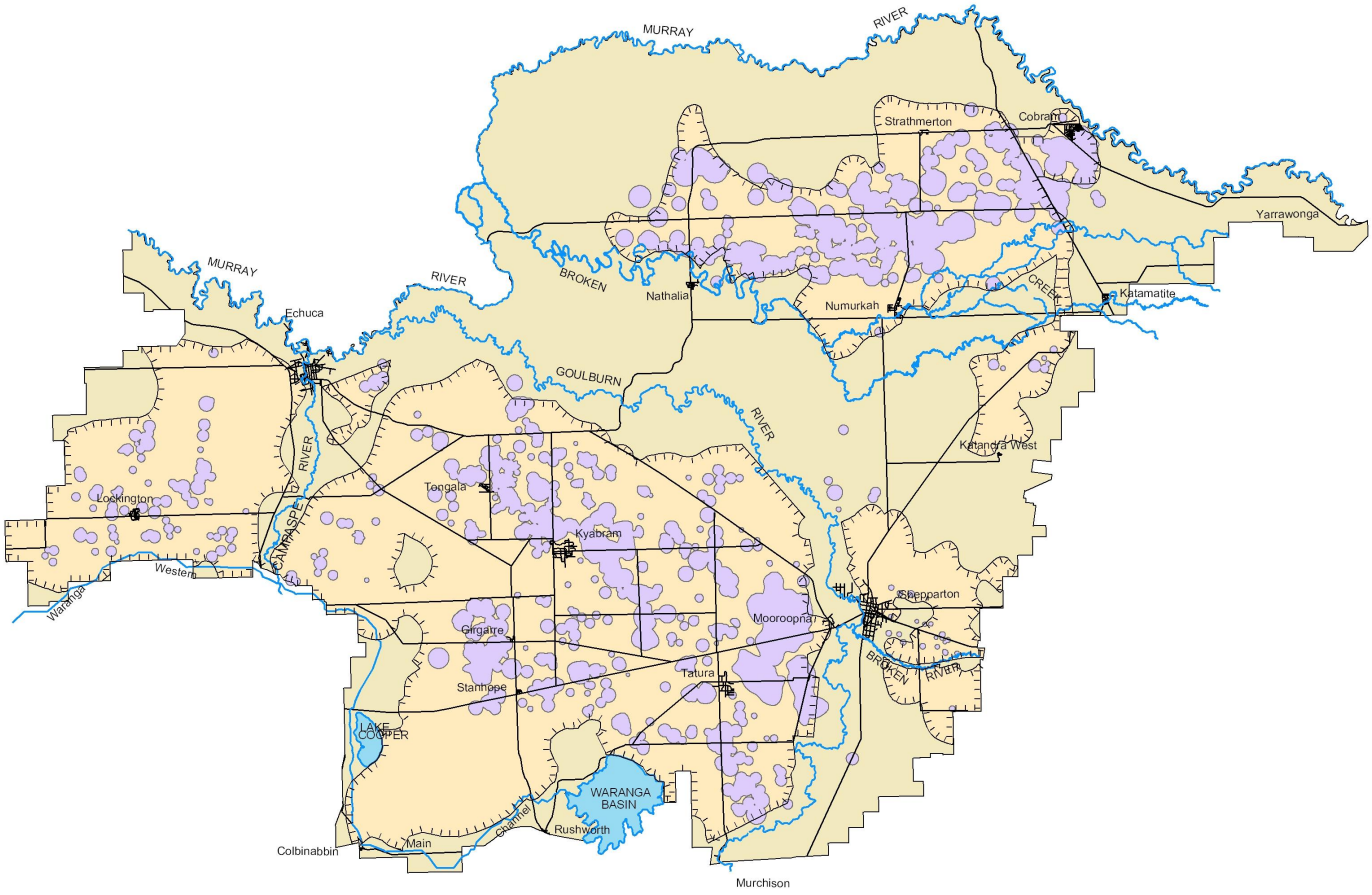
Shepparton Irrigation Region Catchment Strategy

Key Performance Indicators

for the

Sub-Surface Drainage Program



Goulburn-Murray Water

Annual Report for period ending 30th June 2006

Funding

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

Goulburn- Murray Water Project Manager: Steve Feiss

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1. Executive Summary

Goulburn-Murray Water is responsible for implementing many aspects of the Sub-Surface Drainage Program (SSDP) for the Shepparton Irrigation Region Catchment Strategy (SIRCS). The SSDP employs private groundwater pumping, public groundwater pumping, and tile drainage to manage groundwater levels for salinity control and salt disposal within the region. Key Performance Indicators were developed for the program in response to a need for annual performance reporting to key stakeholders. Key Performance Indicators have been used in order to provide a standard method for evaluating and reporting important aspects of program performance to key stakeholders, including government funding bodies, statutory and regulatory agencies, and community organisations and groups.

Three categories of Key Performance Indicators have been used:

- Operations
- Management
- Environmental

The headline indicators for these three categories are presented in Figure 1 to give an overall indication of the performance of the SSDP.

Figure 1 SIRCS – Sub-Surface Drainage Program - Headline Indicator Summary

Aspirational Target against Cumulative Achievements	Target	Achievement	% Achieved
Operations Indicators			
AP-1 Total area served by SSDP (ha)	55,325	33,098	60%
PW-1 Public Salinity Control Pump sites completed to date for the SSDP	72	46	64%
PW-2 Private irrigation SSDP assisted bores installed/upgraded to date	407	335	82%
PW-3 Private irrigation bores operating as Salinity Plan Bores	395	489	>100%
Environmental Indicators			
EV-1 Area of Environmental Features Protected by SSD works (ha)	NA	2,335	NA

Funded Target against Annual Achievements	Target	Achievement	% Achieved
Operations Indicators			
AP-1 Total area served by SSDP (ha)	2,800	2,421	86%
PW-1 Public Salinity Control Pump sites completed to date for the SSDP	3	3	100%
PW-2 Private irrigation SSDP assisted bores installed/upgraded to date	20	11	55%
PW-3 Private irrigation bores operating as Salinity Plan Bores	No target	27	NA
PO-1 Public Salinity Control Pump volume pumped for the year (ML)	2,218	2,290	103%
PO-7 Private Assisted Bores pumped volume vs 65% Safe Volume (ML)	23,355	29,996	128%
Management Indicators			
BE-1 Annual SSDP expenditure compared with budget ($millions)	$4.2	$4.3	NA

Achievement Against Target
Exceeded (100%+)
Satisfactory (70-99%)
Below (26-69%)
Well Below (<25%)
NA Not Applicable
For AP-1, PW-1, PW-2, PW-3 Cumulative Target is based on Aspirational Target for 1999/2000 SSDP Review
For AP-1, PW-1, PW-2 Annual Target is based on Funded Target as set for the year 2005/06 based on available funding

1.1 Headline Operations Indicators for 2005/06

To date the total area served by the SSDP was 33,098 ha an increase of 2,421 ha for 2005-06. Compared to the Aspirational Target the program is under target by 22,227 ha. A comparison between the Annual Funded Target and the achievement for the year shows 86% of the target was met.

The funded target of 3 public salinity control pumps installations was met for 2005/06; however, compared to the Aspirational Target the program is under target by 26 sites. The total number of SSDP assisted private irrigation bores was 11. This is 9 below the annual funded target putting the program under the cumulative aspirational target by 72 bores when compared to the aspirational Target. The

number of new Salinity Plan Bores for this year has increased by 27, which to date exceeds the Aspirational Target by 94 bores.

The volume of water pumped this year by the Public Salinity Control Pumps was 2,290 ML during the summer disposal period compared to a pumping capacity of 2,218 ML for the summer period. Winter/spring pumping was not possible this year due to insufficient dilution flows in the River Murray.

The Private SSDP Assisted Irrigation Bore pumping exceeded the 65% Safe Use Volume target while remaining below the Safe Use Volume. The Safe Use Volume is based on the Goulburn Broken Catchment Management Authority (GMCMA) guidelines for applied irrigation water use.

1.2 Headline Management Indicator

SSDP expenditure for this year was $4.3 million against a budget of $4.2 million.

1.3 Headline Environmental Indicator

The cummulative area of environmental features protected by subsurface drainage works was 2,335 ha.

2. Introduction

This report presents the annual Key Performance Indicators for the SSDP for the Shepparton Irrigation Region (SIR) for 2005/2006 as such it represents a performance report of the SSDP.

2.1 Shepparton Irrigation Region

The SIR is located in the Murray Darling Basin on the southern end of Riverine Plain in Northern Victoria. The SIR covers an area under the jurisdiction of both the GBCMA and the North Central Catchment Management Authority (NCCMA).

The area covers approximately 500,000 ha of which approximately 60 percent is irrigated. The SIR comprises four distinct irrigation areas: the Rochester, Central Goulburn, Shepparton and Murray Valley Irrigation Areas.

2.2 Stakeholder Relationships

A flow diagram showing the stakeholder relationships and program inputs is given in Figure 2.

2.3 The Shepparton Irrigation Region Catchment Strategy

2.3.1 Sub-Surface Drainage Strategy

The Shepparton Irrigation Region Catchment Strategy (SIRCS) has evolved from the Shepparton Irrigation Region Land and Water Salinity Management Plan which was endorsed in 1990. The Sub-Surface Drainage Program (SSDP) is one of the core programs within the SIRCS. The core programs include:

- The Sub-Surface Drainage Program
- The Farm Program
- The Environment Program
- The Surface Water Management Program
- The Waterways Program.

The SSDP employs private groundwater pumping, public groundwater pumping, and tile drainage to manage groundwater levels for salinity control and salt disposal within the region.

