

GOULBURN-MURRAY
WATER



**Katunga Water Supply Protection Area
Management Plan (Groundwater)**

ANNUAL REPORT FOR YEAR ENDING
JUNE 2009

Foreword

This report is submitted to the Minister for Water, the Goulburn Broken Catchment Management Authority in accordance with Section 32C of the *Water Act 1989*. A copy of this report is available for inspection at the Tatura office of Goulburn-Murray Water (G-MW), or upon request. A notice of report availability will also be published as required by Section 32D of the *Water Act 1989*.

The purpose of this report is to detail Goulburn-Murray Water activities administering and enforcing the management plan and provide information that is required to be reported under the Plan.

Area	Katunga Water Supply Protection Area
Segment	Groundwater
Area Declared	14 January 1999
Plan Approved	24 July 2006
Scheduled Plan Review	July 2011
Implementation Authority	Goulburn-Murray Water Corporation
Relevant CMA	Goulburn Broken Catchment Management Authority
Report Period	1 July 2008 – 30 June 2009

Summary

The Minister for Water approved the Katunga Water Supply Protection Area Groundwater Management Plan (the Plan) on 24 July 2006, replacing the existing groundwater management plan that was established in 2003. Goulburn-Murray Water Corporation has responsibility for the administration and enforcement of the Plan (Section 5).

Goulburn-Murray Water (G-MW) has already achieved many of the Plan's requirements including implementation of a metering and monitoring program. Implementing elements of the Plan in some cases requires longer term planning, consultation and negotiations with groundwater users and G-MW is actively progressing towards completion of these elements.

During any year, new operational issues may also arise and impact on plan implementation. These issues, such as new bores requiring meter fitting, are dealt with as they arise. Table 1 outlines the Plan compliance for the reporting period.

Identification and increased monitoring of potential high users throughout the season, temporary and permanent transfers of water entitlement and a communication strategy warning of the consequences of unauthorised use of groundwater have resulted in successful management of compliance. As a result of this pro-active management and G-MW's zero tolerance approach to wrongful take and use of water, there were no groundwater licences which recorded use in excess of licensed entitlement for 2008/09.

Table 1 – 2008/09 compliance with the Groundwater Management Plan

Plan Requirement	Complies
State Observation Bore monitoring requirements	Yes
Salinity Monitoring	Yes
Bore metering requirements	Yes
Average recovery levels above minimum levels specified in the plan	Yes
No use in excess of entitlement	Yes

A number of key issues discussed in this report have been highlighted in this foreword.

Resource Position

The Plan's objective is to manage water resources in the Katunga Water Supply Protection Area (WSPA) in an equitable manner to ensure the long term sustainability of the resource. The Plan aims to prevent the 5-year average groundwater levels from falling below 20 metres below groundwater level. In the third year of operation the plan has met these requirements with the 5 year average level in the key observation bores being 20 metres below groundwater surface. The annual average recovery level in 2008/09 was 22.6 metres, which can be attributed to an exceptionally dry late winter/spring period in 2008 and which, due to the persisting dry climatic conditions and low surface water allocations, see early seasonal demands on groundwater.

Operation of the Plan

An allocation of **70%** for all zones was announced for the 2008/09 season and this resulted in 32,849 ML of metered usage (79% of an allocated volume of 41,676 ML). This was increase in the usage from 2007/08; which was 29,851 ML. The 5 year average use is 28,155 ML (for period 1 July 2004 to 30 June 2009 inclusive).

The 5 year average recovery levels at the end of the season was 20m below ground surface which met the recovery level target set in Prescription 1 of the Plan. However, if the spring recovery level continues to be below 20m in spring 2009, this will result in rolling average being below the target specified in the plan which would prompt a review of the relationship between average use and average groundwater recovery levels.

During 2008/09 salinity sampling was identified as a Plan implementation issue by G-MW. Groundwater salinity samples were submitted for 31% of licensed bores in the Katunga WSPA. This was an improvement on last years return rate of 21%. G-MW has complied with Prescription 29 of the Plan, and recognised that the return rate of groundwater samples is improving, but aims to further increase the amount of samples returned. A brief survey was sent out with sample bottles to each licensee requesting feedback on ways to improve the capture of groundwater salinity data in the region. The results from this survey will be used to revise the current program.

Signed:

David Stewart
MANAGING DIRECTOR

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1 Introduction

The Katunga Water Supply Protection Area (WSPA) is located in the Murray and Goulburn Valleys, extending from just west of Yarrowonga to the Barmah in the west and from the River Murray to just south of Numurkah.

For management purposes the area is divided into three zones and covers an area of approximately 2,100 km². The WSPA has been set to manage with groundwater resources of the unconsolidated alluvial deposits occurring at depths greater than 25 metres below surface. Figure 1 shows the Katunga WSPA boundary and zones.

The Katunga WSPA Groundwater Management Plan (the Plan) was approved by the Minister responsible for the *Water Act 1989* (the Act) on 24 July 2006. Under Section 5 of the Plan, Goulburn-Murray Water Corporation (G-MW) has the duty of enforcing and administering the Plan.

The objective of the Plan is to make sure that the groundwater resources within the WSPA are managed in an equitable manner ensuring the long-term sustainability of those resources.

In accordance with Section 32C of the Act, G-MW must prepare a report each year on the administration and enforcement of the Plan.

