



Shepparton Irrigation Region Water Supply Protection Area Groundwater Management Plan

Annual Report for the year ending

30 June 2013

Document Number: 3656140

Document History and Distribution

Version(s)

Version	Date	Author(s)	Notes
1	02/09/2013	Matt Hudson	Document Creation

Distribution

Version	Date	Recipient(s)	Notes
Draft Final	04/09/2013	Simon Cowan	Minor Revisions

Foreword

Goulburn-Murray Water (GMW) is pleased to present the 2012/13 annual report on the Groundwater Management Plan for the Shepparton Irrigation Region (SIR) Water Supply Protection Area.


GMW is responsible for implementation of the Plan, which was approved by the Minister for Water in July 1997.

This report has been prepared in accordance with section 32C of the *Water Act 1989* and it provides an overview of groundwater management activities in the SIR during the 2012/13 water season.

The annual report includes a review of groundwater use, groundwater levels, metering activity and salinity information.

This annual report will be submitted to the Minister for Water, Goulburn Broken Catchment Management Authority and North Central Catchment Management Authority. A notice identifying the availability of the report will be published in the Shepparton News newspaper.

A copy of this report will be available for inspection at the Shepparton, Rochester, Cobram and Tatura offices of GMW, on the GMW website (www.g-mwater.com.au), or upon request.



Gavin Hanlon
MANAGING DIRECTOR
Goulburn-Murray Water

Date 26/9/2013

Executive summary

The primary objective of the Shepparton Irrigation Region Water Supply Protection Area (SIR WSPA) groundwater management plan (the Plan) is to support the implementation of the SIR Land and Water Salinity Management plan, which aims to protect the region's agricultural productivity and natural resources. The groundwater management plan encourages the responsible pumping of groundwater within 25m of the surface to provide salinity control, with a secondary objective of protecting groundwater resources and the rights of groundwater users.

2012/13 was a relatively dry year across the SIR, particularly in the spring, summer and autumn, with a wetter end to the year. Volumes of applied irrigation water from the channel system were relatively high, and the net effect of the interaction between rainfall, irrigation, and evapotranspiration, was that groundwater levels across much of the SIR remained steady, following the rapid rises over the previous two years.

GMW is continuing to monitor shallow groundwater levels in the SIR. Groundwater levels remain within 3m of the surface across much of the SIR and threats remain to agricultural productivity and the environment of widespread salinisation and waterlogging.

Metered groundwater use in the 2012/13 irrigation season was 39,578 ML which is 19.7 % of total entitlement (201,153 ML) in the SIR. This usage compares to 25,119 ML used in 2011/12. The increased usage is consistent with the drier year and the resulting increased demand for groundwater. Groundwater entitlement has continued to fall as licences are cancelled, with a reduction of 3,705 ML in total licence entitlement since 2011/12.

It is now widely recognised by groundwater managers in Goulburn Murray Water and the Department of the Environment and Primary Industries, by customer water service committees, and by stakeholders, that the current groundwater management plan is now out of date and in need of replacement. Consequently GMW has written to the Minister for Water to seek that the Plan be revoked, so that a process to develop a new non statutory 'local management plan' can be commence.

It is proposed that the new plan will be aligned with a lower intensity management approach which is commensurate with the fragmented and opportunistic nature of shallow groundwater resources in the SIRWSPA. Indicative timescales are for a new plan to be developed and consulted upon by December 2014.

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1 Introduction

1.1 Purpose

This annual report provides an overview of groundwater resource status and use in the Shepparton Irrigation Region (SIR) Water Supply Protection Area (WSPA) for the 2012/13 irrigation season. The report also discusses proposed changes to the way SIR WSPA groundwater resources will be managed in the future, and the work undertaken with key stakeholders and customer groups to prepare for this change.

1.2 Water Supply Protection Area

The Shepparton Irrigation Region (SIR) was declared as a WSPA in September 1995. It is located in northern Victoria and extends from Yarrawonga in the north-east to Murchison in the south and across to Tennyson and Echuca in the west (Figure 1).

The SIR WSPA was declared to manage groundwater resources within 25 m of the ground surface. The groundwater resource deeper than 25 m below ground surface is managed separately. In the Murray Valley the deeper resource is managed under the Katunga WSPA Groundwater Management Plan. In the Campaspe and Goulburn catchments the resource is managed under the Lower Campaspe Valley WSPA and Mid-Goulburn Groundwater Management Area arrangements respectively. There are no management zones within the SIR WSPA.

1.3 Groundwater Management Plan

The Groundwater Management Plan was approved in July 1997 by the then Minister for Water in accordance with section 32A(6) of the *Water Act 1989*.

The Plan is unique when compared to other groundwater management plans in Victoria in both its intent and management measures. It was developed to augment the SIR Land and Water Salinity Management Plan (the Salinity Plan). Section 2 of the SIR Plan states:

"The primary objective of this Plan is to support the implementation of the Salinity Plan which aims to protect the Region's agricultural productivity and natural resources. It will do this by encouraging and supporting regular and responsible pumping of groundwater to provide salinity control while protecting both the groundwater resource and the rights of groundwater resource users."

A groundwater monitoring program provides the key information necessary to manage groundwater in the WSPA. Groundwater level monitoring is undertaken to allow watertable and salinity control works to be targeted in the high watertable areas.

The Plan contains a number of rules and requirements, many of which are now considered to be out of date. These aspects and the drivers for changing the groundwater management approach in the SIR are described in more detail in Section 4.