As much of the shallow groundwater is above GBCMA catchment strategy guidelines for applied irrigation water salinity, it often has to be diluted (shandied) with channel water before being used for irrigation. This is called conjunctive re-use. Guidelines are designed to ensure leaching of salt from the root zone occurs thereby allowing sustainable agricultural productivity to be achieved. Water efficiency is enhanced by both recycling irrigation water and maintaining land productivity.

Private groundwater pumping for farm re-use and for winter disposal is encouraged and assistance is available in the form of capital grants, as well as the Farm Exploratory Drilling Scheme (FEDS). The costs of pumping from private irrigation bores (including operation, maintenance and replacement) are met by the landholder.

Public groundwater pumps for salinity control may be installed where:

- Private groundwater pumping is not feasible;
- The area is affected by high watertables;
- There is sufficient landholder support.

The feasibility investigations and capital costs for new public groundwater pumps are jointly funded by the Victorian Government and the National Action Plan for salinity and water quality through the sub-surface drainage component of the SIRCS. Operating and maintenance costs of the public groundwater pumps are met by the direct and indirect beneficiaries of the scheme – landowners and local government.

All SSDP works are given in Figure 3 along with the area served by the SSDP.

2.3.2 Goulburn Broken MER Strategy

The Goulburn Broken Monitoring, Evaluation and Reporting (MER) Strategy is being developed to draw together aspects of natural resource monitoring in the Goulburn-Broken region at a strategic level that are relevant to the practices, policies and activities of the Regional Catchment Strategy.

This SSDP Performance Report is one of many reports detailing monitoring, evaluation and reporting within the Goulburn Broken region. It is consistent with the principles and objectives of the MER strategy.

2.4 Key Performance Indicators for the SSDP

Goulburn-Murray Water is responsible for implementing many aspects of the SSDP. Key Performance Indicators were developed for the program in response to a need for regular performance reporting to key stakeholders. Key Performance Indicators have been used in order to provide a standard method for evaluating and reporting important aspects of program performance to key stakeholders, including government funding bodies, statutory and regulatory agencies, and community organisations and groups.

The indicators provide concise at-a-glance reporting on important monitored parameters, allowing ready evaluation of enterprise or program performance and ensuring that key information and trends are more easily absorbed and understood by the stakeholders.

Combined graphical and numerical indication is a key feature of the reporting, enabling comparison against previous periods and visual trend recognition whilst retaining the raw data.

The Indicators are grouped into a range of categories that extend beyond purely financial and economic aspects and include environmental impacts/benefits and other indicators.

Interpretive notes for each of the Key Performance Indicators are provided in the Section 3 to 5.

The Public Pump Program KPI report which was produced last year has not been produced this year. Key information on the public pump program is provided in this overall program report.

A summary of the KPIs is given in Figure 4.

2.5 Report Layout

This report is comprised of the following sections:

1. Executive Summary – provides a brief summary of the report
2. Introduction – gives a overview of the SSDP
3. Operational Indicators
4. Management Indicators
5. Environmental Indicators
6. Appendices – contains tables of information regarding the 3 indicator categories

A glossary of abreviations and terms used is given at the end of this report.

2.6 Changes in Key Performance Indicators and Assumptions from Last Year

To simplify the KPIs, the number of categories has been reduced from five to three. The Financial and Economic Indicator categories have been combined and renamed as Management Indicators. The Miscellaneous Indicator Category has been removed with indicators MI-1 to MI-3 being moved to the Operations Indicator Category and MI-4 being moved to the Environment Category.

A number of indicators have been removed due to a lack of suitable data. The indicators that were removed for this reason are:

- CB-1 – Benefit/Cost Ratio for the SSDP
- CB-2 – Benefit/Cost Ratio for Public Salinity Control Pumps (pasture)
- CB-3 – Benefit/Cost Ratio for Private Irrigation Bores (pasture)
- CB-4 – Benefit/Cost Ratio for Horticultural Program
- EV-2 – Groundwater Salinity Trend in Private Irrigation Bores

It should be noted that the 2000-2005 SSDP review will cover these issues.

CB-5 (SSDP program costs per area served) was removed, even though the data is available, as it is more effectively covered in the 2000-2005 SSDP review. BE-3 (Percentage of Annual Budget Invested in SSDP Research and Investigation) was incorporated in CB-1.

Other indicators have not been reported this year as the information has not varied historically and can be covered in the main body of the report. The indicators that were removed for this reason are:

- AP-6 – Area served by Public Pumps installed before the commencement of the SSDP; Phase A and Girgarre Pumps.
- PW8 – Number of SSDP assisted evaporation basins for drainage disposal
- PW9 – Number of Public Pumps disposing to land for SSDP (other than evaporation basins)
- PW-10 – Number Public Salinity Control installed primarily for environmental protection

The basis for calculating the area served has been changed to better represent the actual situation. In the KPI report the area served for previous years has been revised to reflect this. The methodology used is consistent with the 2000-2005 SSDP review.

The assumption for the area served for horticultural bores has changed since last year. The current assumption is that 1 hectare is protected for every 2 ML/d pumped. Previously it was assumed 1 hectare is protected for every 1 ML/d pumped.

2.7 Further Information

Requests for further information and comments can be directed to:

Mr Stephen Feiss

Goulburn-Murray Water

PO Box 165, Tatura, VIC 3616

Further related information can be obtained from the Goulburn Broken Catchment Management Authority Annual Report on www.gbcma.vic.gov.au.

Figure 2 Shepparton Irrigation Regional Catchment Strategy – Subsurface Drainage Program – Stakeholder Relationships

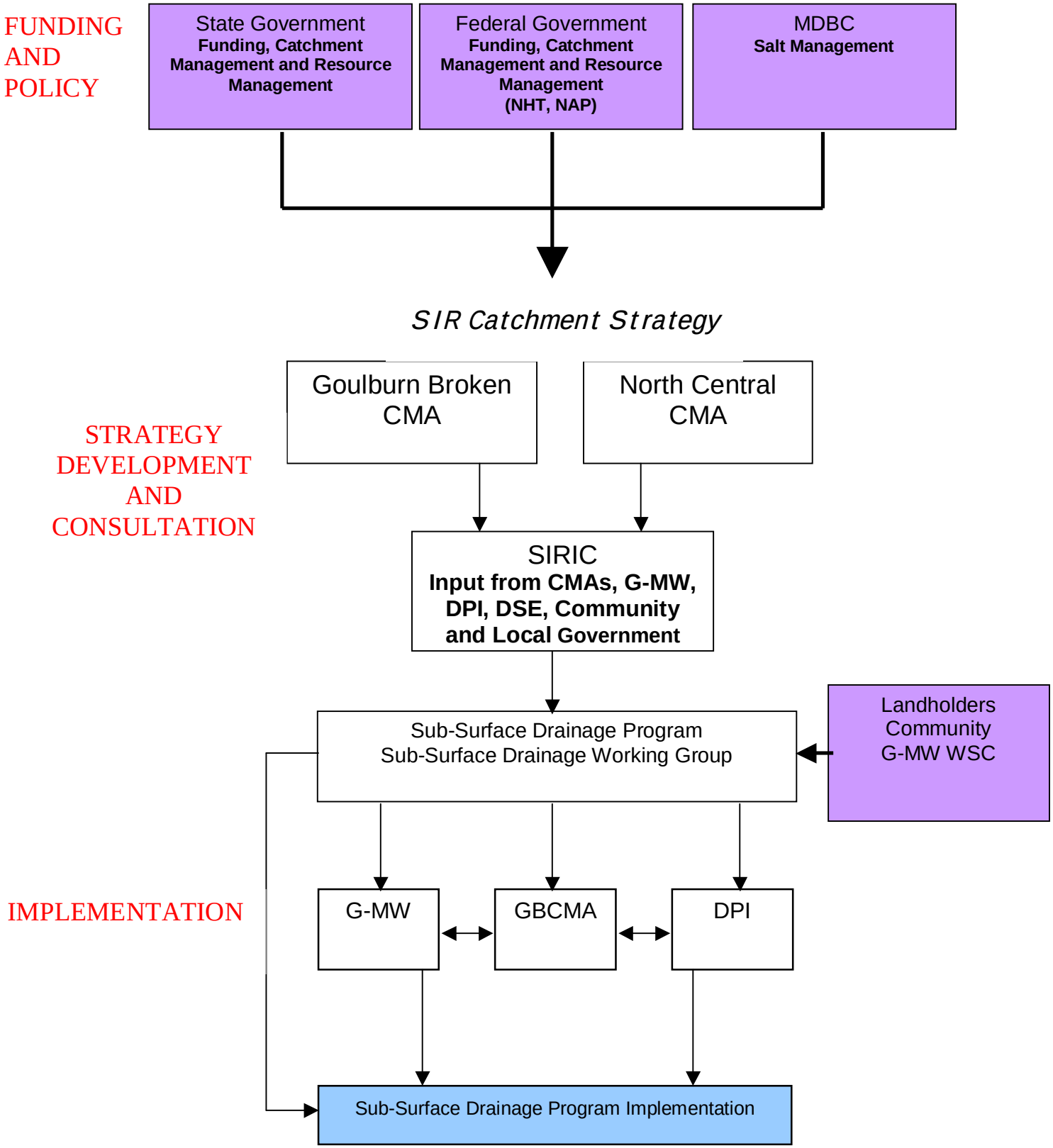
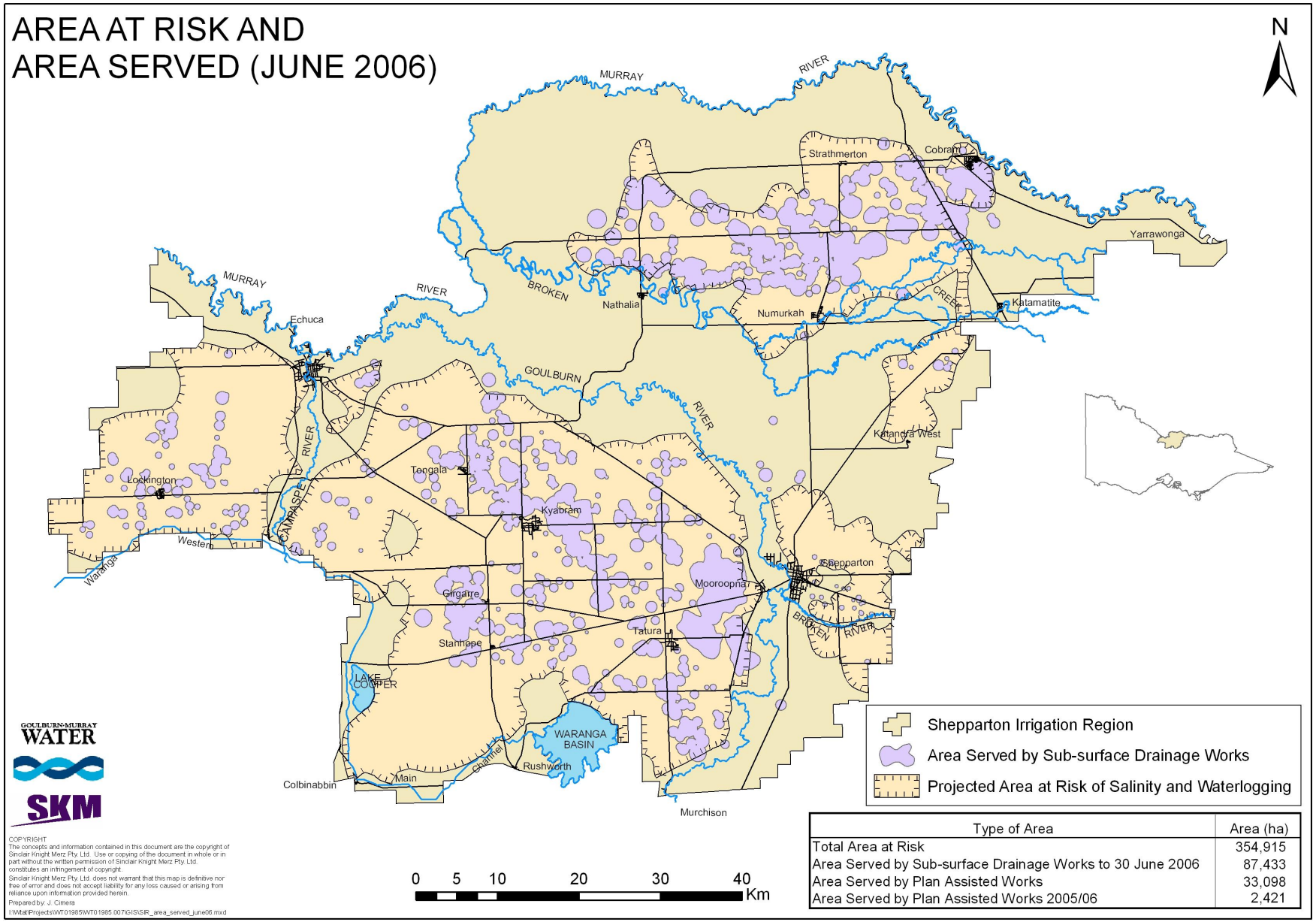