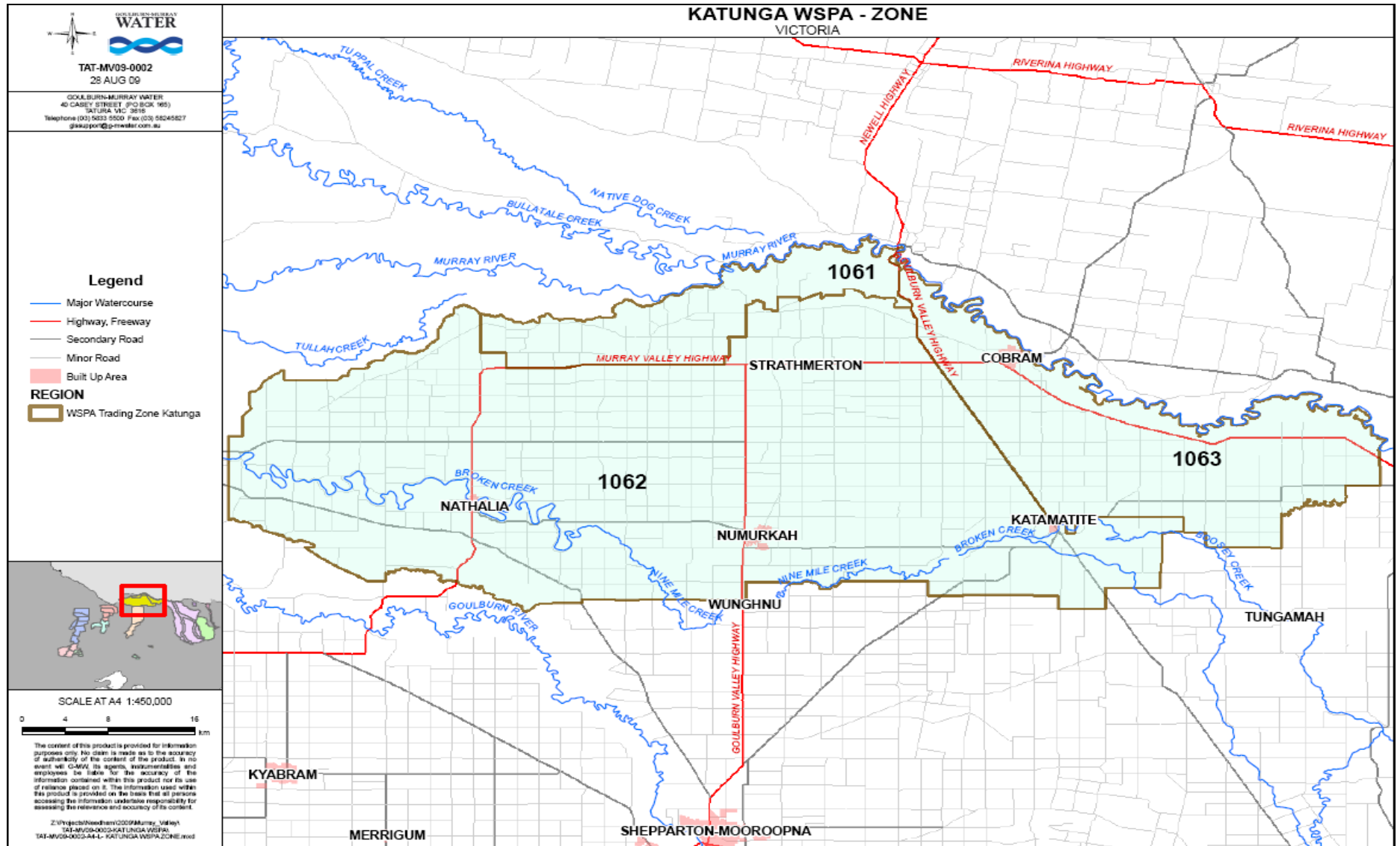


Figure 1 - Katunga WSPA boundary and management zones

2 Key Observations

2.1 Water levels

The continued dry conditions resulted in continuing low surface water allocation (35% of high reliability water share in the Murray Valley compared to a 43% allocation in the 2007/08 season). Annual average recovery levels based on the eight key observation bores (monitored under Schedule 2 of the Plan) have continued to decline markedly from 20.9m below ground surface in spring 2007 to 22.6 in spring 2008. The five year average recovery level has fallen to 20m below ground surface. If annual average recovery levels are below the 20m target figure in spring 2009, the 5-year average recovery level will be greater than 20m, and this will prompt a review of the relationship between 5-year average recovery and 5-year rolling average licensed groundwater use.

The continued decline in recovery levels was in part expected given the low winter/spring rainfall, low surface water allocation and continued high demand for groundwater (notably early in the irrigation season).

2.2 Salinity/ Water Quality

A groundwater salinity sampling program for licensed production bores was conducted as required in Prescription 29¹ of the Plan. The spatial distribution of groundwater salinity sample results return in 2008/09 is presented in Figure 2.

Groundwater salinities within the Calivil and Lower Shepparton Formation aquifers are lowest in central and eastern parts of the WSPA and an increase in salinity is observable in the western areas. This increase in salinity is also observed nearer the boundaries of the WSPA because lateral drainage is slower at the margins limiting the dilution and export of accumulated salts.

¹ The program scope includes domestic and stock bores

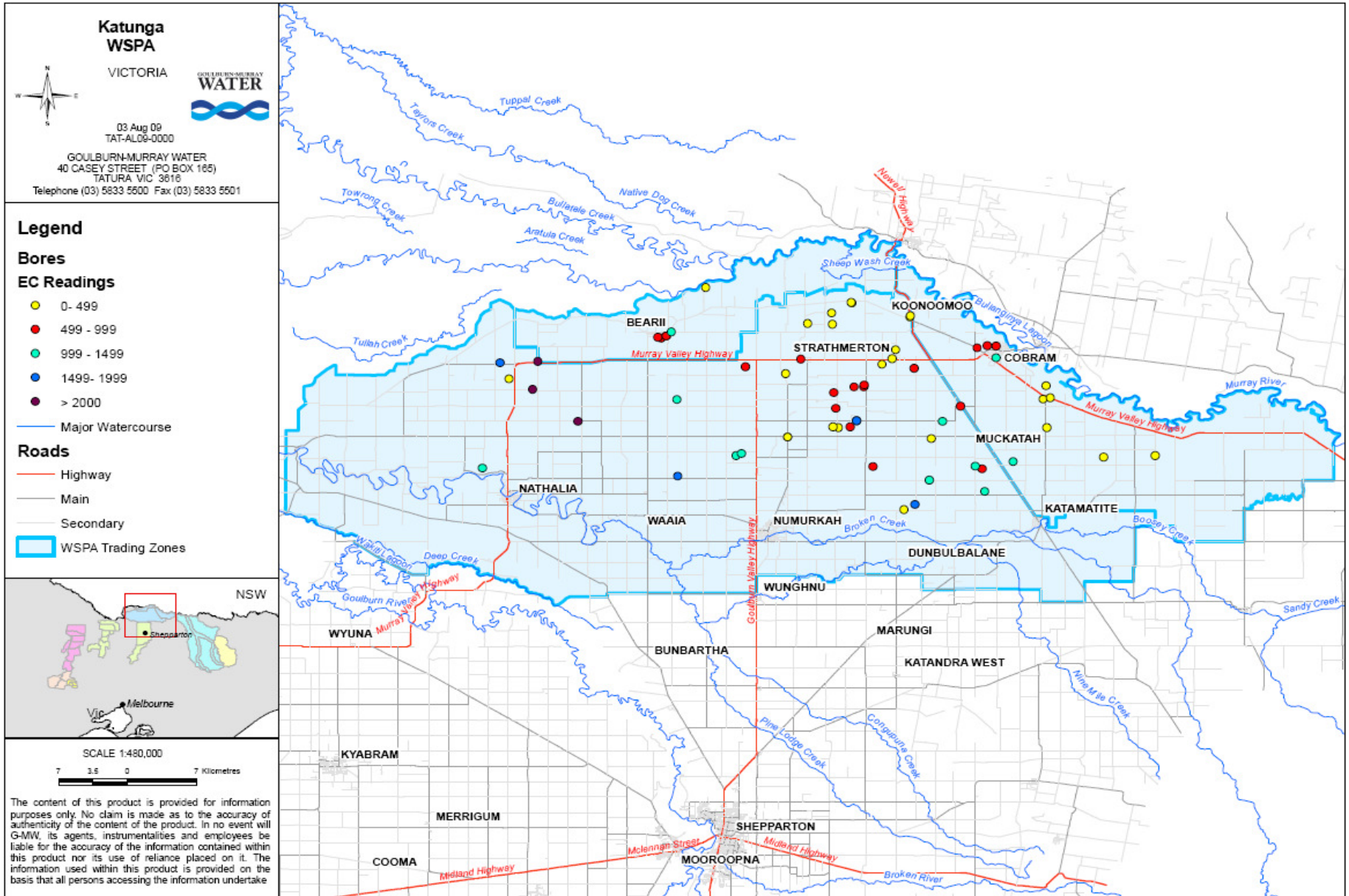


Figure 2 – Distribution of returned groundwater salinity samples from licensed bores in Katunga WSPA – 2008/09

2.3 Water Use

Table 2 below provides detail on groundwater use in 2008/09 compared to the previous two years.

