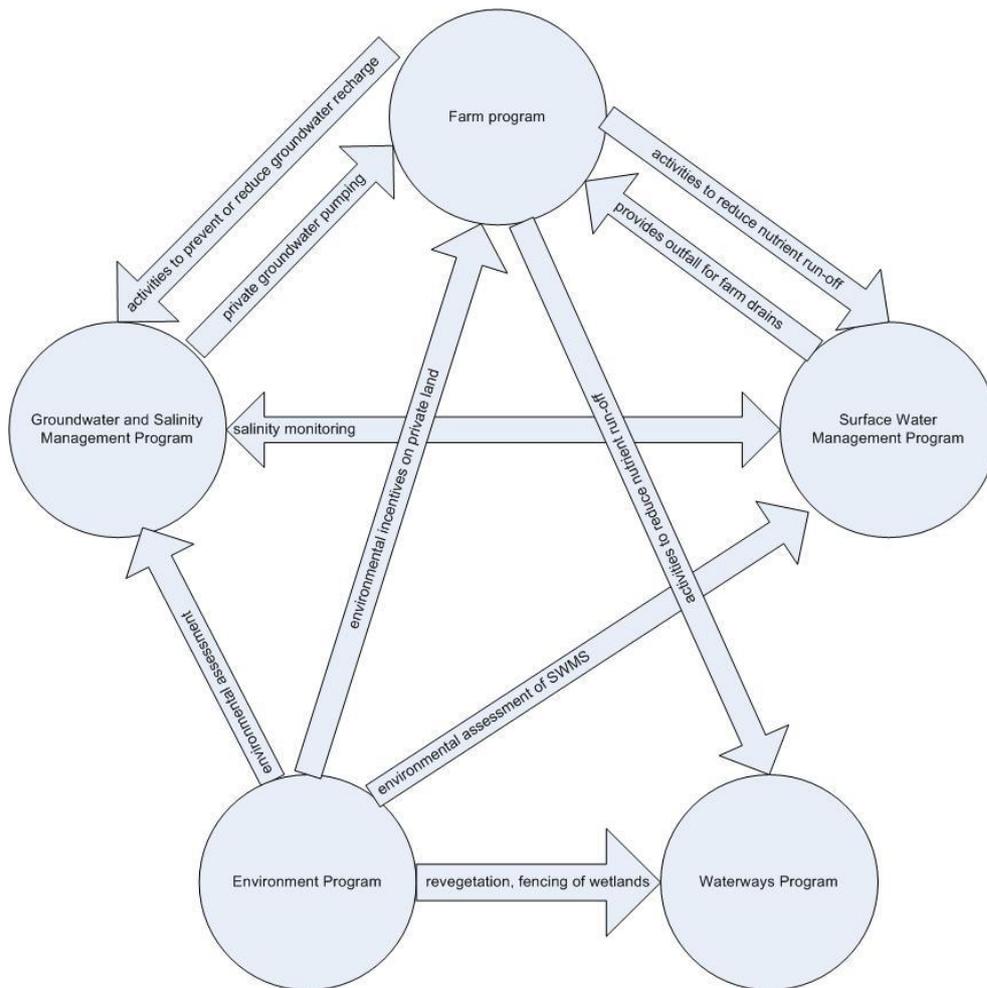
The program has been aimed at preventing groundwater recharge by providing a drainage network to remove irrigation induced rainfall runoff.

#### Waterways Program

*“To protect and enhance the natural riverine features in the region, improve water quality, and the social, economic and cultural values they provide.”*

Reducing biodiversity loss through revegetation of waterways and improving stream water quality issues are the main focus of the program.

The activities of the five programs are interlinked (Figure 1).



**Figure 1 Links between SIRCIS Programs**

The SIRCIS total expenditure from 1990 to June 2006 was \$292.7 million (at 2011 values). From 2006-2007 to June 2011, the expenditure is \$100.3 million (Table 1).

**Table 1 SIRCIS Expenditure 1990-2011**

Year	Amount (\$m)	2011 value(\$m)
1990 to 2006		292.7
2006-07	17.6	19.8
2007-08	16.0	17.3
2008-09	15.8	16.7
2009-10	13.3	13.7
2010-11	32.8	32.8
<b>Sub-total 2006 to 2011</b>		<b>100.3</b>
<b>Total 1990-2011</b>		<b>393.0</b>

Note: The 2010-11 includes Farm Water Program funding of \$21.5 million. The share of SIR was \$15.9 million and the balance was projects in the North Central and North East Catchments

The full implementation of the Strategy from 2011-2012 to 2020 (Groundwater and Salt and Surface Water Management Programs to 2030) will require \$365.7 million (at 2011 values).