Figure 3 Shepparton Irrigation Region – Total Area Served by SSDP



Type of Area	Area (ha)
Total Area at Risk	354,915
Area Served by Sub-surface Drainage Works to 30 June 2006	87,433
Area Served by Plan Assisted Works	33,098
Area Served by Plan Assisted Works 2005/06	2,421

Figure 4 SIRCS – Sub-Surface Drainage Program – Summary of Indicators for 2005-06

		Aspirational Cumulative Totals			Funded Annual Totals		
		Target	Achieved	% Achieved	Target	Achieved	% Achieved
Operations Indicators							
AP-1	Total area served by SSDP (ha)	55,325	33,098	60%	2,800	2,421	86%
AP-2	Area served by Public Salinity Control Pumps (ha)	14,600	9,195	63%	600	595	99%
AP-4	Area served by SSDP assisted private irrigation bores (ha)	39,799	23,489	59%	2,200	1,826	83%
AP-3	Area served by SSDP assisted horticultural protection bores (ha)	825	399	48%	0	0	100%
AP-5	Area served by SSDP assisted tile drainage systems (ha)	101	16	16%	0	0	100%
PW-1	Public Salinity Control Pump sites completed to date for the SSDP	72	46	64%	3	3	100%
PW-2	Private irrigation bores installed or upgraded to date with SSDP assistance	407	335	82%	20	11	55%
PW-3	Private irrigation bores operating as Salinity Plan Bores	395	489	>100%	no target	27	>100%
PW-4	Private horticulture protection bores completed with assistance from the SSDP	33	20	61%	0	0	100%
PW-5	Private low volume pasture1 sub-surface drainage systems completed with assistance from SSDP	0	1	>100%	0	0	100%
PW-6	Total number of Tile drain sites assisted by the SSDP	0	4	>100%	0	0	100%

		Informational Annual Totals		
		Target	Achieved	% Achieved
Operations Indicators (continued)				
PW-7	Number of FEDS investigations completed		41	NA
MI-2	Number of FEDS applications		56	NA
MI-3	Percentage of successful FEDS investigations	25%	20%	80%
PO-1	Public Salinity Control Pump volume pumped for the year (ML)	2,218	2,290	103%
PO-2	Public Salinity Control Pump salt load exported from the region for year (kT)	9.6	1.8	19%
PO-3a	Phase A pumps volume pumped for the year (ML)		3864	NA
PO-3b	Phase A operation time compared to service level (%)	100%	95%	95%
PO-3c	Girgarre annual pumping (ML) – T101, T102 and T103 pumping combined	544	544	100%
PO-4	Private Irrigation Bores SDA pumping for the year (ML)	6,302	0	0%
PO-5	Private Irrigation Bores SDA salt exported for year (T)		0	NA
PO-6	Metered Private Irrigation Bores volume pumped for the year (ML)		62,752	NA
PO-7	Metered Private Irrigation Bores assisted by the SSDP volume pumped for the year compared to 65% Safe Use Volume (ML)	23,355	29,996	128%
MI-1	Number of Metered Irrigators using more than licence entitlement volume	0	40	NA
Management Indicators				
BE-1	Annual SSDP expenditure compared with budget ($millions)	$4.2	$4.3	103%
BE-2	Revenue from operation of public salinity control works ($1000s)		$616	NA
CG-1	Average cost to manage grants process per site		$15,252	NA
FE-1	Average cost per FEDS investigation		$23,794	NA
Environmental Indicators				
EV-1	Groundwater levels - Area threatened by shallow watertables (ha) ie. water levels less than 2 m below ground surface		90,306	NA
EV-3	Area of Environmental Features Protected (ha)		2,335	NA
MI-4	Average soil salinity in rootzone for indicator public pump (dS/m)		NA	NA

Achievement Against Target

- **Achieved or Exceeded (100%+)**
- **Satisfactory (70-99%)**
- **Below (26-69%)**
- **Well Below (<25%)**

3. Operations Indicators

The Operations indicators consist of Area Protection, Program Works and Program Outputs indicators. These are summarised in table form in Appendix A for the current period 2005/2006 and five previous annual periods.

3.1 Area Protection Indicators AP-1 to AP-5

The Area Protection indicators focus on reporting the area of land protected by the SSDP. The area of land protected by each of the key implementation areas of the SSDP are separately reported and also amalgamated to report on the total area served. The area served is based on pumping test data for individual groundwater pumps (for public pumps), the assumption that 1 ML of estimated use equates to 1 ha of groundwater protection (for private pasture irrigation bores) or for horticultural bores where the area served is assumed to be 1 hectare protected for every 2 ML/d pumped.

The area served is also compared to targets where applicable. These targets were devised in the original 1989 Program and are revised every five years. The plan targets or aspirational targets for the reporting period where set in the 1999-2000 five year review. Yearly area targets or funded targets, based upon budget availability, are also set by the SSDP at the start of each financial year. Meeting these yearly targets provides an indication of the efficiency and effectiveness of the SSDP in implementing works and measures. The overall SSDP targets and subsequent five yearly targets are a function of the expected available budget over the long term. Reporting against these targets gives an indication of how the SSDP is progressing towards total implementation.

The basis for calculating the area served has been changed to better represent the actual situation. Adjustments for overlap in the area of bore influence and more realistic assumptions regarding pumping volume have been made. In the KPI report the area served for previous years has been revised to reflect this. The methodology used is consistent with the 2000-2005 SSDP review.

Although the KPIs indicate that there has been a steady increase in the area currently protected by the SSDP, current five year targets, and therefore potentially the overall 30 year targets, are not being met. This can be largely attributed to public funding limitations, the severe drought conditions that have existed over the last few seasons limiting private landholder funds, and decreasing focus placed on groundwater control by landholders. Increased public funding levels and a return to a wetter climatic cycle will restore landholder focus on the need to control groundwater levels in the SIR and increase implementation rates.

Funding available has largely been focussed on Public Salinity Control pumps (AP-2) and SSDP assisted private pasture irrigation bores (AP-4). No funding has been spent on SSDP assisted private horticultural protection bores (AP-3) or SSDP assisted tile drainage systems (AP-5) because the demand for horticulture protection bores or tile drainage systems does not exist.

It should be noted that the values quoted for area served are post SSDP. The SSDP was created in 1990. The total area served by Public Pumps installed before the commencement of the SSDP was created was 13,240 ha. This total figure is made up of Public Watertable Control pumps (Phase A pumps) and Salinity Control pumps (Girgarre Pumps) which protected 12,275 ha and 965 ha respectively.

