

GOULBURN-MURRAY
WATER



Shepparton Irrigation Region Catchment Implementation Strategy

Sub-surface Drainage Program Research and Investigation Strategic Plan Annual Report for 2007/08

Final

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Purpose

The purpose of this report is to present the key achievements from the Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS) Sub-surface Drainage Program (SSDP) Research and Investigation (R&I) Strategic Plan for 2007/08.

Background

The SSDP R&I Strategic Plan was revised for the first time in 2007 following its inception in 2003. This revision focused on developing and implementing the SSDP R&I Strategic Plan for the period 2007-11.

As part of this process, a 4-Year and a more detailed 1-Year SSDP R&I Strategic Plan were developed.

2007/08 was the fifth year of implementation of the SSDP R&I Strategic Plan.

Overview of 2007/08 Plan Outputs

The key SSDP R&I Strategic Plan outputs for 2007/08 were:

- 18 projects were progressed over the 2007/08 financial year
- Four projects were completed and are detailed in **Attachment A**
- Two stand alone sub-projects were completed and are detailed in **Attachment B**
- 21 new issues were identified. 13 new issues were identified and assessed as sufficiently important to warrant inclusion in the SSDP R&I Strategic Plan and are summarised in **Attachment C**.

SSDP R&I Strategic Plan Achievements 2007/08

The SSDP R&I Strategic Plan was successfully managed and progressed in 2007/08. A summary of the key achievements of the SSDP R&I Strategic plan for the year is as follows:

- i) Identification and investigation of a high value environmental features trial site to determine SSDP requirements and to assess the risk of degradation as a result of high water tables
 - ii) Agreeing that the Dryland and Irrigation R&I programs should be combined
 - iii) Due to the uncertainty regarding the future need for more SSD works, work on evaporation basin technology was deferred
 - iv) Current assumptions concerning the level of connectivity between the deep lead and shallow Shepparton formation were confirmed as being best available knowledge
 - v) Developed general concepts and a prototype model for salt conveyance in the SIR
 - vi) Assessment that GEM2 electromagnetic geophysical survey system does not provide benefits above those provided by the current EM34 system
 - vii) A review of Phase A pump operation principles confirmed that there is no demonstrable reason for modifying the Phase A operating target of 2.0 m watertable depth or the pump operating regime
 - viii) Developed an operation guide for the use of the Goulburn-Broken CMA Salt Audit Model
 - ix) Strengthened the relationships between G-MW and the DPI, which has created a more united approach to the management of salt in the region
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- x) Support and input to the finalisation of the regional and Statewide irrigation development guidelines.

More detailed project outcomes from the completed projects and sub-projects are detailed in **Attachment B**.

Financial Progress 2007/08

The budget for the SSDP R&I Strategic Plan in 2007/08 was significantly reduced on previous allocations due to a reduction in funding. The total expenditure for the SSDP R&I Strategic Plan in 2007/08 (including DPI and G-MW expenditure) was approximately \$468,000 (61% less than in 2006/07).

To ensure that cost effective outputs continued, Management and Technical Support of the SSDP R&I Strategic Plan was strategically and significantly reduced in 2007/08.

A summary of SSDP R&I Strategic Plan expenditure for 2007/08 is presented in **Attachment D**. The period by period cumulative expenditure for the SSDP R&I Strategic Plan as a whole is shown in **Attachment E**.

Despite the reduced budget, the SSDP R&I Strategic Plan through proactive management delivered its planned budget and work targets for 2007/08.

Funding Acknowledgements

The SSDP is funded as part of the Shepparton Irrigation Region Catchment Implementation Strategy (SIRCIS) 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 program is delivered through partnerships between Goulburn-Murray Water (G-MW), Department of Primary Industries (DPI) and the Goulburn Broken Catchment Management Authority (GB CMA).

Conclusion

The SSDP R&I Strategic Plan:

- was well managed to meet its reduced budget allocation whilst still meeting key project outputs
- should continue to be adaptable to changing circumstances and ensure that expenditure is managed such that it is focussed on high priority projects.

The SSDP will continue to embrace a long-term, integrated, forward looking, strategic planning process that is innovative, is based on sound science, and continues to improve community awareness of salt management issues and strategies at a community level by promoting sustainable management in the region.