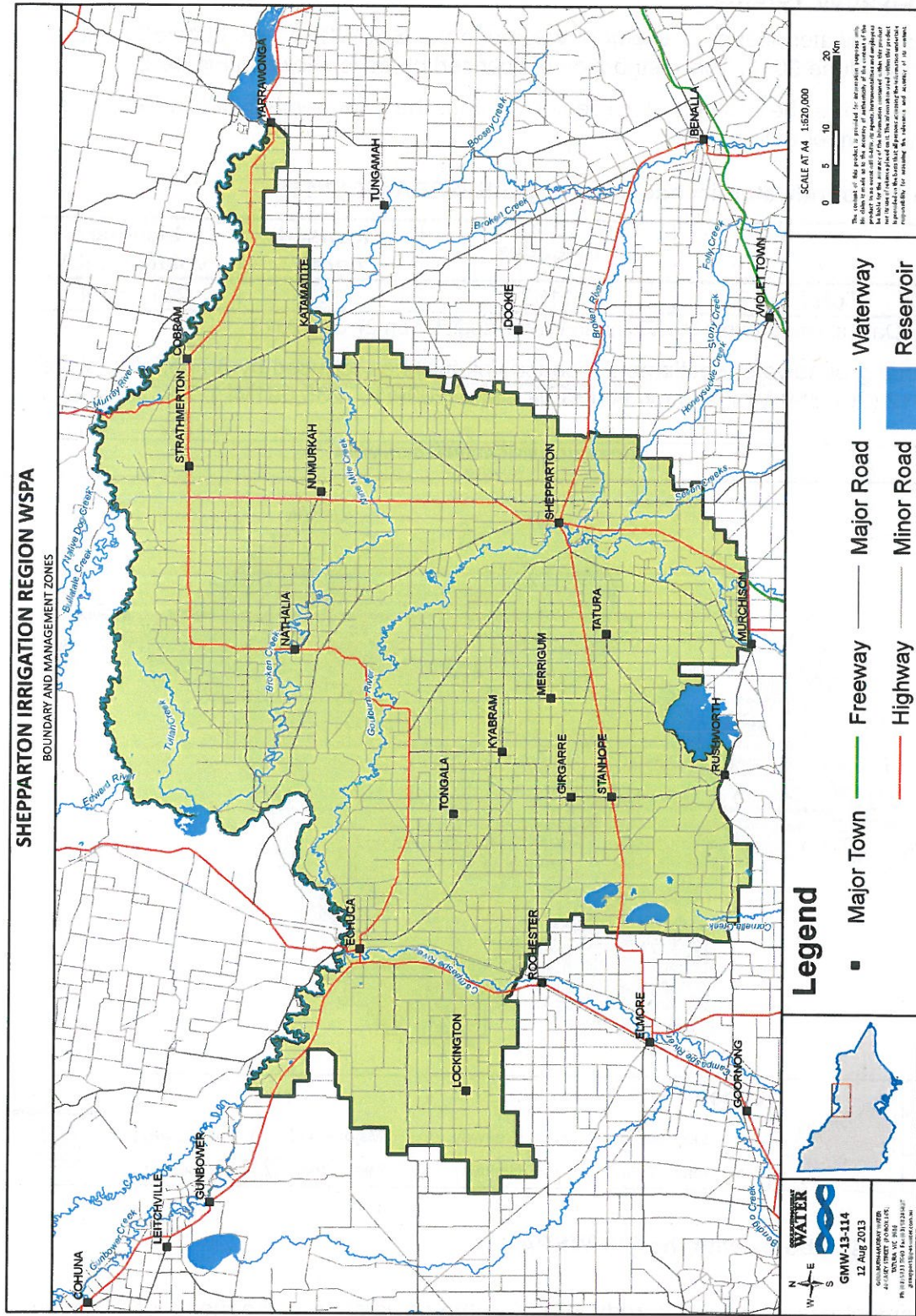


Figure 1 SIR Water Supply Protection Area

2 Groundwater management

2.1 Licence volume

The groundwater licence entitlement volume in the SIR WSPA was 201,153.4 ML at the end of June 2013. This distribution of licensed bores is shown in Figure 2.

Table 1 shows the groundwater licence volume, the total number of licensed bores and the number of licences.¹

Table 1 Groundwater licence summary SIR WSPA (2012/13)

	Licences	Licensed bores	Licence volume (ML)
Total	1162	1162	201,153.4

NOTE: Data extracted from the Victorian Water Register on 27 July 2013

The total groundwater entitlement (licence volume) has reduced by 3,705.6 ML since 2011/12 (204,859 ML), and by 34,438 ML since 2009/10 (235,591ML). The volume of