3.1.1 AP-1 – Total Area Served By SSDP

The total area served by the SSDP was 33,098 ha an increase of 2,421 ha for 2005-06. Compared to the aspirational target, the program is under target by 22,227 ha. Compared to the funded target the achievement for the year was 86% of the target value of 2800 ha.

3.1.2 AP-2 – Area Served By Public Salinity Control Pumps

The total area served by Public Salinity Control Pumps was 9,195 ha, an increase of 595 ha for 2005-06. Compared to the aspirational target the program is under target by 5,405 ha. Compared to the funded target the achievement for the year was 99% of the target value of 600 ha.

3.1.3 AP-4 – Area Served By SSDP Assisted Private Irrigation Bores

The total area served by SSDP assisted private irrigation bores was 23,489 ha, an increase of 1,826 ha for 2005-06. Compared to the aspirational target the program is under target by 16,310 ha. Compared to the funded target the achievement for the year was 83% of the target value of 2200 ha.

3.1.4 AP-3 – Area Served By SSDP Assisted Horticultural Protection Bores

The total area served by SSDP horticultural protection bores was 399 ha. This number has not increased since 2002/03. Compared to the aspirational target the program is under target by 426 ha.

3.1.5 AP-5 – Area Served By SSDP Assisted Tile Drainage Systems

The total area served by SSDP assisted tile drainage systems is 16 ha. This is limited to horticultural areas as no SSDP assisted tile drainage systems are located in pasture areas. The aspirational target is 101 ha, as such, the program is under target by 85 ha.

3.2 Program Works Indicators PW-1 to PW-7, MI-2 and MI-3

Program Works are concerned with gauging the completion, operation and upgrade of bores, tile drainage systems, evaporation basins and other land based drainage disposal schemes under the SSDP. Works are categorised as either:

Public: - Salinity Control

- Watertable Control

Private: - Pasture

- Horticulture

Public salinity and watertable control is achieved through the use of bores. For private pasture, bores have been used exclusively to date. For private horticulture, a combination of bores and tile drainage have been used, though new SSDP assisted tile drainage systems have not been used for several years.

It should be noted that no SSDP assisted evaporation basins for drainage disposal exist in the SIR. Public salinity control pumps are primarily used to protect agriculatural assets and have not generally been used for environmental protection purposes. No public pump disposal to land such as tree lots and salt tolerant crops for the SSDP have occurred. However, salinity control through partial conjuctive re-use from a private groundwater pump is being undertaken through at the Mount Scobe trial site, near Kyabram. This trial site is on a working dairy farm. About thirty percent of the groundwater pumped is conjunctively reused in accordance with the guidelines for applied irrigation water salinity and used for irrigation. The remainder of the pumped groundwater is irrigated directly onto a salt tolerant tree plantation.

3.2.1 PW-1 – Public Salinity Control Pump Sites Completed for the SSDP

The total number of public salinity control pumps installed last year was 3. Compared to the aspirational target the program is under target by 26 bores. Compared to the funded target the achievement for the year was 100% of the target value of 3 bores.

3.2.2 PW-2 – Private Irrigation Bores Installed or Upgraded with SSDP Assistance

The total number of private bores installed or upgraded last year with SSDP assistance was 11. Compared to the aspirational target the program is under target by 72 bores. Compared to the funded target the achievement for the year was 55% of the target value of 20 bores.

3.2.3 PW-3 – Private Irrigation Bores Operating as Salinity Plan Bores

Salinity Plan Bores (SPBs) are licensed irrigation bores that are required to meet special operating requirements in order to qualify registered SPB owners for financial assistance. For those bore owners who have not received assistance under government funded catchment management programs, registration of their irrigation bore as a SPB is voluntary. All irrigation bores receiving financial assistance under the government funded catchment management programs are mandatory SPBs. SPB operators have their annual fixed fee waived during the time their bores are operating as registered SPBs.

Winter groundwater extraction and disposal applies to registered SPBs. A special operating condition applies to SPB owners relating to winter groundwater extraction and stipulates that winter season disposal of their entitled Salt Disposal Allocation (SI), to their nominated disposal point, must be undertaken when directed by G-MW.

The number of SPBs has increased by 27 for this year. Compared to the aspirational target the program exceeded the target by 94 bores. There was no winter and spring disposal during the current reporting period and previous reportng period shown as a result of the trigger dilution flow in the Murray River not

being achieved.

3.2.4 PW-4 – Private Horticultural Irrigation Bores Completed with SSDP Assistance

No private SSDP assisted horticultural irrigation bores have been installed for several years. The current number of bores is 20. This is 13 below the aspirational cumulative target.

3.2.5 PW-5 – Private Low Flow Pasture Completed with SSDP Assistance

Low volume sub-surface drainage systems are used to target areas with poor aquifer systems. These areas are categorized as C Type areas based on their high groundwater levels and low yielding aquifer systems. Areas with high yielding aquifer systems are referred to as B Type.

For pasture areas, only 1 SSDP assisted private low volume sub-surface drainage system has been installed. This was completed in 2002/03. The aspirational target for this indicator is 0.

3.2.6 PW-6 – Tile Drainage Sites with SSDP Assistance

SSDP assisted tile drainage sites have been solely installed in horticultural areas. No SSDP assisted tile drainage sites have been installed in pasture areas. A SSDP assisted tile drainage system has not been installed in a horticultural area for several years - the current number installed to date is 4. The aspirational target for this indicator is 0.

3.2.7 PW-7, MI-1 and MI-3 – Farm Exploratory Drilling Scheme

The Farm Exploratory Drilling Scheme (FEDS) is a program that offers financial and technical support for the exploration of groundwater in the SIR. Investigations are carried out in both horticultural and pasture areas, though most investigations are typically in pasture areas.

As indicated for the PW-7 indicator, the number of pasture FEDS completed this year was 41. No horticulture FEDS were completed this year. This is the lowest overall number of FEDS completed since 2000/01 and is largely due to a lack of demand for the FEDS program by farmers. Some reasons for the decrease in demand for the program is a reduction in the need for the water for irrigation, reduced visible impacts from salinisation due to lower watertable levels and/or insufficient promotion of the program.

MI-2 gives an indication of the strength of the FEDS program, which is a key indicator of landholder interest and the potential for the SSDP to assist in works on the ground. For 2004/05 and 2005/06 the FEDS waiting list has been low compared to previous years due to reduced demand for the program. This indicates a need to increase promotion of the FEDS program to avoid a slow down in FEDS and capital grants in the coming period. There was also a continued decrease in the total number of FEDS investigations completed compared to the peak in 2003/04.

MI-3 shows a decrease in the percentage of successful FEDS investigations for 2005/06 to 20% from 25% for 2004/05. This is below the target of 25%.

3.3 Program Outputs Indicators PO-1 to PO-8, MI-1

Program Output Indicators for the SSDP report the performance of salinity control works for Public Salinity Control Pumps, Public Watertable Control Pumps (also referred to as 'Phase A' pumps), and Private Irrigation Bores (including those with capital grants assistance). The performance is measured in terms of groundwater volumes pumped and salt exported.

Outputs for the Public and Private pumping components of the SSDP are affected by a range of factors, including climate and surface water allocations. Of particular note, winter/spring disposal pumping from private and public groundwater bores has not been conducted in recent years due to insufficient dilution flows in the River Murray (largely a response to extended dry conditions during the past few years).

3.3.1 PO-1 – Public Salinity Control Pump Volume

The amount pumped this year by the Public Salinity Control Pumps was 2,290 ML during the summer disposal period compared to a pumping capacity of 2,218 ML for the summer period. Winter/spring pumping was not possible this year due to insufficient dilution flows in the River Murray as indicated above.

3.3.2 PO-2 – Public Salinity Control Pump Salt Load Exported

The actual amount exported by the Public Salinity Control Pumps was 1.83 kT compared to a salt export capacity of 9.6 kT.

3.3.3 PO-3 – Phase A And Girgarre Evaporation Basin Pumping

The Phase A or Watertable Control Pumps pumped volume for this year was 3,864 ML, an increase of 176 ML compared to last year. The pumps were operating 95% compared to their service level.

The total Girgarre evaporation basin pumping (T101, T102 and T103) was 544 ML, an increase of 32 ML compared to last year. This figure met the total target of 544 ML. T101 pumping is discharged to the evaporation basin – 327 ML was pumped against a target of 352 ML. T102 and T103 pumping is discharged to drain - 217 ML was pumped against a target of 192 ML.

3.3.4 PO-4 – Private Irrigation Bores SDA Pumping

Private Irrigation SDA Bore pumping has not occurred for several years due to climatic conditions not allowing salt disposal pumping. The pumping allocation is 6,302 ML.

3.3.5 PO-5 – Private Irrigation Bores SDA Salt Exported

Similarly as for indicator PO-4, Private Irrigation SDA Bore salt export has not occurred for several years due to the dry climatic conditions.

3.3.6 PO-6 – Private Irrigation Bores Total Volume Pumped

Private Irrigation Bores with verified usage data pumped a total volume of 62,752 ML for the year a decrease of 2,248 ML compared to last year. Only 40% of the total licence volume for these bores was used last year.

3.3.7 PO-7 – Private Irrigation Bores Assisted – Volume Pumped vs 65% Safe Use Volume

The private assisted irrigation bore volume pumped was 29,996 ML. This is within optimal operational target range of the upper Safe Use Volume limit and the lower 65% Safe Use Volume limit.