Table 2 - Water Use Comparison Table

	At 30 June 2007	At 30 June 2008	At 30 June 2009
No. of groundwater licences ²	183	183	190 ³
Total licence entitlement volume	59,734 ML/yr	59,577 ML/yr	59,538 ML/yr ⁴
Annual allocation	70 %	70 %	70 %
Total annual allocation volume	41,876 ML/yr	41,704 ML/yr	41,676 ML/yr
No. of metered bores	121	123	126 ⁵
Total metered volume used	30,801 ML	29,851 ML	32,849 ML ⁶
Total metered use as a percentage of total licence entitlement volume	52 %	50 %	55%
Total metered use as a percentage of total annual allocation volume	74 %	72 %	79 %
No of licences with estimated volumes	0	0	0
Total estimated volume used	0 ML	0 ML	0 ML
Total use	30,801 ML	29,851 ML	32,849 ML

2.4 Non Compliance

There were no instances of groundwater being pumped in excess of licensed entitlement. Identification and in field monitoring of potentially high use bores occurred throughout the season as well as continued communication with groundwater licence holders on their obligations to use within licensed entitlement (which outlined the consequences of use in excess of entitlement). These factors as well as increased utilisation of temporary transfers resulted in successful management of licensed use within entitlement.

All licence holders were warned in 2008/09 of the consequences of unauthorised use of groundwater. Likewise all operational licensed groundwater bores were the subject of two compliance checks undertaken by G-MW compliance unit in October 2008 and February 2009.

During the 2008/09 season there was one case of reported water theft in the Katunga WSPA which is now progressing through the judicial system.

G-MW will continue to take a zero tolerance approach to breaches of the *Water Act 1989* and has taken steps via a dedicated compliance team to provide the necessary support and information to G-MW's operational staff on compliance matters.

² Sole private rights licensed D&S use bores are not included in this number.

³ This figure is derived from the DSE water register while in previous years the data was obtained from other databases. The discrepancy with last year's figure may be due to different sources being used to obtain the data. The water register is considered to be the most accurate record.

⁴ Total entitlement volume has decreased due to the 20% claw back of entitlement which has occurred through permanent transfer.

⁵ This data was obtained from the G-MW Metering Program database and the discrepancy from last year's figure may be attributed to different sources being used to obtain the data. The database used is considered to be the most accurate record.

⁶ The usage of 5 repaired meters referred to in Section 3.3 have been validated and is included in this total.

3 Plan Implementation

3.1 Bore Monitoring and Maintenance

3.1.1 Plan Requirements

The Katunga WSPA Groundwater Management Plan requires groundwater levels to be measured in fifty-two State Observation Bores. The location of monitoring bores specified in Schedule 2 and 3 of the Plan are shown in Appendix A.

Table 3 Bore Monitoring Program Requirements

Plan Requirement:	Activity/ Reference	Complies
Maintenance of monitoring bores		
i. The Secretary and G-MW must ensure, that each bore listed in Schedule 2 and Schedule 3 is properly maintained and replaced if necessary	Inspected during monitoring ⁷ Maintenance program established and adhered to, no additional action required Relevant comments included on monitoring run sheets and entered into the State Groundwater Management System (GMS) on behalf of DSE ⁸ .	Yes Yes Yes
Water Levels		
ii. The Secretary must determine the potentiometric level in each bore specified in Schedule 2, during July, October, January and April in every year.	Monitored as specified by Thiess Services on behalf of the Secretary.	Yes
iii. G-MW must determine the potentiometric level in each bore specified in Schedule 3.	Monitored as specified by Thiess Services on behalf of G-MW.	Yes
iv. The Secretary and G-MW, respectively, must record each potentiometric level determined under ii) and iii) on the GMS within 30 days	Data entered to GMS database as specified.	Yes

3.1.2 Activities Undertaken

3.1.2.1 Maintenance of Monitoring Bores

Bores are visually inspected during monitoring and any maintenance required is noted on the electronic monitoring run field sheets kept by Thiess Services. There have been no long-term maintenance issues identified. Maintenance such as painting the bores or clearing the site is undertaken as required by Thiess Services as required under contract with DSE. No observation bores in Schedules 2 and 3 of the Plan have been identified as requiring replacement.

3.1.2.2 Groundwater Level Monitoring

Under Prescription 26, DSE must determine the potentiometric levels in each bore specified in Schedule 2 (8 bores) during August, November, February and May. Under Prescription 27, G-MW must determine the potentiometric levels for every bore specified in Schedule 2 in every other month of the year (totalling 12 readings per year). Schedule 2 monitoring in 2008/09 complied with these requirements.

⁷ As advised by Thiess Services the contractor engaged to carry out this work.

⁸ Also kept on file by Thiess Services the contractor engaged by DSE to carry out this work.

Under Prescription 27, of the Management Plan the water levels specified in Schedule 3 (44 bores) were carried out to assist with the requirements and goals of the Plan.

Under Prescriptions 26 and 27 potentiometric levels from bores listed in Schedules 2 and 3 are to be entered into the Groundwater Management System within 30 days after it is determined. Levels for all bores have been entered into the GMS within this timeframe. Hydrographs of monitoring bores specified in Schedule 2 from the Plan are attached in Appendix B and for selected monitoring bores specified in Schedule 3 are attached in Appendix C.

The hydrographs for each monitoring bore have been reviewed and there were no anomalies in data obtained during 2008/09. The monitoring program was reviewed during the season and observation bores (Schedule 2 and 3 bores) will be monitored at the same intervals in 2009-10.

G-MW has been coordinating a Department of Sustainability and Environment funded State Observation Bore construction program projected to continue for the next two years, which will include the construction of two new observation bores recommended for management zones 1062 and 1063 of the Katunga WSPA as recommended in Section 11.2 of the Plan. Coinciding with this is web-based technology that gives G-MW and DSE the ability to readily access and undertake improved analysis of groundwater level data obtained through the State Observation Bore network at a desktop level.

