

GOULBURN-MURRAY  
**WATER**



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

REPORT FOR YEAR ENDED  
JUNE 2007

## Foreword

This report is submitted to the Minister for Water, the Goulburn Broken Catchment Management Authority and the North Central 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.

<b>Area</b>	Katunga Water Supply Protection Area
<b>Segment</b>	Groundwater
<b>Area Declared</b>	14 January 1999
<b>Plan Approved</b>	24 July 2006
<b>Scheduled Plan Review</b>	July 2011
<b>Implementation Authority</b>	Goulburn-Murray Water Corporation
<b>Relevant CMA</b>	Goulburn Broken Catchment Management Authority
<b>Report Period</b>	1 July 2006 – 30 June 2007

## Summary

The Minister for Water approved the Katunga Water Supply Protection Area Groundwater Management Plan (the Plan) on 26 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 management plan compliance for the reporting period.

Identification and increased monitoring of potential high users throughout the season, temporary & 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 there were no licences where water was taken in excess of licensed entitlement.

**Table 1 – 2006/2007 compliance with the Groundwater Management Plan**

<b>Plan Requirement</b>	<b>Complies</b>
Bore monitoring requirements	Yes
Salinity Monitoring	Yes (improved sample return rate target set for 2007/08)
Bore metering requirements	Yes
Average recovery levels above minimum levels specified in the plan	Yes
No use in excess of entitlement	Yes

### **Resource Position**

The new Groundwater Management Plans objective is to manage water resources in the Katunga Water Supply Protection Area (WSPA) in an equitable manner ensuring 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 first year of operation the plan has met these requirements with the 5 year average level in the key bores being 19.1 metres. The annual average recovery level in 2006/2007 was 20.7 metres, which is reflective of the drought conditions experienced throughout the year.

### **Operation of the Plan**

The licensed volume of groundwater extracted in 2006/07 season did not cause the 5 year average recovery levels to fall below the specified level of 20 m below ground surface, as required in Prescription 1 of the Plan.

During the reporting period only salinity sampling was identified as requiring consideration by Goulburn-Murray Water (G-MW) in relation to the implementation of the Groundwater Management Plan.

Water salinity samples were submitted for 28% of bores. The return rate of water samples for salinity testing is problematic.

G-MW will continue to raise these issues in communications with customers and has set a target return rate of 40% for 2007/08. G-MW is endeavouring to improve the return rate of salinity samples by providing feedback to licensees on the sample results. G-MW will also aim to improve understanding by providing information to licensees outlining the purpose and benefits of collecting groundwater data and highlighting the importance of contributing this information.

Signed

Russell Cooper  
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 Yarrowonga in the east to Barmah in the west. For management purposes the area is divided into three management zones and covers approximately 2,100 km<sup>2</sup>. The WSPA deals with groundwater resources of the unconsolidated alluvial deposits occurring at depths greater than 25 metres below surface. **Figure 1** shows the Katunga WSPA.