## Key issues and Challenges

The SIRCIS is exposed to a number of issues and challenges that are expected to shape continued implementation of the SIRCIS over the next 10 years. In an uncertain future with climate change, changes in government policies and priorities and the inherent business risk the farmers are facing, SIRCIS should be flexible to adapt and to tackle these challenges. The Strategy and its programs are regularly reviewed, updated and revised to take on these issues and continue to be relevant. This process ensures strong input from all stakeholders in the partnership. This gives the community confidence to respond to emerging conditions with increased capacity and knowledge. SIRCIS has built in a range of programs and projects to inform the adaptive management approach and support for planning by individuals and organisations.

The following list of issues and challenges is not comprehensive and not in priority order.

### 1. Ageing and inefficient irrigation infrastructure

Losses in water delivery to farms are estimated to be about 900GL due to ageing and inefficient irrigation infrastructure. These losses can be used on farm, for the environment and for urban use.

In 2007, the Food Bowl Modernisation Project was initiated to reduce these losses. It is a \$2 billion works program to modernise Victoria's food bowl region and upgrade the irrigation infrastructure across the Goulburn Murray Irrigation District. The project is now called the Northern Victoria Irrigation Renewal Project (NVIRP) and is an historic investment in the future of the region. The first stage of NVIRP is being funded by the Victorian Government (\$600M), Melbourne Water (\$300M) and Goulburn-Murray Water (\$100M).

The project aims to save 225GL that will be shared among irrigators, the environment and Melbourne urban use.



#### **Ageing and inefficient irrigation infrastructure is causing losses in water delivery to farms**

This is an extremely important project and will have significant impact on the ability to deliver the SIRCIS. The SIRCIS has become more focussed on water use efficiency and successfully aligned with the project from strategic, planning and operational levels. SIRCIS has worked closely with NVIRP and other modernisation activities to ensure water saving projects, provision of drainage and protection of environmental assets are consistent with and complementary to implementation of the SIRCIS.

Irrigators, senior management and technical and environmental staff are ensuring that both NVIRP and SIRCIS are seamlessly implemented by providing input into wetland watering plans, farm irrigation assessments, environmental assessments, waterway watering plans, identifying backbones, connection processes and farm works. Cost-sharing agreements have been developed with NVIRP.

## **2. Providing drainage in modernised, reconfigured or decommissioned irrigation systems**

SIRCIS also faces challenges in providing drainage infrastructure in a modernised, rationalised or reconfigured irrigation system, including the “new dryland” areas and possibly decommissioning of some drainage infrastructure.

Figure 2 shows areas within the SIR that require surface drainage and most hotspots are within 2km of the backbone. This becomes a serious resource issue for the effective continuation of the SIRCIS, as the choice of irrigators to drain to channels is being restricted with the NVIRP implementation. The drainage problem is going to be aggravated with the predicted variability in climate. It recognises the need to consult widely with the community regarding community surface drains.