3.1.3 Compliance and Exceptions

As shown in Table 3 activities undertaken during the reporting period comply with the requirements of the Plan.

3.2 Salinity Monitoring

3.2.1 Plan Requirements

Table 4 details the salinity monitoring requirements of the Plan.

Table 4 - Salinity Monitoring

Plan Requirement:	Activity / Reference	Complies
Salinity		
a) The licensee, or the owner or occupier of a domestic and stock bore, must take, store and give G-MW a sample of water from their bore when requested by G-MW	Sample bottles and letters sent to the owners of 184 licensed bores. 58 groundwater samples were returned	Partial compliance due to voluntary nature of the program.
b) G-MW must		
i. measure the electrical conductivity of each water sample	All water samples received were analysed within 30 days of receipt	Yes
ii. record the results of the analysis on the Groundwater Management System within 30 days of sample analysis	Sample results were entered into a G-MW corporate database within 30 days for future upload to GMS (which relies on third party upload)	Partial
iii. Inform the bore owner of the results of the analysis	Landholders provided with results from previous year by mail, and results from current year upon request	Yes

3.2.2 Activities Undertaken

G-MW conducted a salinity sample mail-out to customers in November 2008. 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 G-MW for salinity determination.

A total of 58 samples were returned between November 2008 and June 2009 from the licensed bores included in the salinity mail out, a return rate of 31%. This rate is higher than 2007/08 which had 21% return rate. Whilst this improvement is encouraging, it fell short of last year's target of a 40% return rate set by G-MW. Figure 2 shows the geographic spread of samples provided for analysis.

A brief survey was also sent with the sample bottles requesting feedback on ways to improve the capture of groundwater salinity data in the region and increase the effectiveness of the current salinity sample mail out program. Seventy-five surveys were returned, and of those twenty-one hadn't previously sent in a sample. The most prevalent comment from returned surveys was that G-MW's response to provide customers with sample results could be improved. There were also other suggestions on how the program could be improved such as sending samples at a different time of the year or e-mailing results.

Domestic and stock groundwater users are also encouraged to submit a salinity sample from their groundwater bore, however in accordance with the Plan must contact G-MW to register their interest and be supplied with a sample bottle. G-MW will analyse the sample and return results.

3.2.3 Compliance and Salinity Program improvements

G-MW will develop a revised communication strategy aimed at increasing the return rate of salinity samples based on responses from the returned salinity surveys in 2008/09. The main areas that G-MW has identified needing improvement include:

- providing prompt feedback to licensees on salinity sample results,
- providing incentives to increasing the salinity sample return rate; and,
- the possibility of running the salinity sampling program at a different time of the year.

G-MW will highlight benefits of returning salinity samples by providing information to licensees outlining the agronomic benefits of collecting groundwater data and flagging the importance of this information to future management of the resource.

A more pro-active approach to sample collection should improve the response rate and emphasise the importance of the salinity sampling program. G-MW field staff have been directed that, if a bore is operating, when a flow meter is read or a compliance check carried out then a groundwater sample is taken.

These actions are anticipated to improve the capture and return rate of salinity samples in 2009-10 and a future salinity sampling strategy has been considered as part of the plan review currently been conducted.

3.3 Metering

3.3.1 Plan Requirements

Table 5 details the metering requirements of the management plan. The location of all extraction points and metered sites is included in Appendix C.

Table 5 - Bore Metering Program Requirements

Plan Requirement:	Activity / Reference	Complies
<p>Installation and maintenance of meters</p> <p>a) G-MW must:</p> <ul style="list-style-type: none"> i. ensure that a flow meter is fitted to every operational bore being used in association with a groundwater licence that authorises the extraction of 20 ML/year or more. ii. inspect the condition of the flow meter whenever it is read iii. maintain the flow meter in good condition iv. recalibrate the flow meter at any time when the authority has reason to believe that a reading from the meter may be inaccurate v. replace any damaged flow meter vi. keep a copy of all work done on the flow meter 	<p>An inspection of all licensed bores undertaken and all are metered under the Plan.</p> <p>Condition of meter noted when reading taken</p> <p>Condition of meter noted when reading taken.</p> <p>5 defective meters identified and repaired.</p> <p>14 meters were replaced in 2008/09</p> <p>Condition of meter noted if necessary when reading taken.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<p>b) The licensee must:</p> <ul style="list-style-type: none"> i. ensure reasonable care is taken of any meter fitted to the bore by G-MW ii. ensure G-MW is promptly advised whenever that meter appears to be defective, registering incorrectly or is damaged 	<p>No record of unreasonable care.</p> <p>No record of such advice</p>	<p>Yes</p> <p>Yes</p>
<p>Meter Readings</p> <p>a) G-MW must:</p> <ul style="list-style-type: none"> i. read each flow meter at least once each year ii. determine the volume of water extracted iii. record the metered volume on a database iv. estimate the volume of water from defective meters v. record the estimated volume on a database 	<p>Meter readings currently undertaken read three times each year</p> <p>Metered usage calculated from subtraction of start and end of season meter readings.</p> <p>Meter reading data entered into G-MW's Irrigation Planning Module database.</p> <p>No estimates were made, usage for 5 repaired meters was validated</p> <p>No action required. All metered usage was verified.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>N/A</p> <p>N/A</p>

3.3.2 Activities Undertaken

Fourteen meters were replaced during the season and five meters were repaired.

Table 6 - Meter Fitting Activities 2008/09

	Total at 30 June 2007	Total at 30 June 2008	Total at 30 June 2009
Number of meters installed	2	2	-
Meters requiring installation	-	-	-
Meters requiring maintenance	5	12	5
Meters replaced	5	3	14

3.3.3 Compliance and Exceptions

Effective management of groundwater within the WSPA and elsewhere requires systems for the storage, retrieval, analysis and reporting of large quantities of data. Goulburn-Murray Water has developed an assets database to record meter details which is enabling an improved maintenance schedule. G-MW's Integrated Planning Module links to a Geographic Information System to include all metered groundwater bores. It is now used to monitor metered usage and salinity readings. The use of IPM has allowed verification of meter reading records to occur and in 2009/10 electronic meter reading technology will be trialled for implementation mid season. This will allow improvements in data accuracy and transfer and make meter reading more efficient.

3.4 Restrictions on Licensing and Licence Transfers

3.4.1 Plan Requirements

Table 7 details the groundwater licensing requirements of Plan.