3.3.8 MI-1 – Over-Use of Groundwater By Irrigators

The number of irrigators over-using their groundwater entitlement has decreased substantially compared to 222 in 2002/03. The current number is 40, which is less than 20% of the 2002/03 value. The large decrease is likely to be due to slightly wetter conditions since 2002/03 and an end of the transition period for use within entitlement.

4. Management Indicators

These indicators focus on financial statistics of the SSDP Program. Financial data presented includes budget and expenditure data for the SSDP program, private and public sector sector contributions to Public Salinity Control, Capital Grant Scheme costs and FEDS costs. These indicators are tabulated in Appendix B.

4.1 BE-1 – SSDP Expenditure Compared to Budget

SSDP expenditure for this year was $4.3 million against a budget of $4.2 million. The development component, which includes research and investigation, was over budget by $107,000. The program support component, which include meetings, coordination, program management, extension and capacity building, was under budget by $4,000. The implementation component, which includes all on ground works, was over budget by $4,000. The monitoring and reporting component was over budget by $1,000.

The percentage of annual budget allocated to research and development was 30% this year compared to 16% for 2004/05. This value has increased year on year for the last 3 years when data became available.

4.2 BE-2 – Revenue from Operation of Public Salinity Control Works

Revenue from the operation of the Public Salinty Control Works is raised from landholder and local government contributions. For 2005/06, landholder contributions were $510,867 and local government contributions were $104,690 bringing the total revenue to $615,557. This is an increase of 0.7% over the previous year.

4.3 CG-1 – Capital Grants Scheme

The capital grant scheme costs have increased over the last year for both new pasture and system upgrades. There are no costs associated with the new horticulture systems as none of these systems were installed last year. The total administration costs have decreased over the last year to bring the average cost per site to manage the grants process down to $15,252 compared to $22,497 for last year.

4.4 FE-1 – Farm Exploration Drilling

The total cost for FEDS has risen marginally compared to last year. However, due to fewer investigations completed during the year the average cost per FEDS investigation has risen by approximately 25% over the last year.

5. Environmental Indicators

The environmental indicators are intended to demonstrate the environmental benefits and impacts of the SSDP. The indicators focus on groundwater levels, environmental features protected and salinity. These indicators are tabulated in Appendix C.

5.1 EV-1 – Area Threatened by Shallow Watertables

This indicator provides information on the area within the SIR that is threatened by shallow watertables. Areas given are for less than 2m and less than 3m below ground level based on August levels.

In both cases, the areas threatened have generally decreased since 2000/01, except in the last year when they have shown an increase. The overall decrease is largely explained by the drier weather over with the recent rise being due to a wetter winter in 2005/06.

5.2 EV-2 - Area Of Environmental Features Protected

The area of environmental features protected by subsurface drainage works to the end of 2005/06 was 2,335 ha.

5.3 MI-4 - Soil Salinity Measurements

No soil salinity data was available for this year due to the dry weather, making the results unreliable.

Soil salinity measurements have been implemented to determine the impact of Salinity Control Public Pumps on soil salinity within the root zone, and to compare the effectiveness of different techniques for measuring the salinity change.

A key assumption of the SSDP is that lowering the pressure level in aquifers (ie. lowering the watertable) promotes leaching of salt from the root zone. This assumption is based on a significant body of scientific work conducted in the region from the 1960's to the 1990's and numerous on-ground examples/observed behaviours.

This KPI Category uses a limited number of representative sites to confirm the effectiveness of the Program in promoting leaching (and therefore managing root zone salinity), and subsequently protecting agricultural productivity.

Initial investigations were carried out in 2002/3 on two Salinity Control Public Pumps. From these investigations, Public Pump Ro107 was assessed as suitable for further investigations and baseline conditions were established through electromagnetic (EM38) and soil salinity surveys. Further EM38 and soil salinity surveys were then earmarked for 2004/5 (ie. two year reporting period) to enable an assessment of soil salinity changes.

Five other public pump sites were investigated for potential ongoing soil salinity monitoring but none were found to be suitable.

Appendix A

Operations Indicators

Area Protection - KPI Indicators AP-1 to AP-5

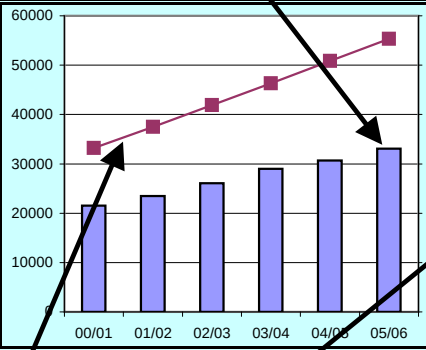
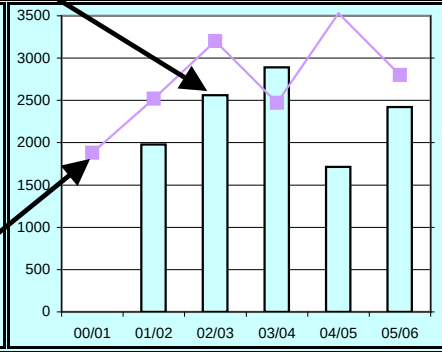
Program Works - KPI Indicators PW-1 to PW-7, MI-2, MI-3

Program Outputs – KPI Indicators PO-1 to PO-7, MI-1

HOW TO READ THE TABLES

Annual Achievements

Cumulative Achievements

Indicator			Previous Periods					Current Period	Comparison	
			00/01	01/02	02/03	03/04	04/05	05/06	Cumulative Total	Annual Total
AP-1	Total area served by SSDP (ha)[1]									
	Achievements	Cumulative Total	21530	23510	26072	28963	30677	33098		
	Achievements	Annual Total		1980	2562	2890	1715	2421		
	Aspirational Target [2]	Cumulative Total	33219	37510	41872	46320	50855	55325		
	Funded Target	Annual Total	1880	2520	3200	2470	3530	2800		

Aspirational Target

Funded Target

SIRCS - Sub-Surface Drainage Program

Operations Indicators

Area Served

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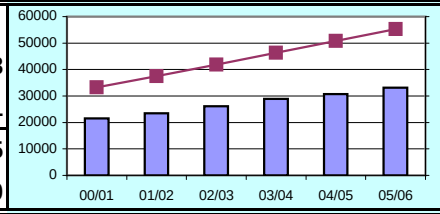
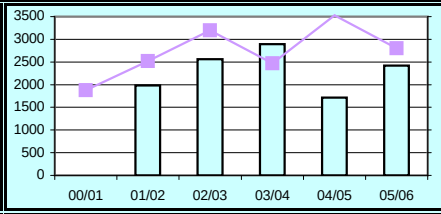
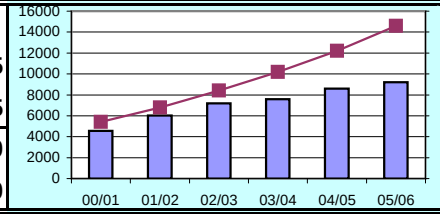
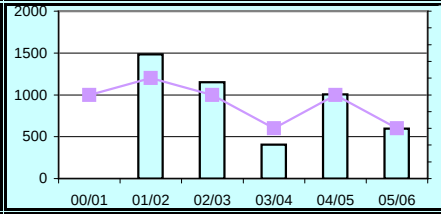
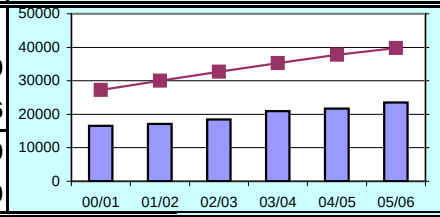
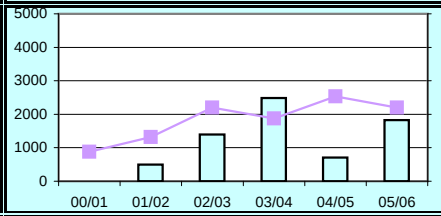
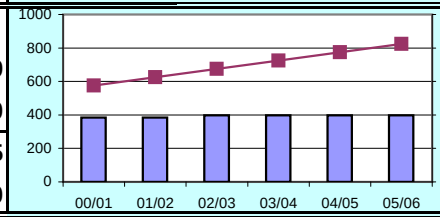
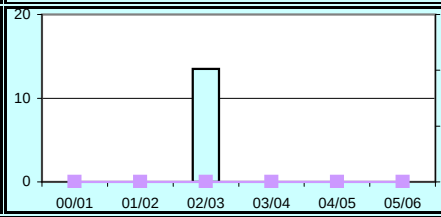
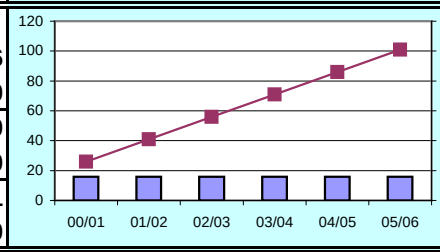
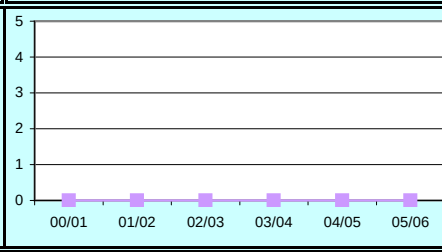
GOULBURN-MURRAY WATER