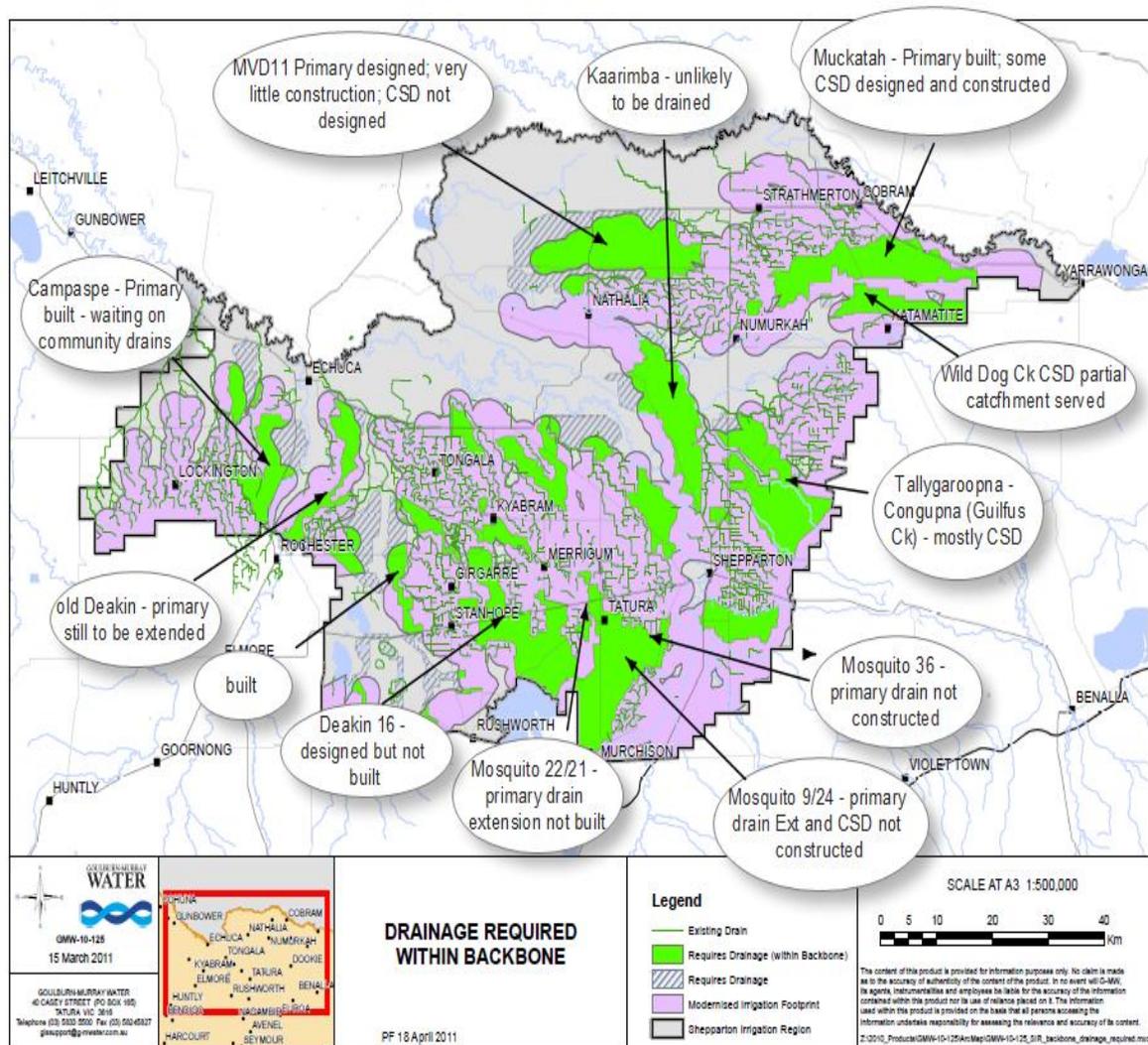
Overall, the level of implementation of the Surface Water Management Program was slightly lower than targets.

The Primary Surface Water Management Program (PSWMP) has followed the program priorities developed in the 1995 Surface Drainage Strategy and although there are still some significant works to be constructed, it is likely that the focus will move to operating and maintenance (of previously constructed SWMS) following the 2011 review. It is essential that the PSWMP continues in its current form if the projected economic benefits of the strategy are to be fully realised. Funding of around \$4 million per year is required to ensure that the short term program targets are met by 2011.

The implementation of the Community Surface Water Management Program (CSWMP) has and is likely to continue to slow considerably as a number of external factors such as climate cycles and funding arrangements influence the ability of the community to commit the required resources. It appears that an alternative implementation model may be required to achieve the necessary uptake of the community program. An appropriate prioritisation policy is in place to fund the implementation of CSWMP as community support arises. The CSWMP construction program is dependent on the construction of Primary Surface Water Management Schemes to enable outfall to occur and this construction will largely be complete by 2011.

It has long been recognised by governments, industries and farmers that irrigation should not be introduced without being accompanied by a comprehensive surface drainage system. This recognition has not been fully acted on in the SIR. As illustrated in Figure 2 this becomes one of the serious issues requiring prompt attention.

The implementation of groundwater pumping programs has mixed results. The number of private groundwater pumps installed since 1990 is well over the target but the target for new public groundwater pumps was not achieved. One of the reasons for the target not being achieved relates to funding constraints, with the total funds requested to implement the required works not received by the Program.



**Figure 2 Drainage requirements within the SIR**

Source: GB CMA 2011

### 3. Water availability and quality

The issue of water availability and quality is linked to climate change and competition for the resource by agriculture, the environment, households and the industry. Both the Federal and State Governments are developing and/or implementing policies and programs to manage the water resource and how it is allocated among the users.