Table 7 - Restrictions on Licensing and Licence Transfers

Plan Requirement:	Activity/Reference	Complies
Extent to which a groundwater licence may be transferred	The Plan sets the rules for permanent transfer in Prescriptions 8, 9 & 10.	Yes
a) Permanent transfers		
b) Temporary transfers	The Plan sets out rules for temporary transfer in Prescription 7 of the Plan.	Yes
c) Recording transfers	G-MW does not track individual buyers and sellers. However the total temporary transfer volume is recorded (See section 3.4.2)	Yes
Changing the Groundwater Extraction Site	One new groundwater licence was issued resulting from permanent transfers from existing licence holders. One licence amalgamation occurred.	Yes
d) G-MW must only approve an application for a groundwater licence under section 51 of the Act or a bore construction licence under section 67 of the Act in accordance with Prescription 11 and 12 of the Plan		

Restrictions and Prohibitions on the Issue of Licences		
e) G-MW must manage licence entitlement in the Katunga WSPA in accordance with Prescriptions 13 to 18	No new groundwater entitlement was issued. One licence amalgamation occurred. One cancellation occurred due to permanent transfer of all entitlement to new licence holders.	Yes

3.4.2 Activities Undertaken

Table 8 provides details of licensing activities. More detailed information on the temporary transfers referred to in Table 8 are shown in Tables 9 and 10.

Table 8 - Licensing Activities for 2008/09

Year to 30 June 2009	No.	Total Volume (ML)
New licences issued	0	0
Licence Alteration ⁹	1	0
Licences revoked	0	0
Licence Cancellations ¹⁰	1	6
Licence amalgamations	1	1928
Permanent transfers ¹¹	1	109.6
Temporary transfers ¹²	53	3470
D&S Bores notifying use	0	0

Table 9 – Temporary transfer summary within zones

Management Zone	Number of transfers	Volume transferred (ML)
1061	0	0
1062	25	1196
1063	11	1324
Total	36	2520

Table 10 - Temporary transfer summary between zones

Out of Management Zone	Into Management Zone	Number of transfers	Volume transferred (ML)
1061	1062	3	180
1062	1061	1	100
1062	1063	9	481
1063	1062	4	189
Total		17	950

⁹ Licencee added a new bore to S51 licence without changing entitlement volume as old bore became D&S

¹⁰ The licence cancellation resulted from users permanently transferring all of their entitlement.

¹¹ The permanent transfer was for a total of 137 ML and after the 20% reduction in the transfer amount left a volume 109.6 ML (in accordance with Prescription 10 of the Plan).

¹² This is the combined total of the transactions described in Tables 9 and 10

3.4.3 Compliance and Exceptions

All activities undertaken during the reporting period comply with the requirements of the Plan.

3.5 Restrictions Imposed on the Taking of Groundwater

3.5.1 Plan Requirements

Table 11 details the requirements of the Plan regarding restrictions on taking groundwater.

Table 11 - Restrictions Imposed on the Taking of Groundwater

Plan Requirement:	Activity/Reference	Complies
Prescription 1 – When an annual allocation is to be announced a) By August 1 or earlier each year, G-MW must determine in accordance with Prescription 1 annual allocation percentages.	Annual allocations determined on 11 July 2008.	Yes
Prescriptions 2 – How an annual allocation is to be announced b) G-MW must announce an annual allocation in accordance with Prescription 2 of the Plan	Allocations were announced through a newspaper notice, a media release and via direct correspondence to each licensee.	Yes
Prescription 3 and 6– Calculating an annual allocation is to be determined. c) As per prescription 3 In any year where the 5-year average annual groundwater use is: <ul style="list-style-type: none"> o less than 30,000 ML/yr, the annual allocation must be announced at 70% or o 30,000 ML/yr or greater, the allocation must be announced at 50% Average annual groundwater use is calculated as per prescription 6.	The 5-year average usage at end June 2008 was 26442 ML - 70% annual allocation announced for 2008/09 Usage in 2008/09 was 32 849 ML The 5-year average usage at end June 2009 was 28155 ML	Yes
Prescription 4 – Consideration of previously unmetered bore usage	Recalculation not required	Yes
Prescription 5 – Calculating average groundwater recovery levels.	The five year average recovery level as of 30 June 2009 is 20 m below the natural surface.	Yes

3.5.2 Activities Undertaken

Compliance with the plan objective is based on the relationship between average recovery level and average use which suggests that 5-year average use of 30,000 ML will lead to an average recovery level of about 20 metres below groundwater surface. To achieve the plan objective and level target, and ensure groundwater users maintain resource access; allocations are managed such that if 5-year average use is less than 30,000 ML then a 70% allocation is announced. If the five year average is equal or greater then 30,000 ML then a 50% allocation is announced.

The total seasonal usage over time and 5-year rolling average of these (as calculated per Prescription 6) is shown in Figure 3. An allocation of 70% for all management zones for the 2008/09 season was announced on 11 July 2008 (Table 12) as the 5 year average usage was 26,442 ML.

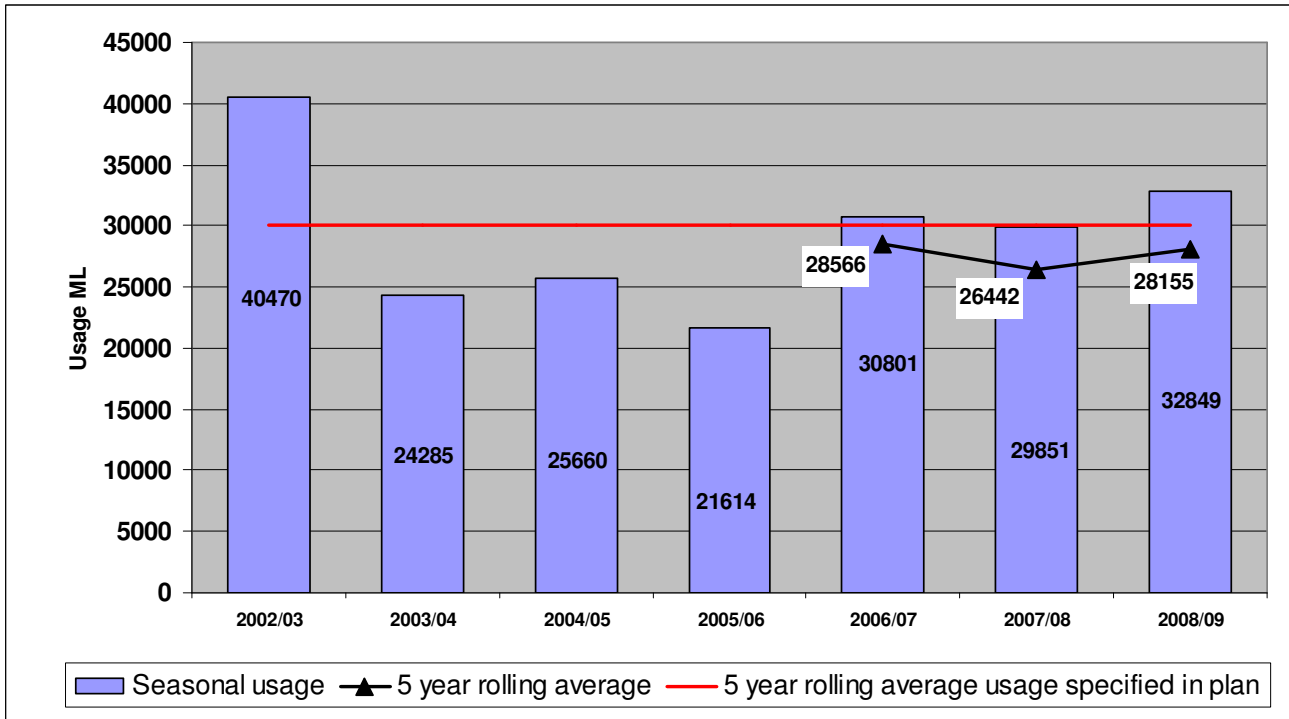


Figure 3 – Annual Usage compared with 5 year rolling average usage

Table 12 – 2008/09 annual allocations and the date of allocation

Management Zone	Seasonal Allocation Determination date	Seasonal Allocation (% of entitlement)
1061	11 July 2008	70
1062	11 July 2008	70
1063	11 July 2008	70