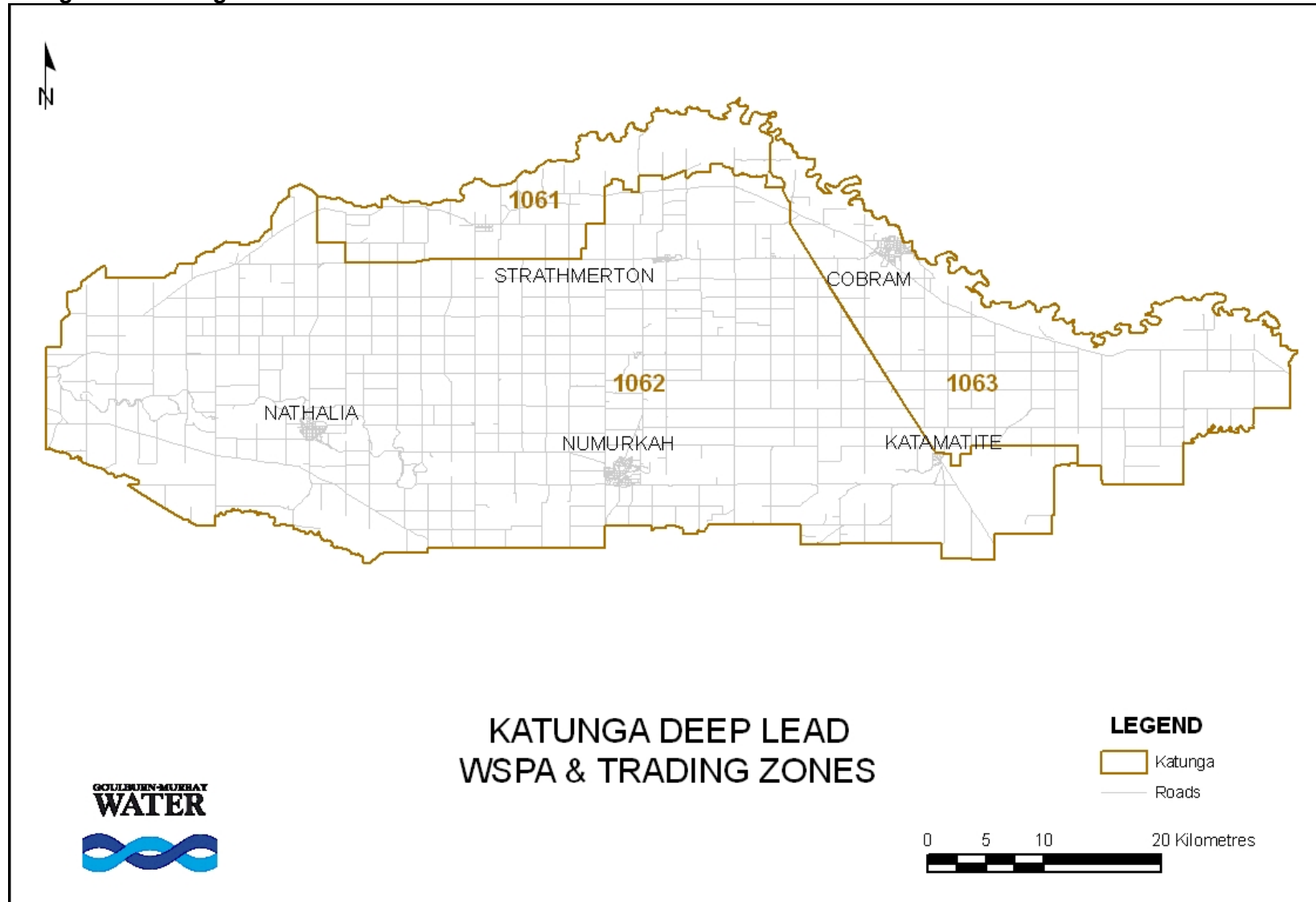
The Katunga WSPA Groundwater Management Plan (the Plan) was approved by the Minister responsible for the *Water Act 1989* (the Act) on 24 July 2006. Under Section 5 of the Plan, Goulburn-Murray Water Corporation (G-MW) has the duty of enforcing and administering the Plan.

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 report annually on administration, and enforcement of the Plan. The Plan specifies several groundwater management activities including:

- Maintenance of monitoring bores;
- Groundwater level monitoring;
- Groundwater salinity monitoring;
- Bore metering program;
- Managing groundwater licences; and
- Restrictions on licences to ensure that groundwater levels do not fall below target minimum levels.

Figure 1 - Katunga WSPA



## **2 Key Observations**

### **2.1 Water Levels/flows**

Across the area, actual average recovery levels for 2006/2007 were above minimum levels specified in the plan despite an increase in metered use compared to last year. Annual use increased from 21 614 ML in 2005/06 to 30 801 ML in 2006/07. The 5 year average use is 28,556 ML (for period 1 July 2002 to 30 June 2007 inclusive).

Seasonal allocations of 70% for 2006/2007 were announced for the first time under the new Groundwater Management Plan. The prolonged drought saw an increase in demand on groundwater usage. The 70% percent allocation resulted in 30,801 ML of metered usage recorded for 2006/07.

The dry conditions resulted in low surface water allocation (95% of water right in the Murray Valley) during 2006/07 and saw a slight decline in the average recovery levels in the eight key observation bores. Annual average recovery levels have decreased from 18.3m below ground surface in spring 2005 to 20.7m in spring 2006. The five year average recovery level has declined marginally to 19.1m below ground surface, however this calculation takes into account the 'low' annual average recovery levels (particularly spring levels in 2003 & 2006) which significantly influence this figure.