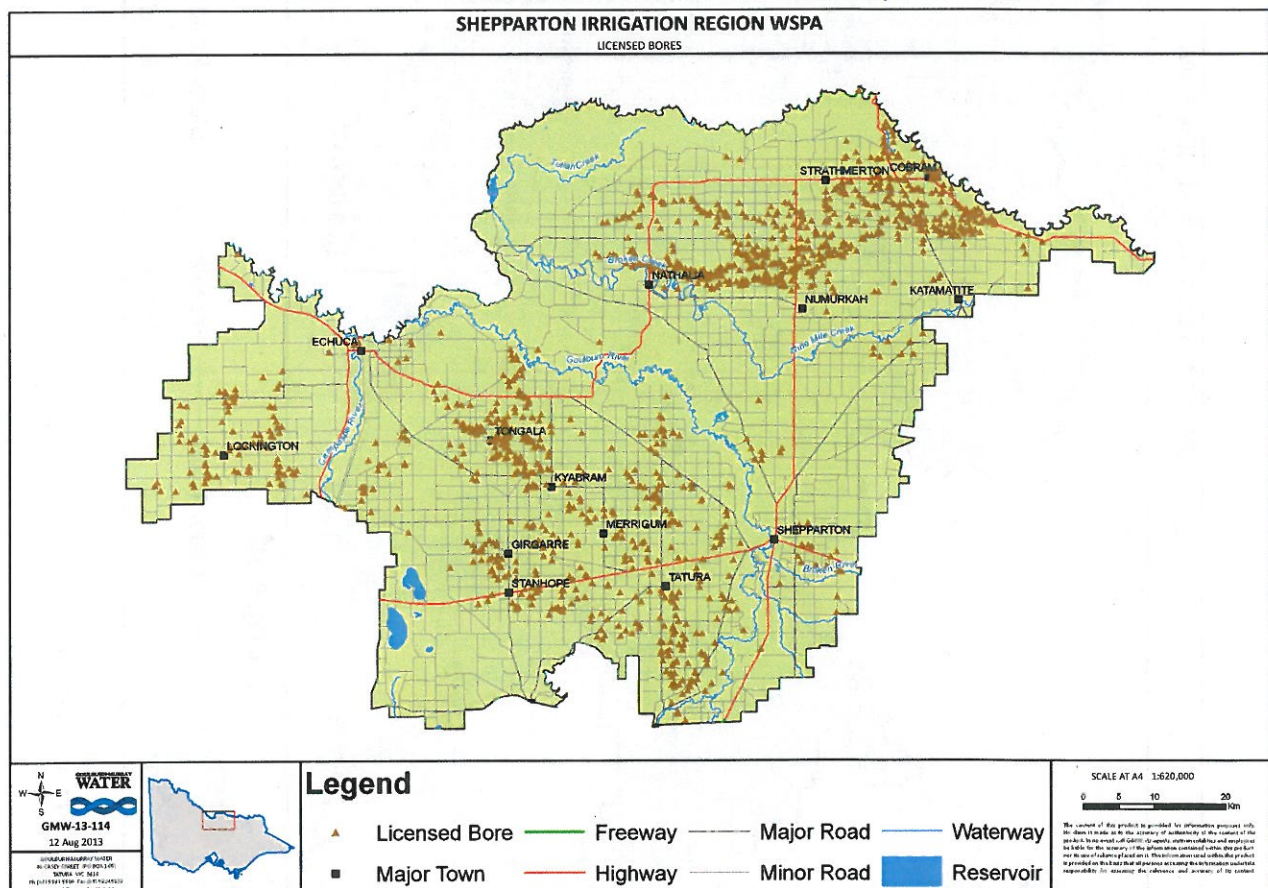


Figure 2 Licensed bores with the SIR WSPA

entitlement has continued to reduce due to the dewatering components of irrigation licences being removed and a number of licence cancellations. Feedback from customers has shown that some have cancelled licences because access to the

¹ Only 1 bore is allowed on each licence in the SIR

resource is unreliable and the quality of groundwater highly variable. Annual groundwater fees are considered by some licence holders to be disproportionately high, considering the opportunistic nature of the resource.

2.2 Groundwater use

Metered groundwater use in the 2012/13 irrigation season was 39,578.8 ML which is 19.7% of total entitlement (201,153.4 ML) in the SIR. This usage figure compares to the figure for 2011/12 of 25,119 ML. The increased usage is consistent with the drier year and the resulting increased demand for groundwater. The usage profile since 2005/06 is shown in Figure 3.