Indicator			Previous Periods					Current Period	Comparison	
			00/01	01/02	02/03	03/04	04/05	05/06	Cumulative Total	Annual Total
AP-1	**Total area served by SSDP (ha)[1]**									
	Achievements	Cumulative Total	21530	23510	26072	28963	30677	**33098**		
	Achievements	Annual Total		1980	2562	2890	1715	**2421**		
	Aspirational Target [2]	Cumulative Total	33219	37510	41872	46320	50855	**55325**		
	Funded Target	Annual Total	1880	2520	3200	2470	3530	**2800**		
AP-2	**Area served by Public Salinity Control Pumps (ha)**									
	Achievements	Cumulative Total	4557	6042	7192	7596	8600	**9195**		
	Achievements	Annual Total		1485	1150	404	1004	**595**		
	Aspirational Target	Cumulative Total	5400	6800	8400	10200	12200	**14600**		
	Funded Target	Annual Total	1000	1200	1000	600	1000	**600**		
AP-4	**Area served by SSDP assisted private irrigation bores (ha)**									
	Achievements	Cumulative Total	16572	17067	18466	20952	21663	**23489**		
	Achievements	Annual Total		495	1399	2486	711	**1826**		
	Aspirational Target	Cumulative Total	27218	30044	32741	35324	37794	**39799**		
	Funded Target	Annual Total	880	1320	2200	1870	2530	**2200**		
AP-3	**Area served by SSDP assisted horticultural protection bores (ha)**									
	Achievements	Cumulative Total	385	385	399	399	399	**399**		
	Achievements	Annual Total		0	14	0	0	**0**		
	Aspirational Target	Cumulative Total	575	625	675	725	775	**825**		
	Funded Target	Annual Total	0	0	0	0	0	**0**		
AP-5	**Area served by SSDP assisted tile drainage systems (ha)**									
	Horticulture	Cumulative Total	16	16	16	16	16	**16**		
		Annual Total		0	0	0	0	**0**		
	Pasture	Cumulative Total	0	0	0	0	0	**0**		
		Annual Total		0	0	0	0	**0**		
	Aspirational Target [3]	Cumulative Total	26	41	56	71	86	**101**		
	Funded Target	Annual Total	0	0	0	0	0	**0**		

[1] Does not include Pre SSDP pumps - SSDP began in 1990, so bores before this time are excluded; [2] Combines targets for AP2, 3, 4 and 5; [3] Target is for horticulture, there is no target for pasture.

SIRCS - Sub-Surface Drainage Program

Operations Indicators

Program Works

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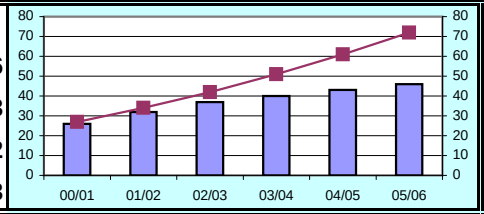
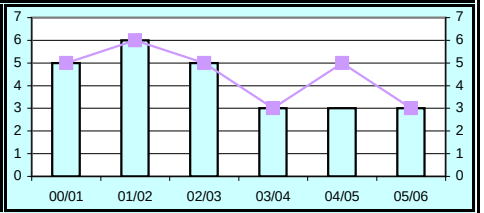
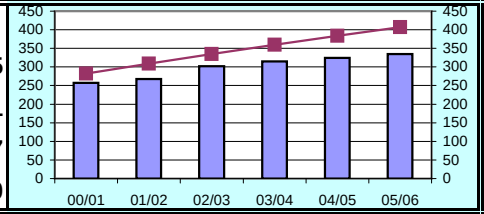
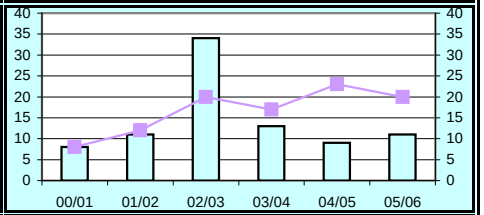
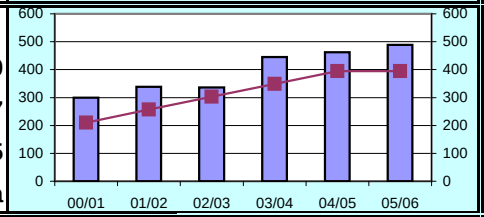
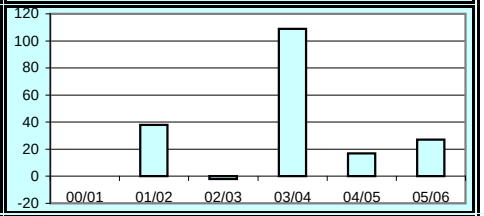
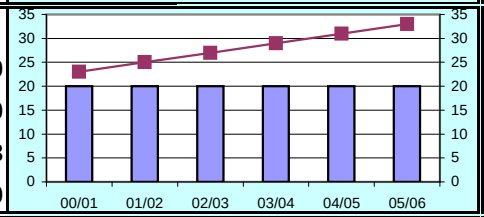
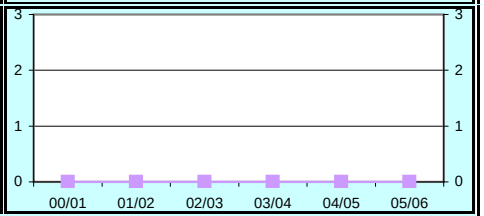
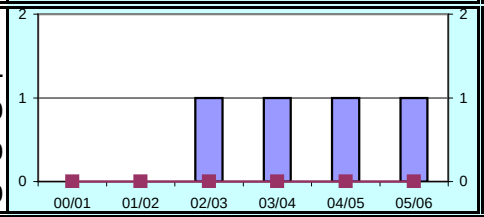
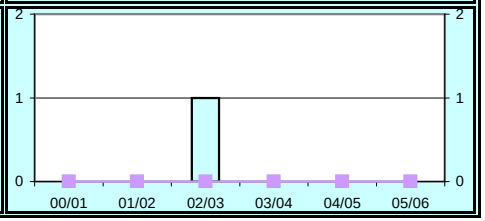
	Indicator		Previous Periods					Current Period	Comparison	
			00/01	01/02	02/03	03/04	04/05	05/06	Cumulative Total	Annual Total
PW-1	**Public Salinity Control Pump sites completed to date for the SSDP**									
	Achievements	Cumulative Total	26	32	37	40	43	**46**		
	Achievements	Annual Total	5	6	5	3	3	**3**		
	Aspirational Target	Cumulative Total	27	34	42	51	61	**72**		
	Funded Target	Annual Total	5	6	5	3	5	**3**		
PW-2	**Private irrigation bores installed or upgraded to date with SSDP assistance**									
	Achievements	Cumulative Total	257	268	302	315	324	**335**		
	Achievements	Annual Total	8	11	34	13	9	**11**		
	Aspirational Target	Cumulative Total	282	309	335	360	384	**407**		
	Funded Target	Annual Total	8	12	20	17	23	**20**		
PW-3	**Private irrigation bores operating as Salinity Plan Bores**									
	Achievements	Cumulative Total	300	338	336	445	462	**489**		
	Achievements	Annual Total		38	-2	109	17	**27**		
	Aspirational Target	Cumulative Total	210	257	303	349	395	**395**		
	Funded Target	Annual Total	n/a	n/a	n/a	n/a	n/a	**n/a**		
PW-4	**Private horticulture protection bores completed with assistance from the SSDP**									
	Achievements	Cumulative Total	20	20	20	20	20	**20**		
	Achievements	Annual Total		0	0	0	0	**0**		
	Aspirational Target	Cumulative Total	23	25	27	29	31	**33**		
	Funded Target	Annual Total	0	0	0	0	0	**0**		
PW-5	**Private low volume pasture[1] sub-surface drainage systems completed with assistance from SSDP**									
	Achievements	Cumulative Total	0	0	1	1	1	**1**		
	Achievements	Annual Total		0	1	0	0	**0**		
	Aspirational Target	Cumulative Total	0	0	0	0	0	**0**		
	Funded Target	Annual Total	0	0	0	0	0	**0**		

[1] Private C-type pumps (low volume pasture) - no targets set as yet.

SIRCS - Sub-Surface Drainage Program

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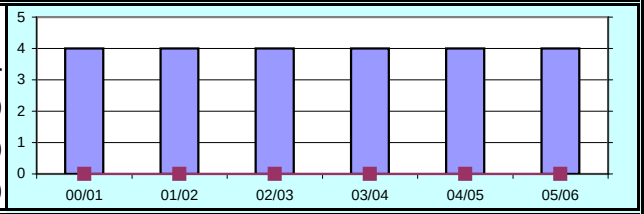
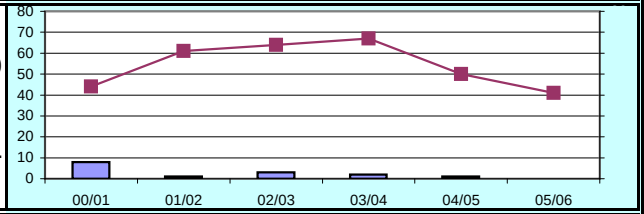
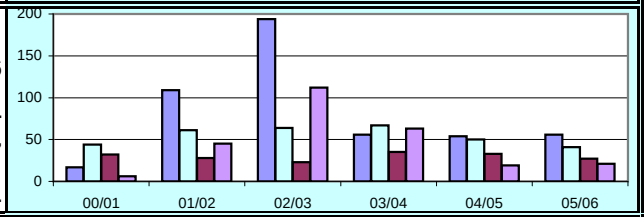
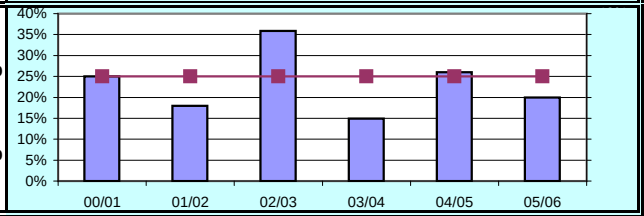
Operations Indicators

Program Works

	Indicator		Previous Periods					Current Period	Comparison
			00/01	01/02	02/03	03/04	04/05	05/06	
PW-6	**Total number of Tile drain sites assisted by the SSDP**								
	Horticulture	Cumulative Total	4	4	4	4	4	**4**	
		Annual Total		0	0	0	0	**0**	
	Pasture	Cumulative Total	0	0	0	0	0	**0**	
		Annual Total		0	0	0	0	**0**	
PW-7	**Number of FEDS investigations completed**								
	Horticulture	Annual Total	8	1	3	2	1	**0**	
	Pasture	Annual Total	44	61	64	67	50	**41**	
MI-2	**Number of FEDS applications**[1]								
		Received	17	109	194	56	54	**56**	
		Completed	44	61	64	67	50	**41**	
		In Progress	32	28	23	35	33	**27**	
		Waiting List	6	45	112	63	19	**21**	
MI-3	**Percentage of successful FEDS investigations**								
	Achievements		25%	18%	36%	15%	26%	**20%**	
	Target		25%	25%	25%	25%	25%	**25%**	

[1] Only Refers to pasture FEDS.