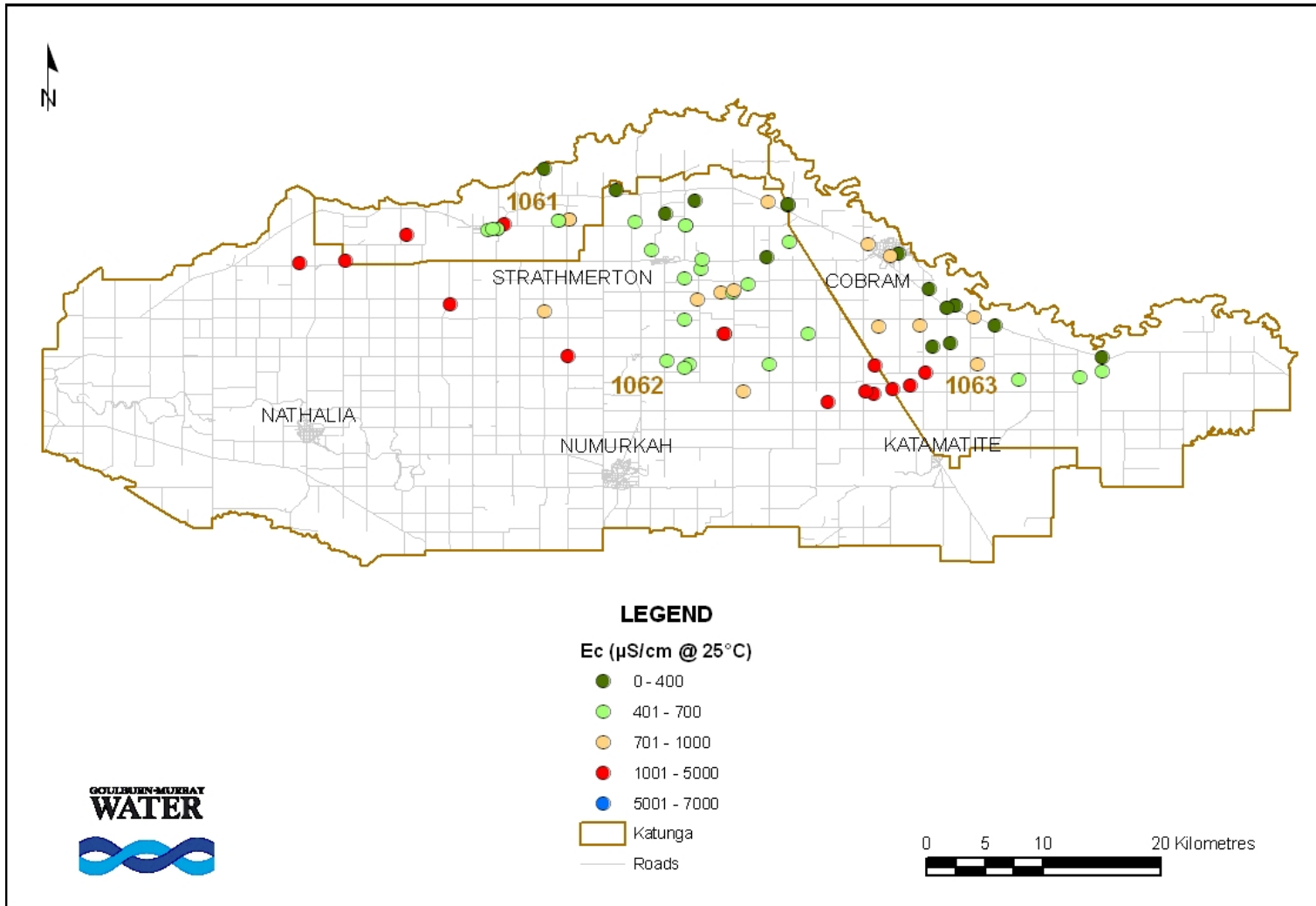
Overall average recovery levels show slightly less aquifer recovery following a period where water levels appeared to stabilise (after the 2002/03 year). This response was in part expected given the low rainfall and low surface water allocation in the 2006/07 season. The drought conditions meant that there was high demand for groundwater directly correlating with groundwater level declined due to an early demand for pumping particularly in the spring of 2006.