Attachments

ATTACHMENT A

Attachment A - SSDP R&I Strategic Plan Projects and Sub-Projects Completed in 2007/08 – Project Management and References

Project No.	Project Title	Date Completed	Agency Responsible for Implementation	Project Manager	G-MW DOCS File Reference	Output Description	G-MW DOCS Number Reference
GG03 030	Evaporation basin design, ownership and promotion (Water for Growth)	November 2007	G-MW	Peter Dickinson	2000/474/1	Implications Paper Discussion Paper	2319246 2319792
GG03 047	Deep Lead Impacts on Shallow Groundwater	June 2008	G-MW	Terry Hunter	2004/1992/1	Implications Paper Literature Review	2490431 2494568
GG05 026	Review of Salt Conveyance Practices	November 2007	G-MW	Peter Dickinson	2005/587/1	Implications Paper	2290227
GG06 034	Phase A Operation Principles	June 2008	G-MW	James Burkitt	2005/591/1	Implications Paper Report	2490452 2493000
GG03 045	Project Investigation of New Technologies – GEM2 Electromagnetic Testing (sub-project)	June 2008	G-MW	Terry Hunter	2005/587/1	Implications Paper	2487123
GG03 048a	Salt Audit Model – Operational Guide (sub-project)	February 2008	G-MW	Peter Dickinson	2007/944/1 2001/7760/1	Implications Paper Operational Guide	2414942 2412307

ATTACHMENT B

Attachment B - SSDP R&I Strategic Plan Entire Projects Completed in 2007/08 – Project Outcomes

Project No.	Project Title	Project Outcomes
GG03 030	Evaporation basin design, ownership and promotion (Water for Growth)	<p>Identified, through a literature review of current knowledge on evaporation basin design and operation, that there is little or no demand for the use of evaporation basins in the SIR at present, and it will require a succession of wet years before demand is likely to increase.</p> <p>Cost share arrangements for evaporations should be delayed until general principles are established under Project GG04 005 <i>Review of SIRCIS Cost Shares</i>.</p>
GG03 047	Deep Lead Impacts on Shallow Groundwater	<p>Current assumptions about Upper Shepparton Formation connection to deeper formations remain valid.</p> <p>Climate appears to be the major driver for groundwater behaviour.</p>
GG05 026	Review of Salt Conveyance Practices	<p>Developed general concepts for salt conveyance in the SIR</p> <p>Identified the need for a prototype decision support tool to be incorporated into the procedures used in Project GG02 003 <i>Drainage Catchment Scale Planning</i>.</p>
GG06 034	Phase A Operation Principles	<p>The principles behind the Phase A pump initiative have a sound technical basis and there is currently little obvious salinity or waterlogging impacts in the fruit crops within the areas served by Phase A pumps</p> <p>The effectiveness of the Phase A program cannot be assessed in isolation due to impacts on regional groundwater levels from 10 years of below 'average' climatic and irrigation conditions in the SIR</p> <p>At this time, there is no demonstrable reason for modifying the Phase A operating target of 2.0 m watertable depth or the pump operating regime.</p>
GG03 045	Project Investigation of New Technologies – GEM2 Electromagnetic Testing (sub-project)	<p>Investigated, through a trial, whether GEM2 Electromagnetic Geophysical Survey System technology can be used as an alternative to the EM34 Electromagnetic Geophysical Survey System which is currently used to identify potential sites for shallow groundwater pumping as part of the SIRCIS.</p> <p>The trial indicated that GEM2 does not provide any significant technical or cost benefits over the currently used EM34</p>
GG03 048a	Salt Audit Model – Operational Guide (sub-project)	<p>Developed an operation guide for the use of the Goulburn-Broken CMA Salt Audit Model</p>

ATTACHMENT C

Attachment C - Summary of new issues identified and project outlines developed in the 2007/09 financial year