The average groundwater recovery level over time and the 5 year rolling average of these (as calculated per Prescription 5) is shown in Figure 4. The average recovery level at 30 June 2009 is 22.6 m below the natural surface. The five average recovery level at this date of 20 metres below ground surface is equal to target specified in the Prescription 1.

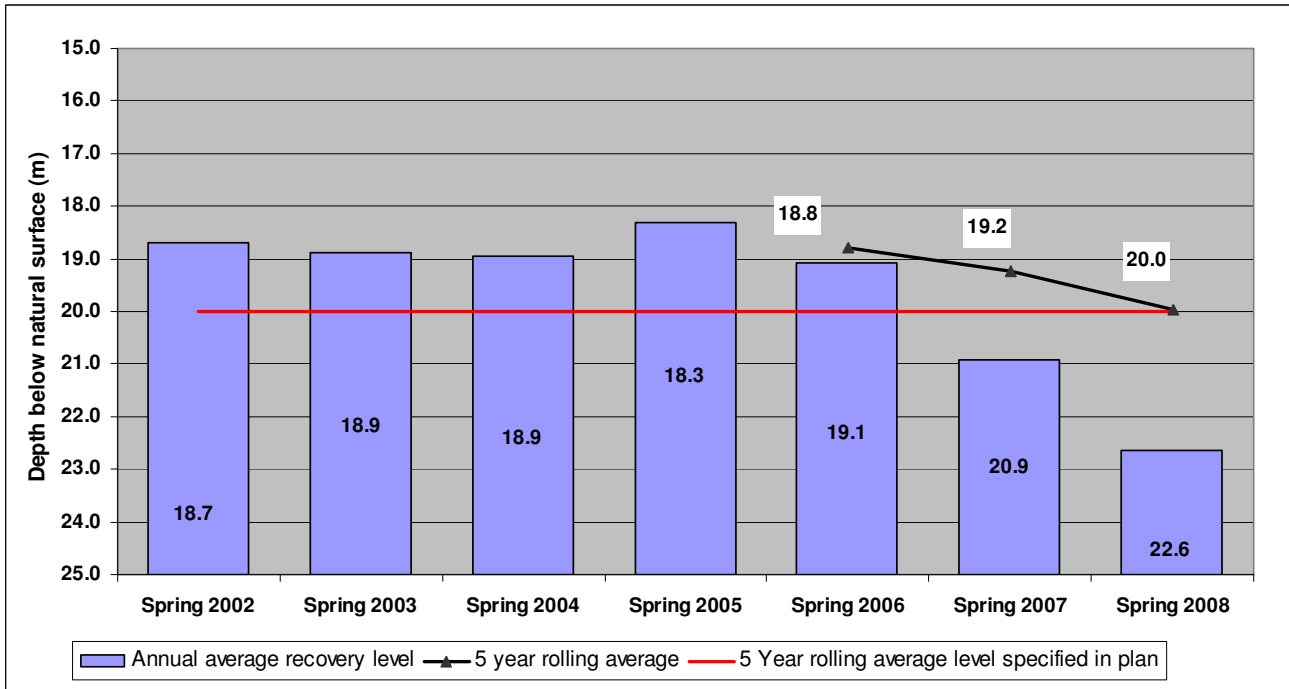


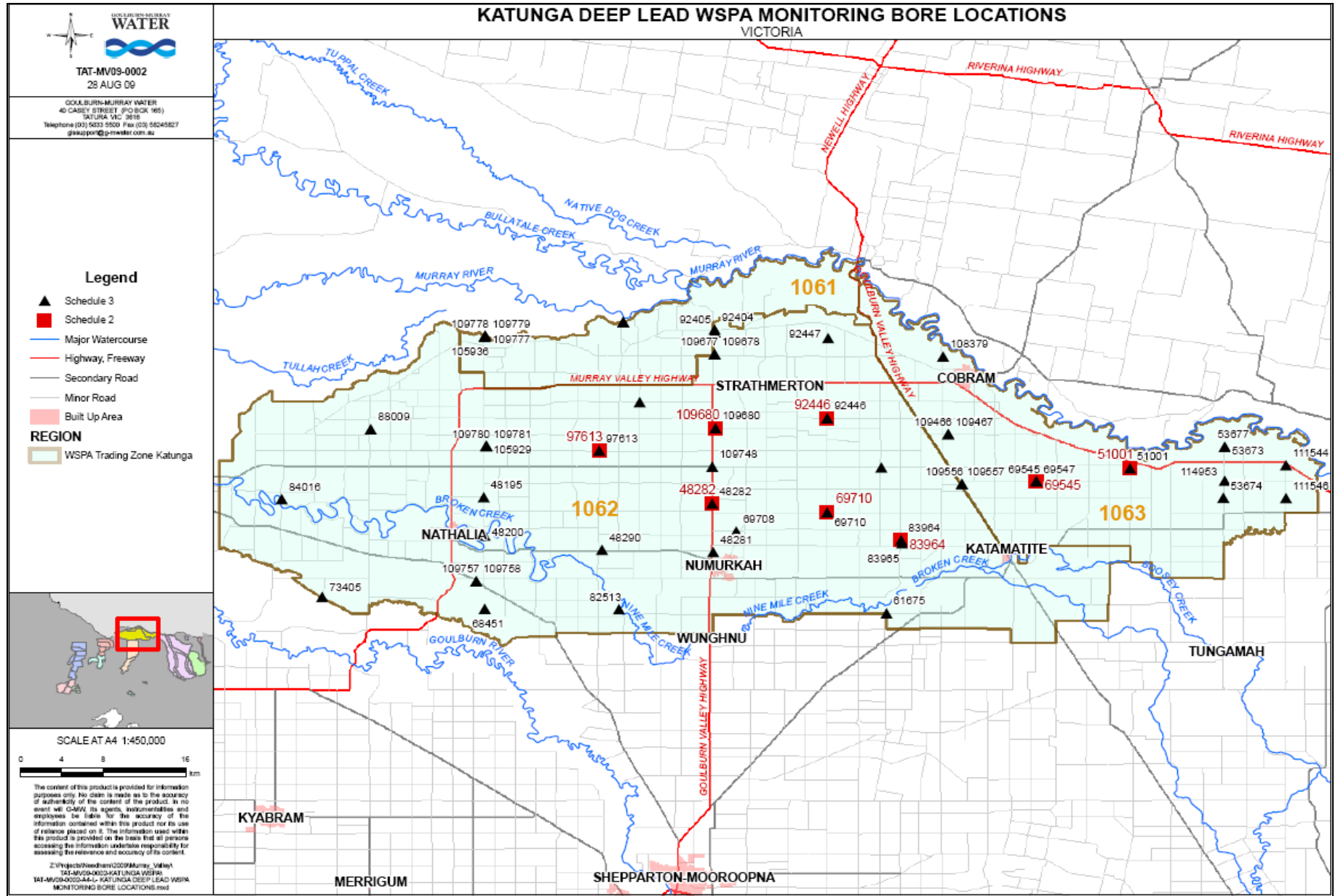
Figure 4 – Spring annual average recovery levels compared with 5 year rolling average levels