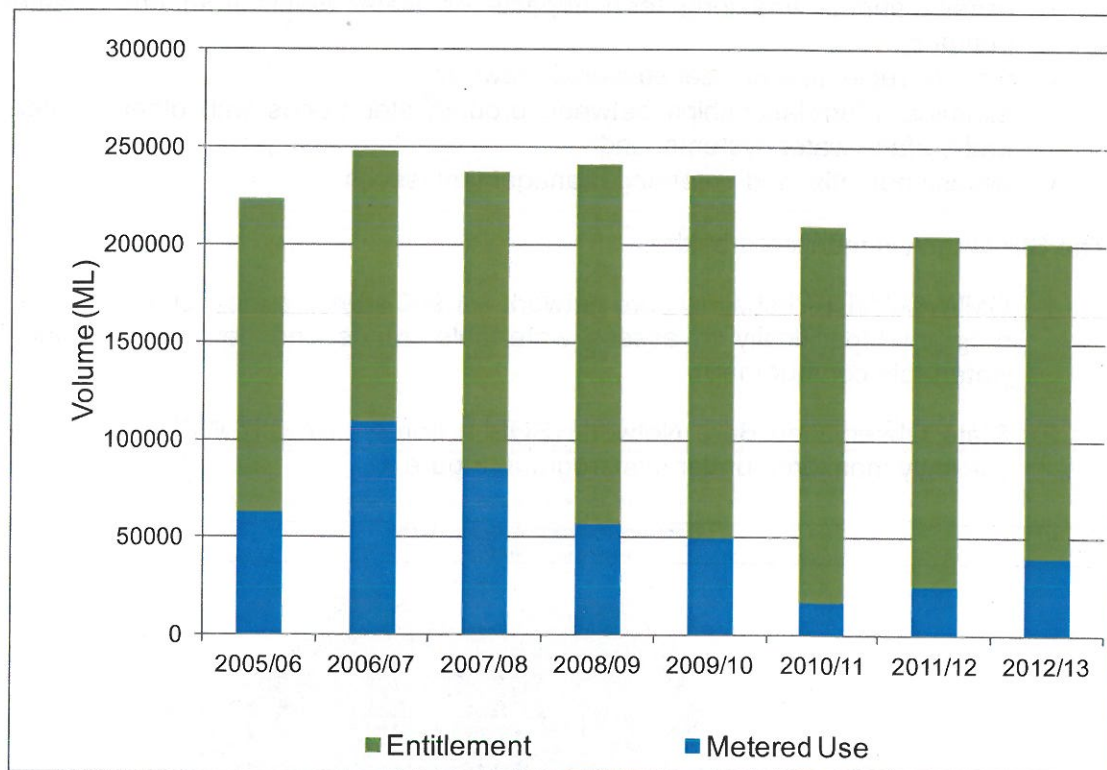


Figure 3 Annual Metered use and total entitlement since 2005/06

2.3 Transfer of entitlement

Transfer of licence groundwater entitlement (temporary or permanent) is not permitted in the SIR WSPA.

2.4 Metering

Section 11.2 of the Plan outlines requirements in relation to installation, maintenance and reading of meters.

Under the requirements of the Plan, all private dewatering bores and bores licensed to extract greater than 20 ML/year must be metered. All new licences are to be metered irrespective of the amount of licensed volume.

Meters in the SIR WSPA were read in the months of May/June. Metered usage for each bore was calculated by subtracting the start meter reading from the end of season reading. All metered usage was verified, and no usage was estimated.

3 Monitoring program

3.1 Groundwater monitoring network

The primary function of groundwater level monitoring in the SIR WSPA is to identify high risk, high watertable areas to enable targeted watertable and salinity control works to occur.

Monitoring of groundwater levels also enables GMW to:

- assess annual and long term impacts on water levels from groundwater pumping;
- monitor regional and local seasonal drawdown;
- examine interrelationships between groundwater trends with other aquifers and surface water systems; and
- assess potential and emerging management issues.

The SIR WSPA is monitored by the:

1. GMW/CMA/DEPI shallow bore network – 1,900 sites are monitored under this program (specifically to assess watertable trends and develop an annual watertable contour map)
2. State Observation Bore Network (SOBN) bores - 97 SIR WSPA bores are currently monitored under this program (Figure 4)

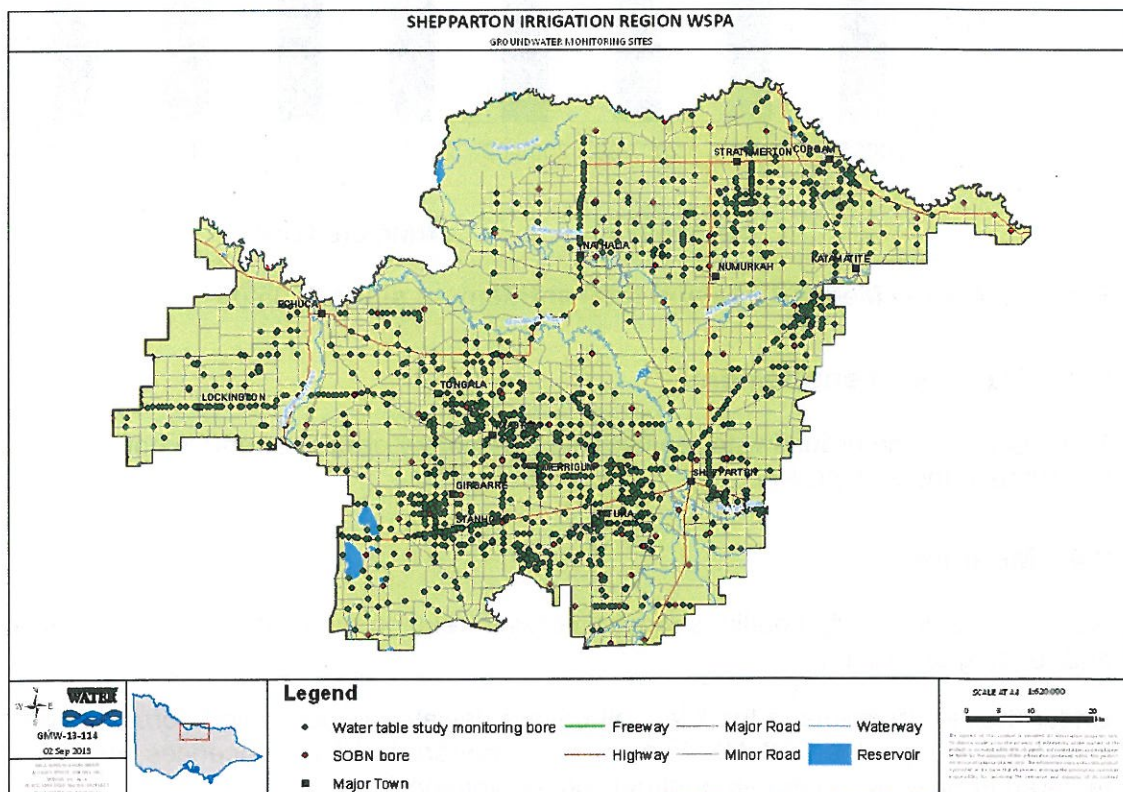


Figure 4 Location of observation bores in the SIR WSPA

Groundwater level monitoring is different in the SIR to most other groundwater management units, which have monitored programs comprising bores mainly within the State Observation Bore Network (SOBN).