The response to the issue is a set of government initiatives such as Northern Region Sustainable Water Strategy (NRSWS), Murray-Darling Basin Plan (MDB Plan) and water use licences. Water trading and water buy back programs have strong links to the NRSWS and MDB Plan. The concern for SIRCIS revolves around water allocation - quantity, certainty of allocation and quality for agriculture and the environment. Managing the resource is crucial in terms of regional economy (income and employment), protection and enhancement of environmental assets and managing potential stranded infrastructure assets.

#### 3.1 Northern Region Sustainable Water Strategy (NRSWS)

The Northern Region represents Victoria's share of the Murray-Darling Basin. The well-being of the region has been built on a foundation of reliable water supplies from the River Murray and its tributaries. The Catchment Management Authorities are the caretakers of river health and deliver waterway, regional drainage and floodplain management services.

The NRSWS identifies and analyses threats to water availability and quality. It sets out actions to ensure water entitlements are secure and provides more choice and flexibility for entitlement-holders to manage the risks imposed by drought and climate change.

The SIRCIS has a large role to play in the successful implementation of NRSWS. The Strategy will need to ensure that farming and catchment communities are active participants in program design and delivery. Waterways, Surface Water Management, Farm and Environment and Groundwater and Salinity Management working groups regularly meet to develop work programs and SIRCIS will be taking on board any suggested changes and modifications of programs.

### **3.2 Murray-Darling Basin Plan and Sustainable Diversion Limits**

The Guide to the proposed Basin Plan sets out the Murray-Darling Basin Authority's (MDBA) approach to the development of surface water Sustainable Diversion Limits (SDLs). The *Victorian Government Technical Submission on the Guide to the Basin Plan* (Victorian Government 2011) points out "the approach used to develop SDLs is not based on best available science and there is no analysis or description of the environmental outcomes intended to be achieved." "This creates significant uncertainty about environmental benefits of the proposed SDLs and reductions in consumptive use (2750 GL)".

According to the submission a net reduction of 143 GL/year (across the board reduction from 175 GL/year to 127 GL/year) would be required from the Goulburn Valley to meet the 2750 GL Basin target proposed in the Guide. MDBA's view is that a reduction of 2750 GL/ year from baseline diversion limits is necessary to achieve environmentally sustainable levels of water use. The Goulburn Valley and SIR in particular, is one of the most productive and valuable agricultural regions in Australia. Furthermore the Goulburn Murray Irrigation District is home to around 95 per cent of the Victorian Basin's dairy industry.

SIRIC will be closely monitoring the impact of the Basin final Plan and SDLs which are being developed. SIRCIS projects such as incorporating efficient delivery of water from Muckatah drain to Kinnaird's Swamp and an environmental watering plan for Reedy Swamp are examples of projects which will be adversely affected as result of a much reduced water availability.

The proposed scaling back of SDLs by MDBA will have serious ramifications for industries and SIRCIS has to be vigilant about this in its future program planning.

### **3.3 Water trade and Water buy-back**

Unbundling was part of Victorian Government's commitment to the National Water Initiative. The last 10 years have seen large volumes of water traded, temporarily and permanently within and between states. Managing land use change as result of water moving within SIR and to downstream irrigators will impact on where more works are required. In particular this will affect the SWMP and GSMP.

A more flexible approach to SIRCIS implementation will be required. Medium reliability water purchased by both State and Federal Governments for environmental flows results in the reduction of high reliability water entitlements, another challenging and ongoing issue for SIRCIS to consider in program planning. There is a need for a constant reminder from SIRIC to governments to re-examine the scope and rate of water buy-back to ensure strategic alignment with the irrigation infrastructure programs.

## **4. Changing irrigation footprint and Farm Water Use Efficiency**

Reduced water availability due to climate change, water for the environment and recognition of the impacts of excessive water use on nutrients, salinity and waterlogging will continue to drive the quest for improvements in water use efficiency. Farm water use efficiency helps to minimise salinity, water logging and nutrient impacts by reducing surface runoff and seepage to the water table.

The GB CMA is part of a consortium that secured \$25.8 million from the Australian Government's On-Farm Irrigation Efficiency Program known locally as Farm Water Program (FWP). Funds are mostly directed to the Goulburn Murray Irrigation District to achieve successful integration with irrigation modernisation processes. The consortium is in the process of preparing a submission seeking funding for Round 2 of the Farm Water Program.