### **2.2 Salinity / Water Quality**

Groundwater salinity sampling of licensed production bores was conducted as required in Prescription 29. The spatial distribution of groundwater salinity sample results is presented in Figure 2. Groundwater salinities within the Calivil and Lower Shepparton Formation are lowest in central and eastern parts of the WSPA and an increase in salinity is observable in the west and north-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.

No analysis was conducted on temporal trends in salinity up to 2006/2007 as there is insufficient data to justify such an analysis on an annual basis, and technical data (including salinity risk arising from pumping) was reviewed in the development of the new Katunga WSPA Groundwater Management Plan.

Figure 2 - Katunga WSPA Salinity Sampling Compliance 2006/2007



2.3



## 2.4 Water Use

Table 2 below provides detail on groundwater use in 2006/2007 compared to use in 2005/2006.

**Table 2 - Water Use Comparison Table**

	At 30 June 2006	At 30 June 2007
* No. of licences	183	183
** Total entitlement volume	59,778 ML/yr	59,734 ML/yr
Total annual allocation	42 487 ML	41 876 ML/yr
No. of metered bores	121	121
Metered volume used	21,614 ML	30,801 ML
No of licences with estimated volumes	0	0
*** Total estimated volume used	0 ML	0 ML
Total use	21,614 ML	30,801 ML
Use % of total allocation	51 %	74 %
No. of licences with use greater than licensed allocation	0	0
Total volume used above licensed allocation	0	0

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

\*\* Total entitlement volume has decreased due to the 20% claw back of entitlement that occurred through a permanent trade.

\*\*\* No of licences with estimated volumes, refers to bores that weren't metered and an estimate on volume extracted had to be made. Refer to Section 3.3.

## 2.4 Non Compliance

There were no licences where water was taken in excess of licensed entitlement. Identification and 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.

Licence holders with a history of use in excess of entitlement were the focus of a G-MW communications strategy warning of the consequences of unauthorised use of groundwater. While this advice has brought about success in 2006/2007, licensed groundwater users will continue to be reminded of their obligation to use within licence entitlement. All future use in excess of entitlement will result in G-MW taking appropriate legal action.

One particular issue is the allowance made for metered entitlements to account for Domestic and Stock (D&S) use. Currently G-MW licences allow a nominal 2 ML/yr for D&S use through the meter in addition to licence volume. As D&S use from a bore is a Section 8 right this figure may change in future years pending any adjustments to the calculation of reasonable domestic and stock use.

### 3 Plan Implementation

#### 3.1 Monitoring Requirements

The Katunga WSPA Groundwater Management Plan requires groundwater levels to be measured in 52 bores.

Monitoring bore locations from Schedule 2 and 3 from the Plan are shown in Appendix A.

Hydrographs of bores in Schedule 2 from the Plan are attached in Appendix B.

The hydrographs for each monitoring bore have been reviewed and there were no anomalies in data obtained during 2006/2007. The monitoring program and strategy was reviewed during the season with bores continuing to be monitored at the same intervals in the 2006/2007 season into 2007/2008. Planning has begun with the Department of Sustainability and Environment for the construction of two new observation bores recommended for management zones 1062 and 1063 as discussed in Section 11.2 of the Plan.

The following table details the groundwater level monitoring requirements of the management plan.

**Table 3 Bore Monitoring Program Requirements**

Plan Requirement:	Activity/ Reference	Complies
Maintenance of monitoring bores The Secretary must, for each bore listed in Schedule 2:		
i. periodically inspect the condition of the bore	Inspected during monitoring <sup>1</sup>	Yes
ii. maintain the bore in good condition	No action required	Yes
iii. keep a record of all inspections and maintenance work undertaken under paragraphs a) and b) in relation to the bore	Relevant comments on monitoring run sheets <sup>2</sup> .	Yes
Water Levels		
iv. The Secretary must determine the potentiometric level in each bore specified in Schedule 2, during July, October, January and April in every year.	All bores in Schedule 2 were read, as required in the Plan,	Yes
v. G-MW must determine the potentiometric level in each bore specified in Schedule 3.	Monitored as required.	Yes
vi. The Secretary and G-MW, respectively, must record each potentiometric level determined under paragraphs a) and b) on the Groundwater Management System within 30 days	Data entered to GMS database.	Yes

##### 3.1.1 Compliance and Exceptions

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

##### 3.1.2 Maintenance of Monitoring Bores

Bores are visually inspected during monitoring and notes on the condition of the bores are recorded into the Groundwater Management System (GMS) when necessary. Maintenance such as painting the bores or clearing the site is undertaken as required.