3.5.3 Compliance and Exceptions

Activities undertaken during the reporting period comply with the requirements of the Plan.

Currently there are no issues affecting the implementation of the Plan. However, the increasingly low recovery levels mean that the relationship between the 5-year average use of 30,000 ML leading to an average recovery level of about 20 metres below groundwater surface may need to be reviewed. If the spring recovery levels are below the 20 meter target next year, it will bring the 5 year average under the target specified in the plan.

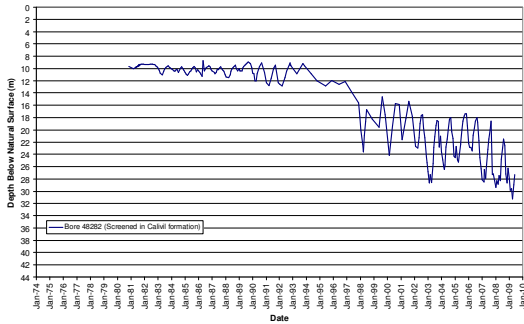
Appendix A - Monitoring Bore Locations



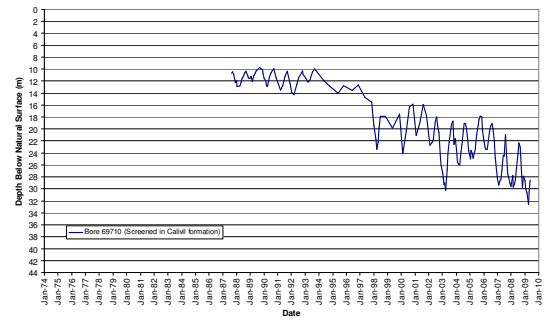
Appendix B - Hydrographs for Monitoring Bores specified in Schedule 2