SIRIC is continuing to work closely with DSE, NVIRP, G-MW and the North Central CMA to implement the FWP. The FWP delivers against targets of the SIRCIS programs such as lasergrading, automatic irrigation, irrigation scheduling, and plastic lining of the channel system. The FWP creates water savings while improving production and improving the viability of communities and farms. Farmers would then be more able to invest in other natural resource management (NRM) activities. It assists farmers who are connected to the NVIRP supply system so that natural resource management investment in irrigation is also more focussed in a smaller area (footprint) which can be more cost effective compared to investment in a larger area.

The success of the FWP will depend on the ability of the farmers to finance all the works. In Round 1, the first payment is for the water transferred and will be made once the water transfer has taken place. The second payment is for half of the cost of the works and will be made upon the completion and inspection of the agreed farm irrigation works and confirmation of expenditure (ie invoices and receipts). For Round 2, the payment is likely to have two components, the transfer of the water and the farm irrigation efficiency grant.

SIRIC is investigating a hardship policy in anticipation of requests for exceptional circumstances where landholders can not access funds due to time lag between paying for works and receiving payment from the GB CMA.

## **5. Institutional changes of Strategy Partners**

There is a risk of losing resources and skills when partners in the implementation of the SIRCIS are involved in organisational restructure.

As its main partner in the delivery of programs and services, SIRIC will continue to work with the Department of Primary Industries (DPI) Farm Services Victoria through its restructure process to ensure SIRCIS program targets and outcomes are met.

## **6. Climate variability and climate change**

The climate variability and change are a significant future risk to the availability of the SIR water resources although the specific hydrologic effects of climate change in the region are difficult to predict with certainty. The GB CMA is conscious that the risks and impacts of climate change and climate variability will adversely affect the region's communities leading to potentially reducing industry outputs and ecological resilience.

The research and development strategy for groundwater and salinity management progressed by SIRIC over the last two decades is in part implemented through a close partnership with DPI's Research and Practice Change groups and G-MW's research and development group. This strategy is pivotal in seeking new knowledge to continue implementing the SIRCIS. A more flexible approach for program planning is needed to assist in building community capacity to respond to climate change challenges and opportunities.

Surface runoff and groundwater recharge are likely to be reduced as a result of reduced water availability due to the impact of climate change. However, in extreme wet years and even in "normal" and "wet" years high watertables and waterlogging present significant salinisation risks to SIR agriculture, built assets and environmental assets. Developing management approaches for both extremes will be challenging.

## **7. Management of farms under wetter than average conditions**

Although the community is reasonably familiar with the land and environmental management issues under normal years, they are uncertain and ill-equipped to withstand a return of wet years in terms of salinity.

SIRCIS should refocus resources for incentives and community expectations to ensure sustainable farming and environmental management under these changing scenarios.



**Wetter than average events will require a refocus of SIRCIS resources**

## **8. Salt Disposal Entitlements**

The SIRCIS is currently using 1.32 EC and it is roughly estimated to require 8.1EC for works to be completed in 2030 (Table 2). Groundwater pumping and other GSMP activities have a debit of 9.06 EC whilst the SWMS will reduce downstream impact i.e. provide a credit of 0.93 EC. The numbers have been determined by proportionating the previous estimates to give approximate impacts based on the reduction achieved from the removal of winter disposal from private pumps.

**Table 2 Uptake of and future requirements for Salt Disposal Entitlements, SIR**

SIRCIS activities	Uptake 2010-2011 as reported to MDBA	Future SDE requirement (EC) 2011 to 2030	Comments
Primary surface water management systems	-0.19	-0.59	
Community surface water management systems	-0.34	-0.34	
Public groundwater pumps	1.69	8.90	
Private groundwater pumps	0	0	Officially removed as a component of the MDBA Register A entry for the Shepparton Salinity Management Plan
Horticultural sub-surface drainage works	0.16	0.16	
<b>Sub-total SIRCIS</b>	<b>1.32</b>	<b>8.13</b>	
NVIRP and Future Flow works		2 to 4EC	Likely to be included as part of the Shepparton Salinity Management Plan entry on the MDBA Register A
Tail Water Fraction		1 to 5EC	TWF being addressed by MDBA, timeline is unclear
<b>TOTAL Shepparton Irrigation Region</b>		<b>11 to 17 EC</b>	

Source: Burkitt, J (pers comm, October, 2011)

NVIRP and Future flow works within the SIR are proposed to be included as a component of the SIR Salinity Management Plan entry on the MDBA Basin Salinity Management Strategy Register A. The current estimate for this work is a debit in the order of 2 to 4 EC.