SIRCS - Sub-Surface Drainage Program

Operations Indicators

Program Outputs

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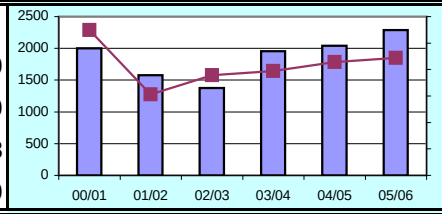
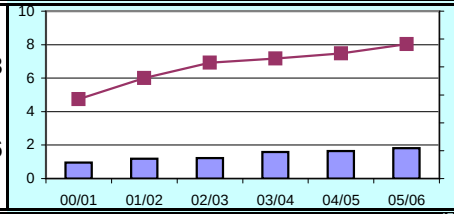
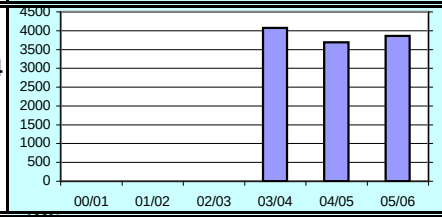
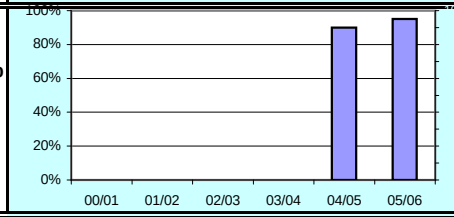
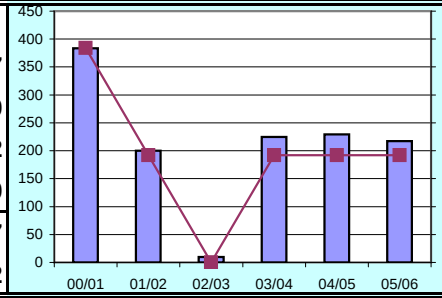
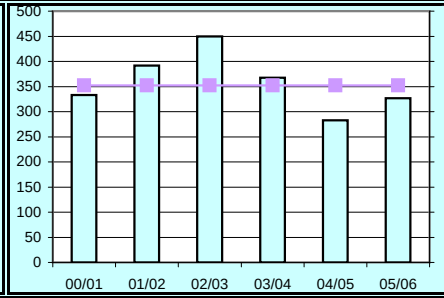
	Indicator	Previous Periods					Current Period	Comparison
		00/01	01/02	02/03	03/04	04/05	05/06	
PO-1	**Public Salinity Control Pump volume pumped for the year (ML)**							
	Summer Pumping	1001	1580	1375	1956	2043	**2290**	
	Winter/Spring Pumping	1001	0	0	0	0	**0**	
	Summer Pumping Capacity	1374	1530	1894	1975	2139	**2218**	
	Winter/Spring Pumping Capacity	1374	0	0	0	0	**0**	
PO-2	**Public Salinity Control Pump salt load exported from the region for year**							
	Actual Amount Exported (kT)	0.95	1.19	1.22	1.59	1.65	**1.83**	
	Salt Export Capacity [1] (kT)	5.7	7.2	8.3	8.6	9.0	**9.6**	
P0-3a	**Phase A pumps volume pumped for the year (ML)**							
		NA	NA	NA	4076	3688	**3864**	
P0-3b	**Phase A operation time compared to service level (%)**							
		NA	NA	NA	NA	90%	**95%**	
P0-3c	**Girgarre evaporation basin annual pumping (ML)**							 
	T102/3 Summer Pumping	192	200	10	225	229	**217**	
	T102/3 Winter/Spring Pumping	192	0	0	0	0	**0**	
	T102/3 Summer Pumping Capacity	192	192	0	192	192	**192**	
	102/3 Winter/Spring Pumping Capacity	192	0	0	0	0	**0**	
	T101 Pumping Pumping	333	392	450	368	283	**327**	
	T101 Pumping Capacity	352	352	352	352	352	**352**	

[1] Based on design capacity and nominal salinity and assumed disposal percentages.

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Operations Indicators

Program Outputs

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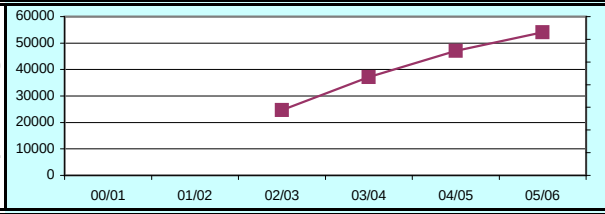
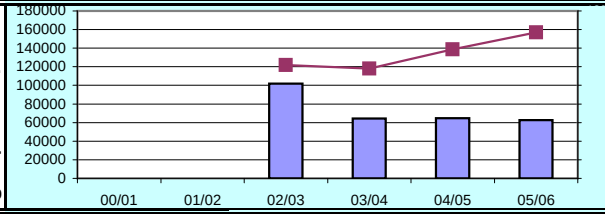
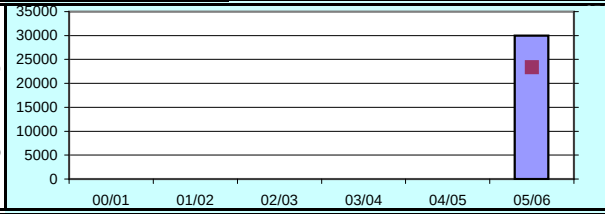
GOULBURN-MURRAY WATER

Indicator		Previous Periods					Current Period	Comparison
		00/01	01/02	02/03	03/04	04/05	05/06	
PO-4	**Private Irrigation Bores SDA pumping for the year (ML)[1]**							
	Actual Amount Pumped	0	0	0	0	0	**0**	
	Pumping Allocation[2]			2878	4329	5484	**6302**	
PO-5	**Private Irrigation Bores SDA salt exported for year (T)[1]**							
		0	0	0	0	0	**0**	
PO-6	**Metered Private Irrigation Bores volume pumped for the year (ML)[3 4]**							
	Actual Amount Pumped	NA	NA	101823	64288	64820	**62752**	
	Licenced volume[5]	NA	NA	121757	118132	138669	**156984**	
	Percentage Used			84%	54%	47%	**40%**	
PO-7	**Metered Private Irrigation Bores assisted by the SSDP volume pumped for the year (ML)[3]**							
	Actual Amount Pumped	NA	NA	NA	NA	NA	**29996**	
	65% of Safe Use Volume[6]	NA	NA	NA	NA	NA	**23355**	
MI-1	**Number of Metered Irrigators using more than licence entitlement volume**							
		NA	NA	222	107	91	**40**	

[1] Climatic conditions did not allow salt disposal pumping. [2] Potential maximum amount only. [3] Values likely higher: total volume pumped based on bores where pumping volume can be reliably calculated/metered. [4] 2002/3 was a drought year and groundwater usage was increased by irrigators. [5] Licenced volume of pumps where useage can be reliably calculated. [6] Safe Use Volume for Assisted Bores that pumped.

Appendix B

Management and Cost Effectiveness Indicators

Budget, Revenue and Expenditure - KPI Indicators BE-1 to BE-2

Budget, Revenue and Expenditurec – CG-1, FE-1

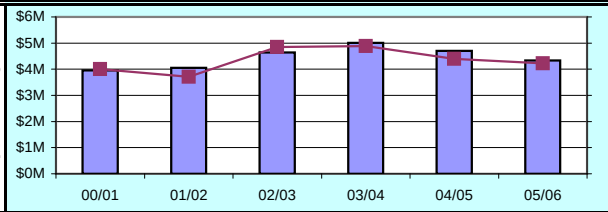
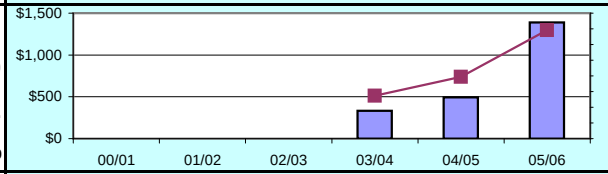
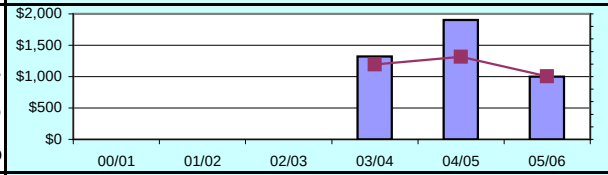
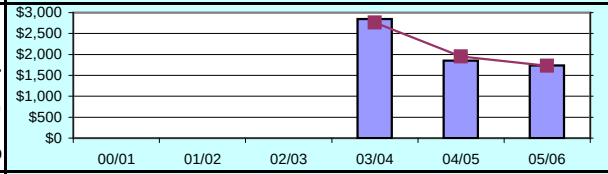
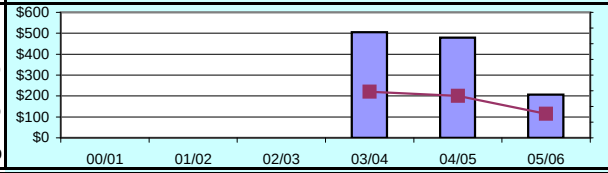
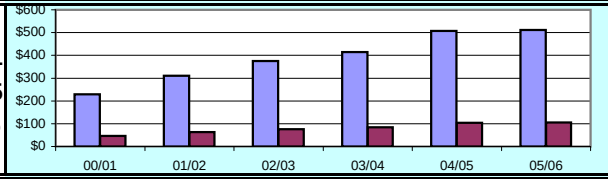
SIRCS - Sub-Surface Drainage Program