3.2 August 2012 Groundwater Levels

The Plan specifies that the August groundwater levels from the shallow bore network are used annually to produce a shallow water table map. The August period is chosen as this is generally the month when regional water table levels are highest; showing the areas at greatest risk to salinity. The August 2012 water table map is presented in Figure 5, which shows that there are significant areas of the SIR where the shallow watertable is within 3 m of the surface.

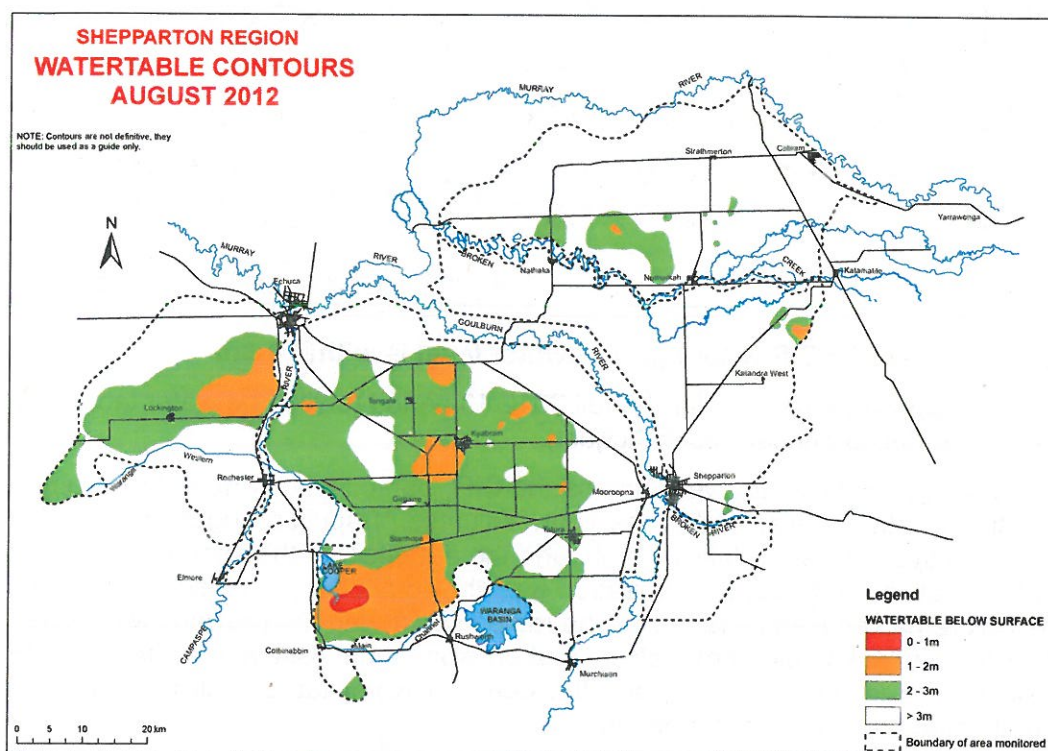


Figure 5 SIR watertable contour map for August 2012

The changing area threatened by shallow groundwater levels close to ground surface, and the recent re-emergence of the salinity threat, are illustrated in Figure 6.

In August 2012 shallow water table levels were generally within three metres of the ground surface across 32% (181,754 ha) of the monitored area of the SIR WSPA, compared to around 6.1% (41,357 ha) in August 2010.

Shallow water levels continued to recover from the low levels (2009) at the end of the drought, leading to a substantial increase in the areas where the water table level is within 3 m of ground surface as at August 2012.

For the 12 months to the end of July 2012, rainfall totalled 600 mm compared to the average for this 12 month period between 1982 and 2012 of 444 mm (156 mm above average). Hydrographs from five monitoring bores are presented in Figure 7. These hydrographs show shallow watertable behaviour between 1972-2013, with level rises evident in four of the five bores.