The reduction in Tail Water Fraction (TWF) from irrigation runoff collected by the SIR drains is a significant factor that has not been addressed and may have considerable ramifications on the overall salinity impacts in the SIR. The potential salinity debit from the TWF could be between 1 and 5 EC.

The removal of winter disposal from private groundwater pumps has been assessed by SIRIC as no longer required, and has now been removed as a component of the SIR Salinity Management Plan entry on the MDBA Basin Salinity Management Strategy Register A. This reduces the long term estimate of salinity credit requirement by 2030 by approximately 2 EC<sup>1</sup>. Therefore, the potential salinity credit required in the SIR is likely to be in the range of 11 EC to 17 EC. If the available salt credit from Victoria is less than the requirement then the full implementation of the works program under SIRCIS may not be feasible.

<sup>1</sup> The 2006 estimate of the required salt credit for works to be completed in 2030 was 11.1EC.

## Snapshot of works, operations and outputs to date

Protection of wetlands and remnant vegetation gathered pace from 2006 to 2010 with achievements exceeding targets (Table 3, Figure 3). Landforming, re-use systems and private groundwater pumps also continued to exceed targets. This means these programs may be completed before the target completion year of 2020. SIRCIS used less than half of the Salt Disposal Entitlement target.

Figure 4 traces the history of the Strategy and plots the rainfall events and the watertable levels from 1964 to 2010. As indicated high watertables and waterlogging present significant salinisation risks to the SIR and its productive agricultural base and environmental assets. Since 1990 the community and government have invested a significant amount of money and resources in the catchment in managing watertables and associated salinity threats.

The SIRCIS should target future irrigation drainage needs and include programs to support adaptive management approaches for individuals, organisations and community to actively manage risks and uncertainty relating to the re-emergence of rising watertable and climate change. Although drought and modernisation have reduced this risk, risks of high watertables in intensively irrigated areas in "normal" and "wet" periods still exist. Average rainfall for Northern Victoria is approximately 450 mm/year; over the last 12 months in excess of 800 mm has fallen. This well above average rainfall has re-emphasised the need to have adequate and effective drainage initiatives in place. An effective partnership with NVIRP in its modernisation process will lead to future positive outcomes in managing the changing irrigation footprint. Continuing to improve salinity management is central to ensuring environmentally sustainable irrigation in the SIR.



**Community Surface Water Management Scheme**



**Groundwater and salt disposal**

SIRCIS Targets v Outputs	1990-2011	Unit of measure	1990-2011 Target	1990-2011 Output achieved	% of 1990 to 2011 target completed	Strategy Target	% of Strategy Target achieved
Landforming		ha	190,080	249,372	131	375,000	66
Whole farm plans (area)		ha	269,646	283,638	105	316,853	90
Whole farm plans (number)		(no.)	3,984	3,990	100	5,384	74
Reuse system (includes 2712 pre scheme)		(no.)	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	n/a*	n/a*
Whole farm plans modernised (number)		(no.)	n/a*	131	n/a*	n/a*	n/a*
Whole farm plan modernised (area)		ha	n/a*	12,296	n/a*	n/a*	n/a*

\*n/a: not available or not applicable

**Table 3 Progress against output targets for SIR 1990 to 2011**

Note: Modernised Whole Farm Plans: Modernised Whole Farm Plans are prepared to take advantage of modernisation activities in the area. These are undertaken by landholders who already, in most cases, have a WFP 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 WFPs would depend upon weighing up of the private and public benefits. For the past three years NVIRP have recognised the importance of this aspect and have contributed significantly to the cost share funding of these modernised plans where they complement NVIRP works.