Operations Indicators

Program Outputs

2005-06 PERFORMANCE REPORT

GOULBURN-MURRAY WATER

	Indicator	Previous Periods					Current Period	Comparison
		00/01	01/02	02/03	03/04	04/05	05/06	
BE-1	**Total Annual SSDP expenditure compared with budget ($millions)**							
	Expenditure	$4.0	$4.1	$4.6	$5.0	$4.7	**$4.3**	
	Budget	$4.0	$3.7	$4.8	$4.9	$4.4	**$4.2**	
	Development[1] Program Expenditure and Budget Breakdown ($1000)							
	Expenditure	Data not available			$334	$492	**$1,389**	
	Budget	Data not available			$446	$689	**$1,282**	
	Budget (% of Total)				9%	16%	**30%**	
	Support Program Expenditure and Budget Breakdown ($1000)							
	Expenditure	Data not available			$1,321	$1,901	**$1,001**	
	Budget	Data not available			$1,194	$1,318	**$1,005**	
	Budget (% of Total)				24%	30%	**24%**	
	Implementation Program Expenditure and Budget Breakdown ($1000)							
	Expenditure	Data not available			$2,848	$1,853	**$1,734**	
	Budget	Data not available			$2,762	$1,955	**$1,730**	
	Budget (% of Total)				57%	44%	**41%**	
	Monitoring & Reporting Program Expenditure and Budget Breakdown ($1000)							
	Expenditure	Data not available			$506	$479	**$206**	
	Budget	Data not available			$489	$434	**$205**	
	Budget (% of Total)				10%	10%	**5%**	
BE-2	**Revenue from operation of public salinity control works ($1000)**							
	Landholder Contribution	$229	$311	$376	$414	$507	**$511**	
	Local Government Contribution	$47	$64	$75	$85	$104	**$105**	
	Total	$275	$374	$451	$499	$611	**$616**	

[1] For a full description of each component please refer to the glossary

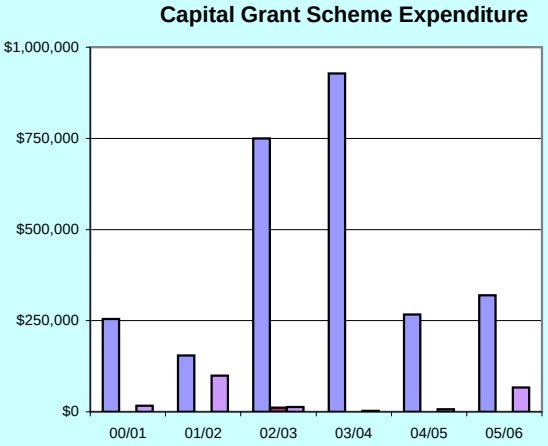
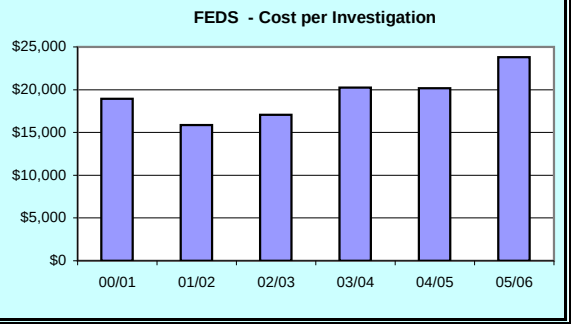
SIRCS - Sub-Surface Drainage Program

Management Indicators

Budget, Revenue and Expenditure

2005-06 PERFORMANCE REPORT

GOULBURN-MURRAY WATER

Indicator		Previous Periods					Current Period	Comparison
		00/01	01/02	02/03	03/04	04/05	05/06	
CG-1	**Capital Grant Scheme (CGS)**							
	New pasture CGS systems costs							
	Landholder	$134,907	$69,937	$379,967	$451,650	$115,262	**$170,525**	
	Capital Grant	$119,864	$84,712	$370,083	$476,510	$151,612	**$148,913**	
	Total	$254,771	$154,649	$750,050	$928,160	$266,874	**$319,437**	
	New horticulture sytems costs							
	Landholder	$0	$0	$5,300	$0	$0	**$0**	
	Capital Grant	$0	$0	$5,940	$0	$0	**$0**	
	Total	$0	$0	$11,240	$0	$0	**$0**	
	CGS system upgrades							
	Landholder	$6,826	$69,652	$5,597	$1,043	$3,542	**$47,809**	
	Capital Grant	$10,238	$29,405	$7,710	$1,937	$3,892	**$18,839**	
	Total	$17,064	$99,057	$13,307	$2,980	$7,434	**$66,648**	
	Total Administration Costs	$185,150	$188,462	$210,000	$257,259	$202,474	**$167,770**	
	Average cost to manage grants process per site	$46,288	$47,115	$8,750	$17,151	$22,497	**$15,252**	
FE-1	**Farm Exploratory Drilling Service (FEDS)**							
	Total cost of annual FEDS investigations for the SSDP	$832,988	$967,808	$1,091,140	$1,357,673	$1,009,143	**$1,046,929**	
	Number of FEDS investigations[1]	44	61	64	67	50	**44**	
	Average cost per FEDS investigation	$18,932	$15,866	$17,049	$20,264	$20,183	**$23,794**	

[1] Only refers to pasture FEDS

Appendix C

Environmental Indicators

Benefits and Impacts - KPI Indicators EV-1 and EV-3

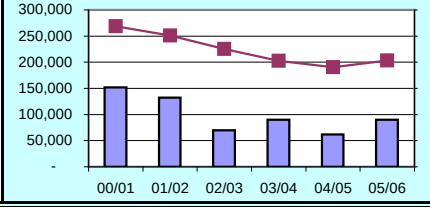
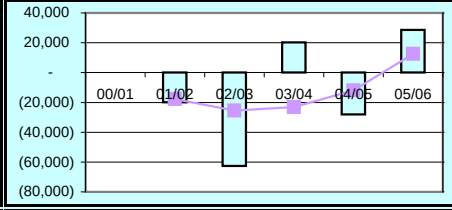
Program Review Long-Term - KPI Indicators MI-4

SIRCS - Sub-Surface Drainage Program

Environmental Indicators

2005-06 PERFORMANCE REPORT

GOULBURN-MURRAY WATER

Indicator			Previous Periods					Current Period	Comparison	
			00/01	01/02	02/03	03/04	04/05	05/06	Total Area	Annual Change
EV-1	**Groundwater levels - Area threatened by shallow watertables (ha)[1]**									
	< 2 m	Total Area	152,074	132,118	69,544	89,704	61,647	**90,306**		
		Annual Change		(19,956)	(62,574)	20,160	(28,057)	**28,659**		
	< 3 m	Total Area	268,660	250,975	225,550	202,479	190,634	**203,051**		
		Annual Change		(17,685)	(25,425)	(23,071)	(11,845)	**12,417**		
EV-3	**Area of Environmental Features Protected by SSDP Program Works (ha)**		NA	NA	NA	NA	NA	**2335**		
MI-4	**Average soil salinity in rootzone for indicator public pump (dS/m)[2]**		3.64	NA	NA	NA	2.70	**NA**		

[1] Based on August groundwater levels - eg for 2005/6 August 2005 groundwater levels used [2] Based on results for Public Pump Ro107. Not available for 2005/06 due to extremely dry weather.

Appendix D

Glossary of Terms

Glossary of Terms

Term	Description
Area Served	An area within the influence of a groundwater pump, tile drain or other subsurface drainage system
CGS	Capital Grant Scheme
DPI	Department of Primary Industries
DSE	Department of Sustainability and Environment
FEDS	Farm Exploratory Drilling Scheme
GBCMA	Goulburn-Broken Catchment Management Authority
G-MW	Goulburn-Murray Rural Water Authority
KPI	Key Performance Indicator
MDBC	Murray-Darling Basin Commission
NAP	National Action Plan
NHT	Natural Heritage Trust
Private Bore	Private Irrigation Bore, also known as Private Groundwater Pump.
Program Development	Component of the SSDP related to development. Includes research and investigation.
Program Implementation	Component of the SSDP related to implementation. Includes all on-ground works (including the CGS, FEDS and Public Pump Program).
Program Monitoring and Reporting	Component of the SSDP related to monitoring and reporting. Includes biophysical and program (KPI) reporting.
Program Support	Component of the SSDP related to support. Includes committee meetings, coordination, program management, extension and capacity building.
Public Salinity Control Pump	A Public Pump design to manage salinity levels in the root zone.
Public Watertable Control Pump	A public pump designed to manage high watertables.
SIRCS	Shepparton Irrigation Region Catchment Strategy (formerly known as the Shepparton Irrigation Region Land and Water Salinity Management Plan or SIRLWSMP).
SIRGMP	Shepparton Irrigation Region Groundwater Management Plan
SIRIC	Shepparton Irrigation Region Implementation Committee
SPB	Salinity Plan Bore
SSDP	Sub-surface Drainage Program

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