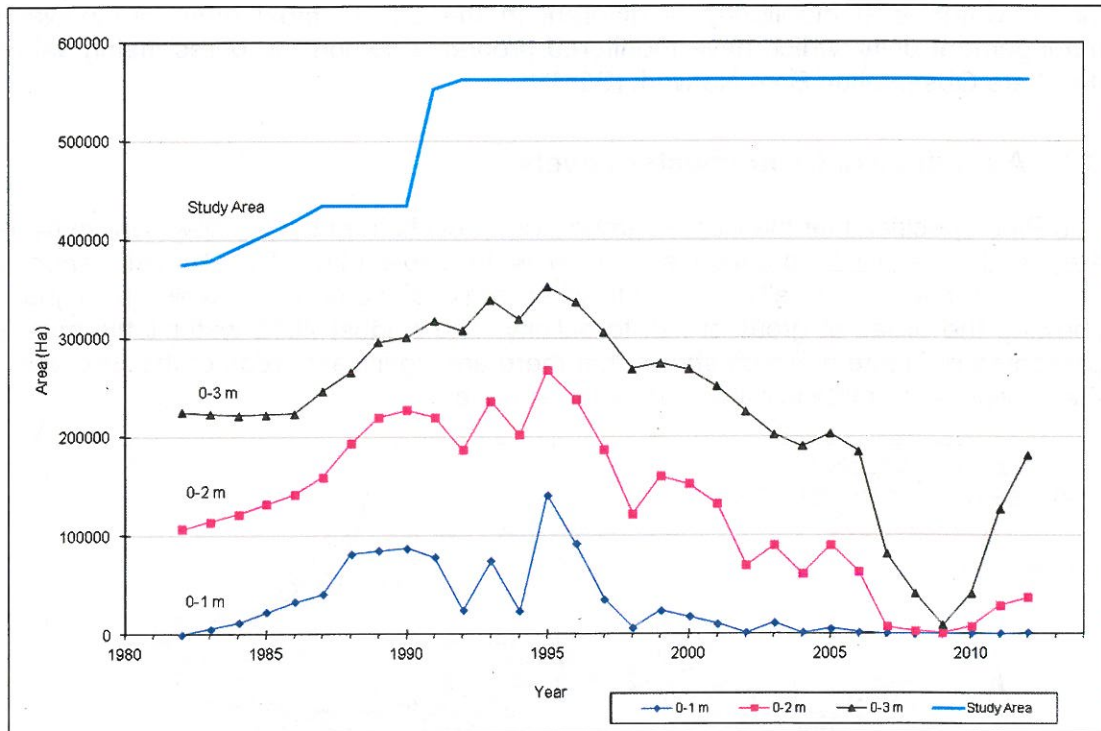


Figure 6 Area of the SIR where groundwater level is within 0-3m

The hydrographs include data for the full 2012/13 period (unlike the water table maps which are produced annually each August).

2012/13 was a relatively dry year across the SIR, particularly in the spring, summer and autumn, with a wetter end to the year. Volumes of applied irrigation water from the channel system were relatively high, and the net effect of the interaction between rainfall, irrigation, and evapotranspiration was that groundwater levels across much of the SIR remained steady, following the rapid rises during the previous two years. It is clear that the risk to land productivity and environmental assets in some regions of the SIR WSPA is still significant, and the need for water table control measures in these affected areas is likely to remain.

The water table response in 2012/13 is consistent with the current understanding of the shallow aquifer system, and it highlights that regional groundwater levels in shallow aquifers will continue to increase over time, unless there are sustained periods of dry weather over a number of successive years.