Zone 1062

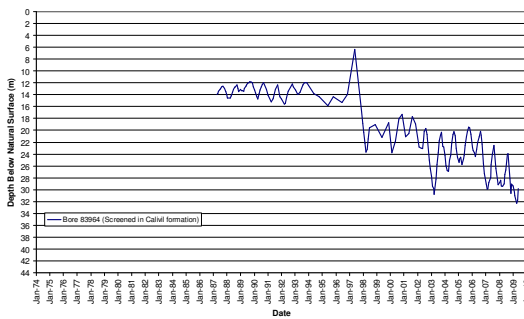
a) Bore 48282



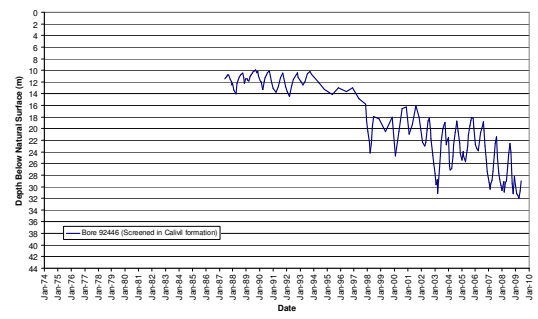
b) Bore 69710



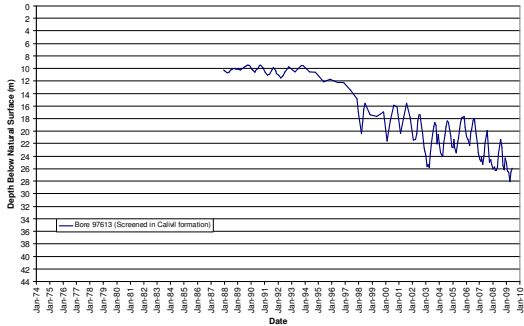
c) Bore 83964



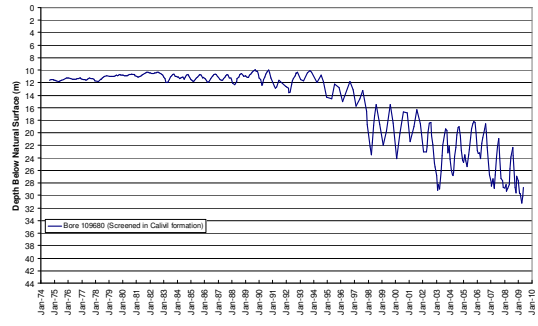
d) Bore 92446



e) Bore 97613

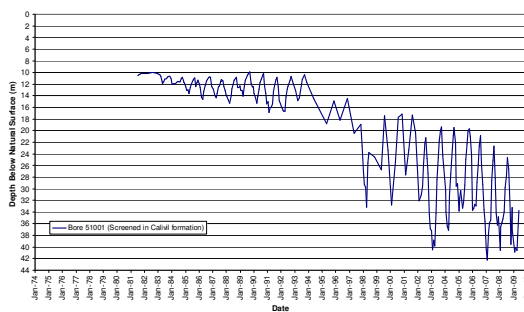


f) Bore 109680

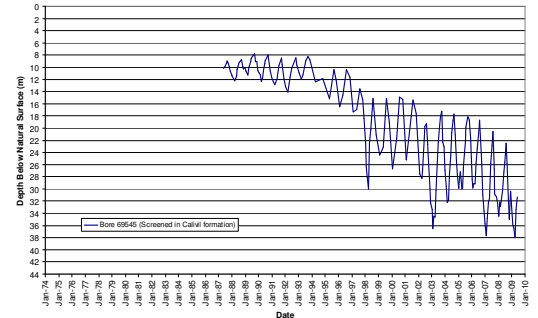


Zone 1063

a) Bore 51001



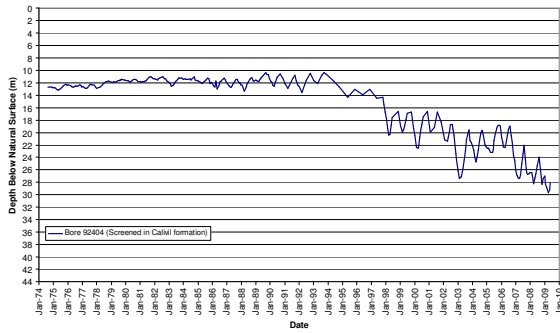
b) Bore 69545



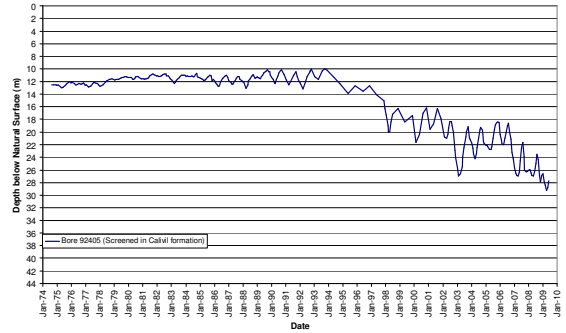
Appendix C - Hydrographs for Selected Monitoring Bores specified in Schedule 3

Zone 1061

a) Bore 92404

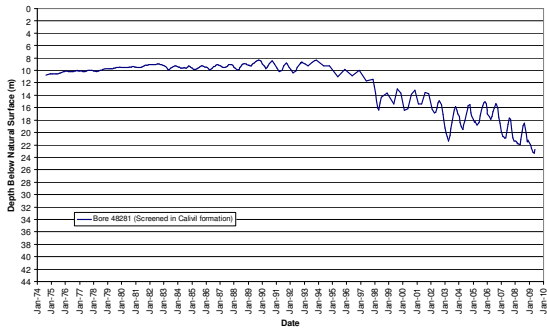


b) Bore 92405

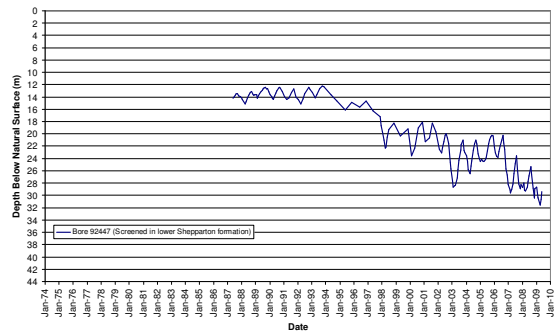


Zone 1062

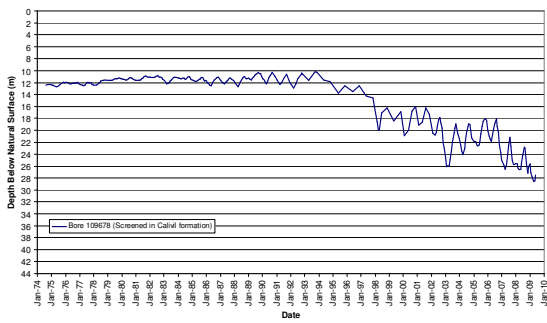
a) Bore 48281



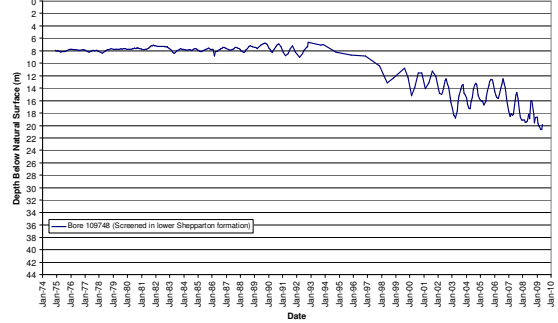
b) Bore 92447



c) Bore 109678

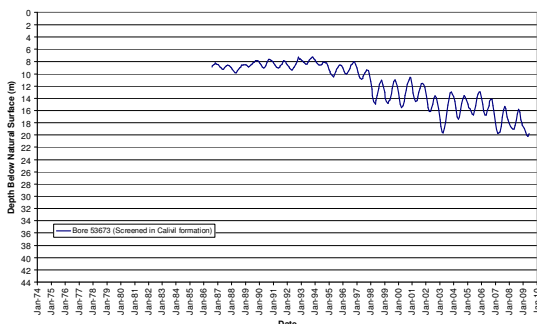


d) Bore 109748

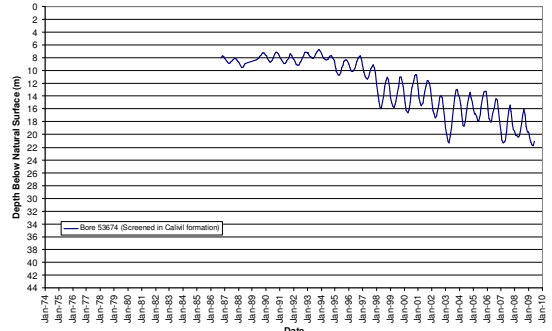


Zone 1063

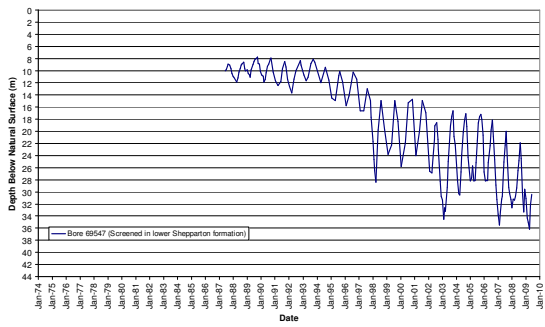
a) Bore 53673



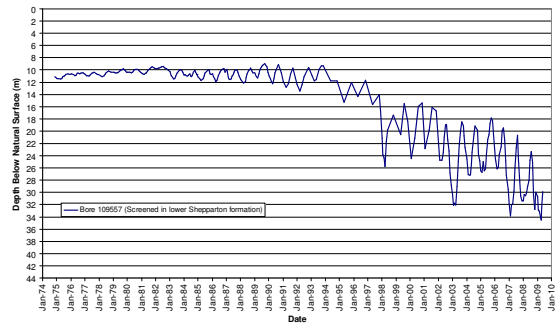
b) Bore 53674



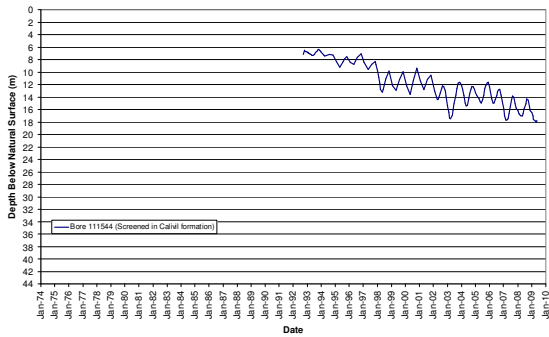
c) Bore 69547



d) Bore 109557



e) Bore 111544



Appendix D - Extraction Points & Metered Site Locations