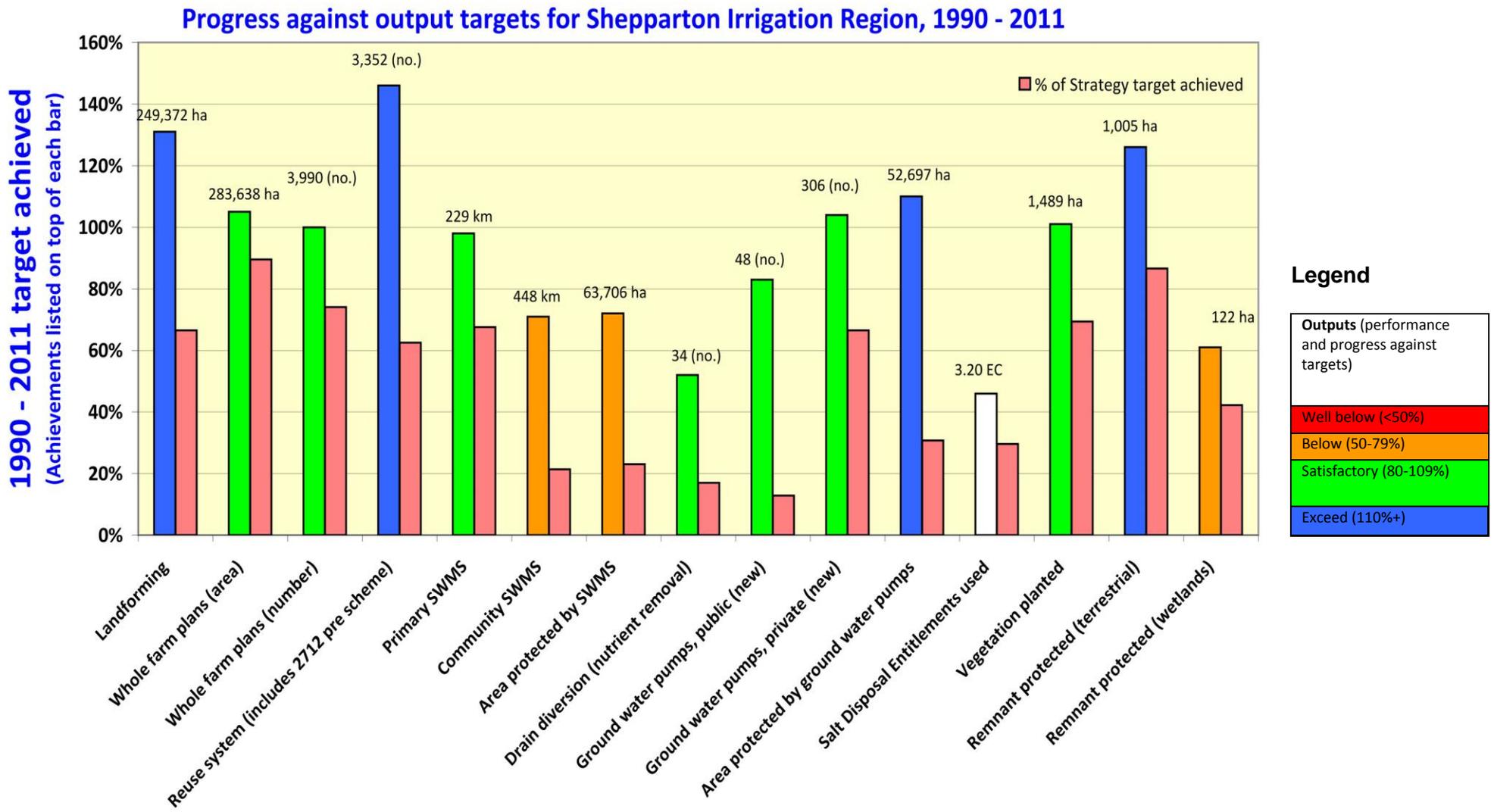


Figure 3 Progress against output targets for SIR 1990 to 2011

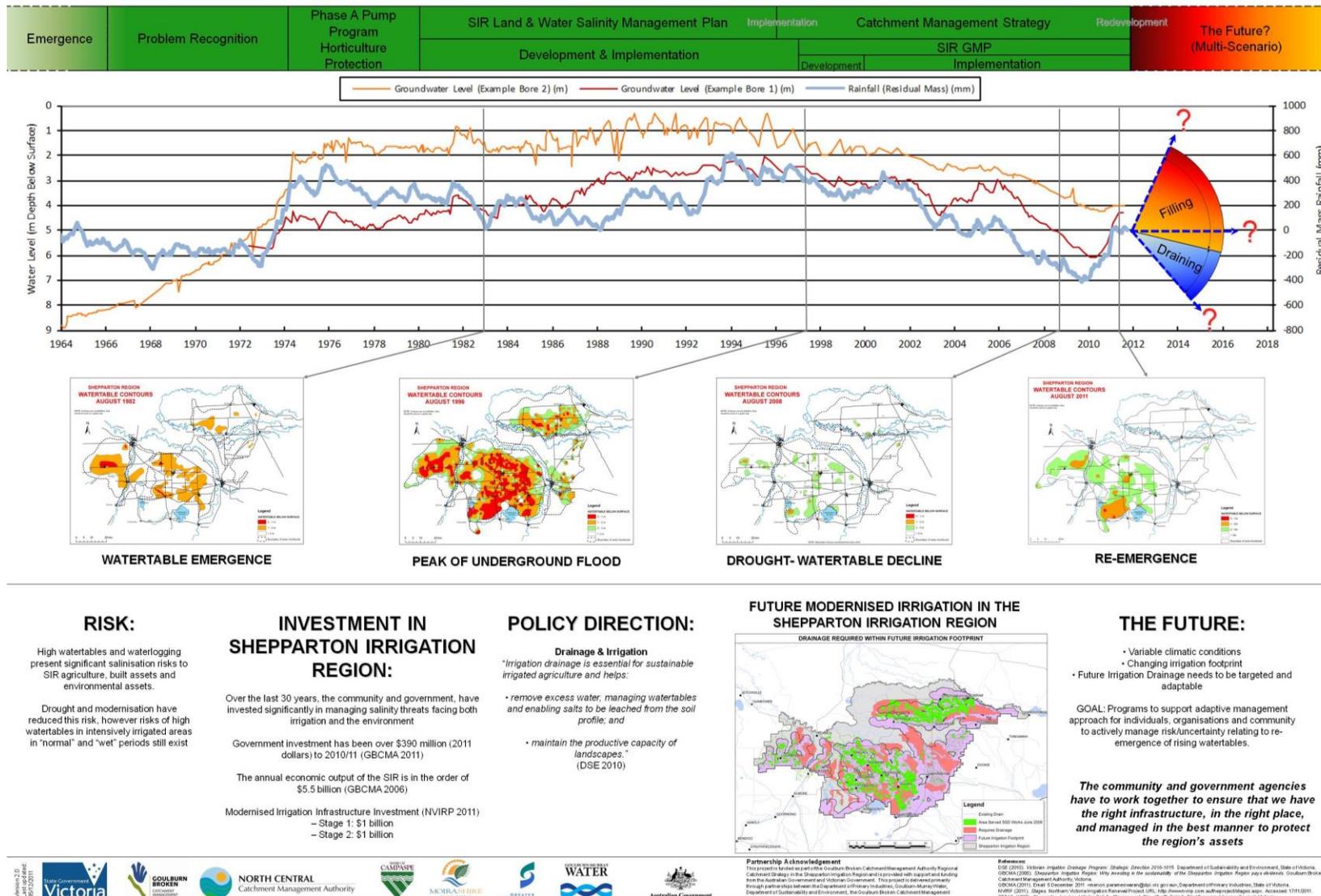


Figure 4 Protecting the investment in modernised irrigation: adapting successful drainage strategies to a changing world

Source: G-MW, 2011

## Economic, Environmental and Social Impacts

The impacts on the triple bottom line will be addressed in the coming 1990 to 2011 Strategy review.

## Community Engagement

The success of the SIRCIS depends on the actions and cooperation of a number of partners such as landholder groups, various State government agencies, water authorities. The Shepparton Irrigation Region Sustainable Irrigation Program Advisory Group (SIPAG previously SIRIC) is also assisted by working groups with representation from local landowners, irrigators, environmentalists as well as agency staff. Technical support is provided by project teams and SIPTEC.

## Cost Share

The SIRCIS has well developed cost-sharing principles and arrangements that have been consistently applied to natural resource management programs.

As of June 2011, \$1.35 billion has been spent by the government and landholders in the SIR on natural resource management. The government's contribution is 28.5 percent and landholders contributed 71.5 percent.

**Table 4 Cumulative SIRCIS expenditure, 1990 to June 2011**

Cost-share partners	Expenditure (\$M)
Government	\$393.0
Landholders	\$955.6
Total	\$1,348.6

## 20-Year Review

This year marks the 20<sup>th</sup> year of the implementation of the Strategy. In the past the reviews tended to be on a program basis thus the methods and period of analysis used, (specifically the economics of the strategy), differ. The upcoming review will cover the whole Strategy and how the interaction between the Programs can be improved further to achieve the goals and objectives of the Strategy.

## Conclusion

The SIRCIS has evolved throughout the years of implementation from a land and salinity plan to a whole of catchment approach incorporating issues such as biodiversity. As the plan moves forward more evolution is anticipated to ensure that the SIRCIS continues to meet the needs of the catchment community. Protecting the investment in modernised irrigation and adapting successful water strategies will be the ultimate aim of the SIRCIS.

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