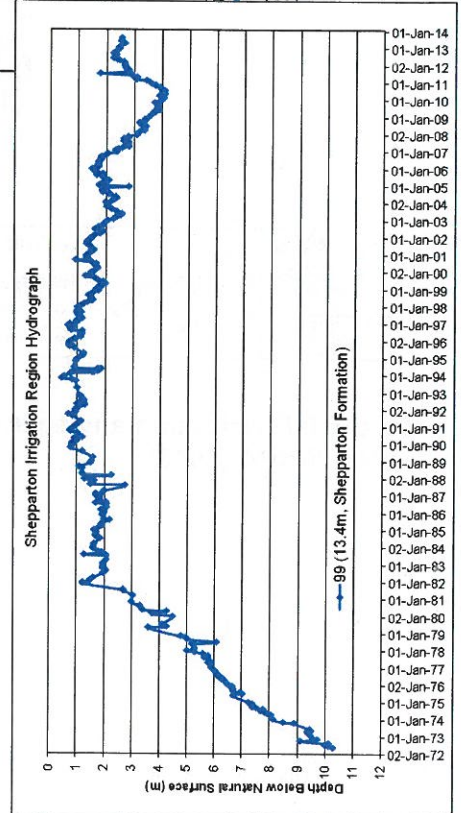
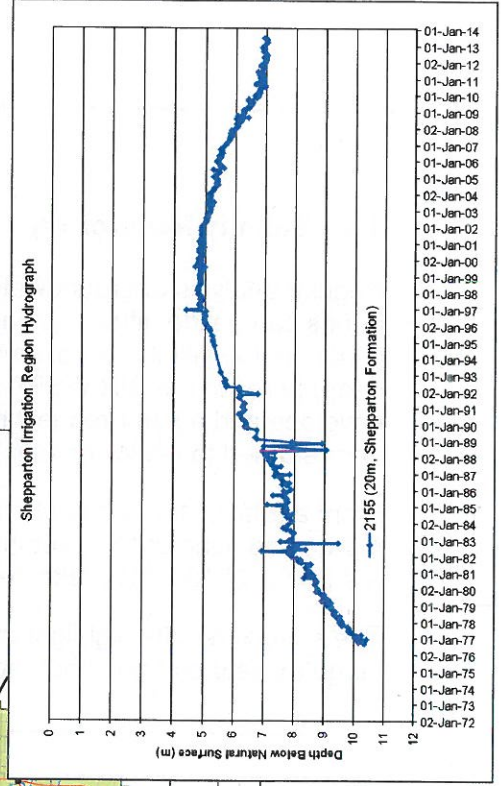
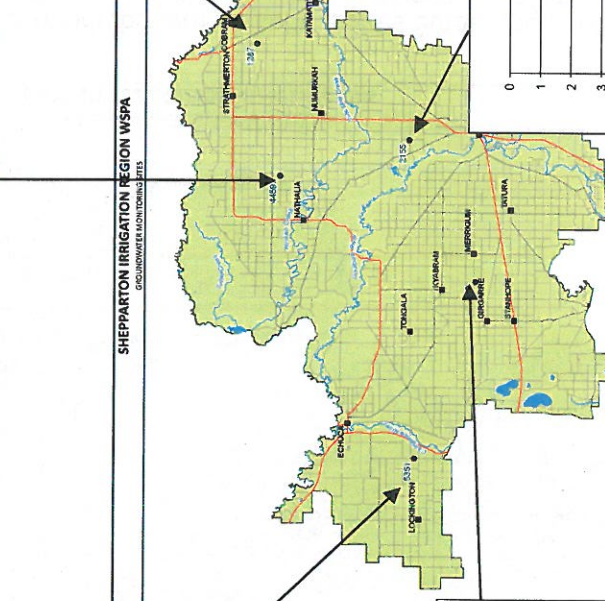
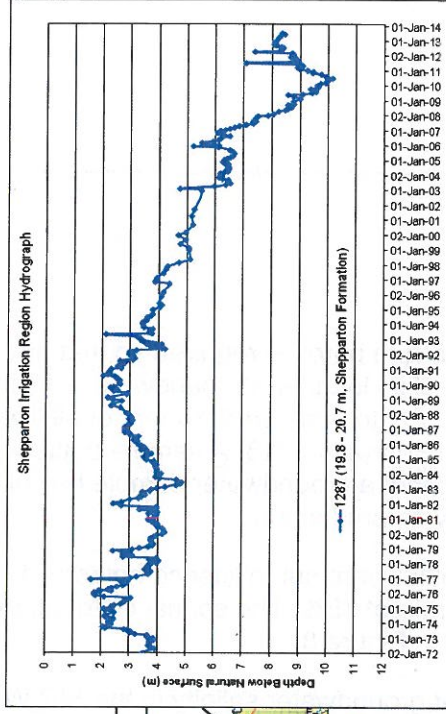
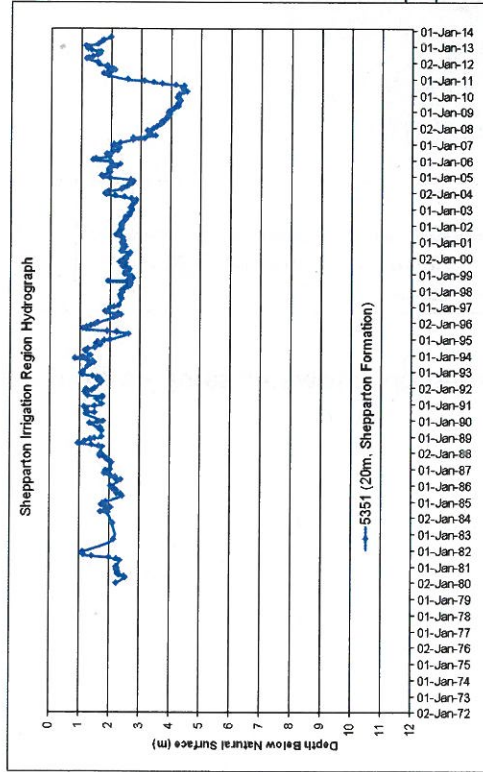
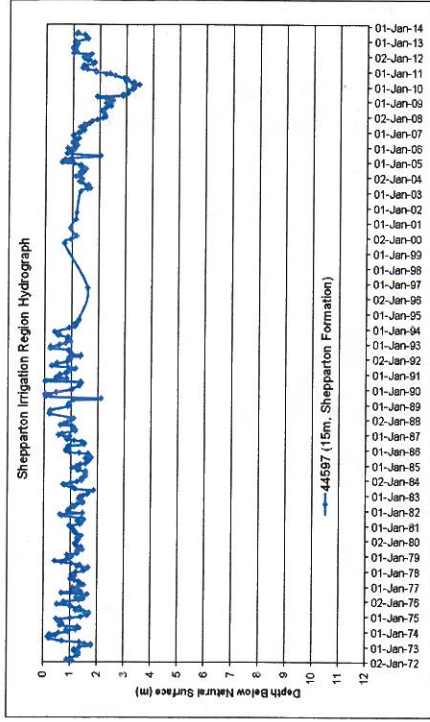
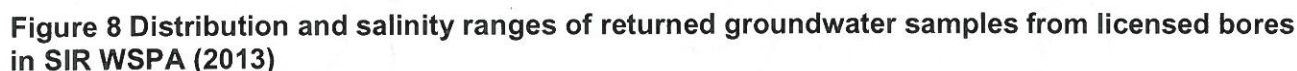


Figure 7 Representative SIR hydrographs

Regular analysis of groundwater from bores is required so that any emerging salinity issues and trends can be identified. As part of its long term groundwater salinity monitoring program, GMW conducted a salinity sample mail-out to registered owners of all licensed shallow (i.e. less than 25 m deep) bores in the SIR WSPA in February 2013. A sample bottle was sent along with a pre-paid return envelope and a letter requesting that a groundwater sample be collected during operation of the bore and returned to GMW for salinity determination.

The sample results highlight that groundwater salinity in the SIR WSPA is highly variable due to the complex nature of the 'shoe-string sands' aquifers that comprise the upper Shepparton Formation.



4 Future management considerations

4.1 Drivers for replacing the SIR Groundwater Management Plan

Since the implementation of the Plan, a number of significant changes have occurred to both attitudes and policy relating to how shallow groundwater and environmental resources are managed across Victoria.

The SIR experienced a 10 year period of below average rainfall including two years of the near record low rainfall years, followed by successive years of widespread flooding. Channel supplied surface water irrigation allocations in the SIR, which in the early to mid-1990s were equivalent to 100% high reliability and 100% low reliability water allocations (200% unbundled water rights), progressively fell through the late 2000s and culminated in a low of around 33-35% high reliability water allocations in 2008/09.

Watertables across the SIR declined during the drought and, coupled with a scarcity of surface water, led to a shift in groundwater management focus from salinity to resource management. Following the subsequent high rainfall years in 2010 and 2011, watertables began rising, increasing concerns about salinity impacts to land productivity.

Modifications have also recently occurred to the irrigation infrastructure and the footprint of the SIR under Futureflow and the Northern Victorian Irrigation Renewal Project (NVIRP), and will continue to do so as GMW's Connections program is implemented.