Priority No.	Issue/Project Title	Considered a high priority issue resulting in a project outline being developed
1	Management of Grouped Salt Projects (Project GG08 001)	✓
2	Next 5-Year review of SIR salt disposal impacts (Project GG08 003)	✓
3	Need to calculate the change in river salinity impacts due to private "pasture" groundwater pumps not having water discharged offsite (Project GG08 002)	✓
4	Understanding Water Balance Changes in the SIR (Project GG08 010)	✓
5	Development of a strategy to assess River Murray impact from uplands and issues associated with riverine plain (linkages between 2C Salt and BIGMOD/REALM) (Project DGG08 009)	✓
6	Development of the Salt Administration Procedures Manual Salt Disposal Management and Reporting for the SIR and the Dryland area of the GB CMA (Project GG7 041)	✓
7	Resolving issues relating to MDB Agreement Schedule C reporting (Project GG08 006)	✓
8	Review of Salt Management Data Recording and Storage Facilities (Project GG08 005)	✓
9	Identify the reasons why there are areas with water tables less than 1m on the 2006/07 groundwater contour maps (Project GG08 004)	✓
10	Review SIR Salt Disposal Impacts and Needs (Project GG07 042)	✓
11	Consider regional non-TWE related redistribution of salt from groundwater disposed to channels and drains, specifically in areas where SSD is not an option (from DPI 12488) (Project GI08 008)	✓
12	In those areas in the SIR still exhibiting high watertables in 2006 (SIR Watertable Map), quantify the salinity impacts given watertables have been high for at least 15 years (Project GI07 043)	✓
13	Consider the effects of a reduction in sewage from the Mooroopna and Shepparton Treatment Plants into the River Murray (Project GG08 007)	✓
14	Assessing the local, regional and basin salt disposal requirements	
15	Developing tools for identifying the location and form of future groundwater management works in the SIR	
16	Develop operation guidelines for identifying multiple disposal periods for groundwater pumps during the Winter-Spring disposal period (achieving a total of 25 disposal periods over the 25 year reference period)	
17	Review of salt water balance in view of modernisation	
18	Review and identify the source of the variations in private pump EC data (sampling error, site variability etc.) DPI Project	
19	Further development of the GB CMA Salt Register to meet MDBC changing needs	
20	Refining the SSDP R&I Strategic Plan prioritisation tool	
21	Review of the Phase A program effectiveness at a property scale from selected Phase A pump sites following the next above average rainfall period (from Implications Paper GG06 034 Review of Phase A Operational Rules)	

ATTACHMENT D

Attachment D – 2007/08 SSDP R&I Strategic Plan expenditure for each sub-section

Table D1: Preliminary Summary of SSDP R&I Strategic Plan Expenditure for 2007/08

SSDP R&I Strategic Plan Sub-Section	Expenditure (\$)	Proportion (%)	*Change from 2006/07 (%)
G-MW Expenditure			
Management and Administrative Support	45,467	9.7 %	↓ 48.7 %
Technical Support	118,823	25.4 %	↓ 72.0 %
Grouped Salt Projects	37,959	8.1 %	↓ 89.0 %
Monitoring and Reporting	90,003	19.2 %	↑ 2.8 %
Land Management	67,958	14.5 %	↑ 50.5 %
Groundwater Management	8,658	1.8 %	↓ 62.2 %
Water Quality Management	0	0 %	-
Communication and Extension	0	0 %	-
Environmental Management	3,769	0.8 %	↑ 92.8 %
On-going Projects	47,230	10.1 %	↑ 69.9 %
Information Management	0	0 %	-
DPI Expenditure			
DPI R&I Strategic Plan Projects	48,500	10.4 %	↓ 41.8 %
Total	\$468,366	100 %	↓ 59.4 %

* ↑ indicates an increase in expenditure from 2006/07 to 2007/08

↓ indicates a decrease in expenditure from 2006/07 to 2007/08

- indicates no change in expenditure from 2006/07 to 2007/08.

**The initial combined G-MW and DPI planning budget assigned for the R&I within the SSDP for 2007/08 in July 2007 was approximately \$864,500. This figure was revised in November 2007 (\$715,500) and revised again in April 2008 to \$573,000. This total planning budget included the implementation and management of the SSDP R&I Strategic Plan, and other R&I related tasks that are conducted by G-MW and DPI for the SSDP.

The total preliminary expenditure for the SSDP R&I Strategic Plan in 2007/08, as recorded by G-MW and DPI was approximately \$468,400. This includes expenditure for individual SSDP R&I Projects (including project management costs) within the Strategic Plan and the overall management of the SSDP R&I Strategic Plan. Total expenditure of \$468,400 indicated 46 % under expenditure relative to the original budget, 18 % under expenditure relative to the revised budgeted amount (April 2008) and 59 % less than in the 2006/07 financial year (\$1,153,570). Expenditure for 2007/08 SSDP R&I Strategic Plan is therefore deemed to be within acceptable limits.

Attachment E – SSDP R&I Strategic Plan overall expenditure in 2007/08