It is clear that in the future the SIR will be subject to wet and dry sequences, with watertables likewise oscillating between rising and declining trends. This view is strongly supported by observations of water level and SIR watertable behaviour over the past 20-30 years.

In the context of these changes and an improved understanding of watertable behaviour, the Plan is no longer a 'fit-for-purpose' tool to manage the shallow aquifer system.

In summary the Plan:

- Does not provide adequate groundwater management measures to enable an adaptive response and transition to be made depending on prevailing salinity and resource management conditions,
- Does not adequately reflect the fragmented and opportunistic nature of shallow SIR groundwater resources,
- Contains redundant and out-dated salinity and water resource management rules which cannot be practically implemented in a changing environment,
- Is a complex and costly mechanism to implement relatively routine management arrangements, and
- Does not meet groundwater user community expectations about value for money (the benefit provided by the level of service does not easily equate to associated costs).

An alternative SIR shallow groundwater management framework is therefore proposed to address these shortcomings.

4.2 Moving to a groundwater Local Management Plan

Recognising the limitations of the Plan, in late 2011 GMW undertook a review into options for an alternate groundwater management framework, supported by DEPI and funded by the National Water Commission. As part of the project, social research was conducted to inform the project of attitudes and expectations of groundwater users. Potential alternative groundwater management options were assessed taking into account community expectations, local, state and federal policy direction and also considering what minimum requirements might be needed to manage groundwater resources adaptably.

A non-statutory groundwater Local Management Plan (LMP) is the preferred groundwater management option to address issues arising from both high and low watertable conditions in the SIR. It is proposed that the SIR Water Supply Protection Area be abolished, and that the statutory Groundwater Management Plan be revoked and replaced by a Local Management Plan.

Key considerations of future management arrangements are likely to be that:

- Metering is of limited value in the SIR, as the costs of metering are significantly greater than the benefits. There is a strong case for removing the requirement for metering SIR groundwater users (subject to consideration of Victoria's metering policy and implications of obligations under the Murray-Darling Basin Plan, National Water Initiative and the National Metering Framework)
- Management and enforcement of applied groundwater salinity rules is not practical, cost effective or desirable, and the risks associated with groundwater users managing their own on-farm groundwater use are low
- The existing licence renewal period of 5 years is unnecessarily restrictive
- Simple and transparent rules will be required which protect existing licence holders as far as practical from the impact of new licence applications (these rules should reflect the main purpose of the Plan)
- The new local management plan needs to be easy to understand and communicate, and easy to adapt to changing irrigation and climatic regimes,
- The cost of any new management arrangements need to better reflect benefits that customers receive from the service

Details of the plan will need to be worked through, within a process of consultation with customers and other stakeholders. It is envisaged that a new groundwater LMP can be delivered within 18 months of initiation.

It is also noted that the SIR has been identified in the Murray-Darling Basin Plan and has been defined with a separate Sustainable Diversion Limit, recognising the specific management priorities relating to groundwater salinity management in this area.

4.3 Support for a new plan

There is clear support for a new, more cost effective and 'lower intensity' management plan from key customer groups and stakeholders as evidenced by:

- Strong endorsement from the Victorian Farmers Federation

- Unanimous endorsement for change from GMW's Murray Valley, Rochester-Campaspe, Central Goulburn and Shepparton gravity district water service committees, and the Goulburn Broken Regional Water Service Committee
- Consistent support throughout 2012/13 from the Goulburn Broken Catchment Management Authority's SIR community working group (the Groundwater and Salt Management Working Group)
- Support for a less prescriptive approach to managing the application of groundwater to land from a range of key stakeholders and subject matter experts at a workshop held on 9th May 2013

4.4 Proposed transition arrangements

An assessment of the preferred transition options has been undertaken by GMW. This assessment has concluded that the existing plan should be revoked as soon as practicable. In the period between when the current plan is revoked and when a new local management plan is approved, it is proposed that the following interim management arrangements will apply:

- The area previously covered by the Water Supply Protection Area will be designated a Groundwater Management Area (GMA), with minor changes to the current boundary area
- New groundwater licence applications will be assessed against the requirements of section 51 (and sections 53 and 40) of the *Water Act 1989*
- New groundwater licences will not be issued with a mandatory requirement to blend groundwater with channel water
- The licence renewal period will continue to be 5 years, however licence entitlement volumes will not be automatically adjusted based on the SIR GMP's salinity criteria upon renewal
- Increased resources and effort will be put into ensure groundwater users understand and know how to manage the risks of applying saline groundwater to land
- Groundwater monitoring of the shallow aquifer will continue
- Trading will not be necessary or available
- Meter maintenance and replacement will not be undertaken by GMW. Meters will remain in place for determining usage as necessary.

4.5 Indicative timeline and next steps

The key steps required to revoke the Plan and develop a new local management plan are summarised in Table 2. GMW has written to request revocation of the Plan. If the Minister is in agreement then a notice of intention to abolish the Water Supply Protection Area and revoke the Plan will be published. Customers and other interested stakeholders will have the opportunity to make a submission on the proposed changes. These submissions and other relevant information will be considered before a final decision is made.

Table 2 Key tasks and indicative timing for SIR Plan replacement

Action	Approximate timing
Application to Minister by GMW	September 2013
Minister decision to give notice	September 2013

of intention to abolish area	
Public notice (60 days)	November 2013
Minister final decision (60 days)	January 2013
Formally commence process to prepare LMP	February 2014
Public consultation on LMP	October 2014
Local Management Plan approved	December 2014