<sup>1</sup> As advised by Sinclair Knight Merz who were contracted to carry out this work.

<sup>2</sup> On file at WT01841 – Sinclair Knight Merz Tatura who is contracted by DSE to carry out this work.

### 3.1.3 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 2006/07 complied with these requirements.

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 both schedule 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.

### 3.1.4 Groundwater Level Monitoring Strategy for 2007/08

In 2007/08 all bores listed in Schedule 2 of the Plan will be monitored at the frequency of 12 readings per year. All bores specified in Schedule 3 of the Plan will be monitored at varying frequencies throughout the year to assist in G-MW's understanding of:

- Short and long-term impacts of groundwater pumping at both regional and local scale
- Regional groundwater decline and seasonal drawdown
- The interrelationships with overlying and bordering aquifers as well as surface water connections
- Groundwater resource trends

Additional bore monitoring may be included as and when required.

## 3.2 Salinity Monitoring

A mail-out to Katunga WSPA licensees took place during the irrigation season. A sample bottle was sent 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.

D&S users are entitled to submit a groundwater sample for testing. Those wishing to do so, can contact G-MW, and they will be then supplied with a sample bottle. G-MW will analyse the sample and return results in accordance with the Plan.

Table 4 details the salinity monitoring requirements of the management 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 246 licensed bores). 70 (29%) groundwater samples were returned	Partial compliance. Actions to improve compliance next year to 40% return rate
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	Results of each analysis were entered into the GMS system and Deep Lead Database within 30 days of analysis.	Yes
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

### 3.2.1 Compliance and Exceptions

Seventy samples were returned from the 246 licensed bores included in the salinity sample mailout, (compliance of 29%) between November 2006 and June 2007. This return rate is slightly less than the previous season (2005/2006) which had a 32% return rate. Figure 2 shows the geographic spread of sample provided for analysis.

G-MW will develop a revised communication strategy aimed at increasing the return rate of salinity samples by providing prompt feedback to licensees on the sample results. G-MW will target improved understanding of the benefits of returning salinity samples by providing information to licensees outlining the agronomic benefits of collecting groundwater data and highlighting the importance of contributing to this information. Field staff have also been directed to test salinity when visiting bores in operation to increase the available records of salinity data.

### 3.3 Metering

The location of all extraction points and metered sites is included in Appendix C.

#### 3.3.1 Requirements of the Plan

Table 5 details the metering requirements of the management plan.

**Table 5 - Bore Metering Program Requirements**

Plan Requirement:	Activity / Reference	Complies
Installation and maintenance of meters a) G-MW must: <ul style="list-style-type: none"> <li>i. ensure that a flow meter is fitted to every bore being used in association with a Licence unless bore is used solely for dairy use or Domestic and Stock purposes</li> <li>ii. inspect the condition of the flow meter whenever it is read</li> <li>iii. maintain the flow meter in good condition</li> <li>iv. recalibrate the flow meter at any time when the authority has reason to believe that a reading from the meter may be inaccurate</li> <li>v. replace any damaged flow meter</li> <li>vi. keep a copy of all work done on the flow meter</li> </ul>	An inspection of all licences identified all bores were metered under the plan  Condition of meter noted when reading taken  Condition of meter noted when reading taken.  5 defective meters identified and have maintenance scheduled.  5 meters were replaced  Condition of meter noted if necessary when reading taken.	Yes  Yes  Yes  Yes  Yes
b) The licensee must: <ul style="list-style-type: none"> <li>i. ensure reasonable care is taken of any meter fitted to the bore by G-MW</li> <li>ii. ensure G-MW is promptly advised whenever that meter appears to be defective, registering incorrectly or is damaged</li> </ul>	No record of unreasonable care.  No record of such advice	Yes  Yes
Meter Readings a) G-MW must: <ul style="list-style-type: none"> <li>i. read each flow meter once each year</li> <li>ii. determine the volume of water extracted</li> <li>iii. record the metered volume on a database</li> <li>iv. estimate the volume of water from defective meters</li> <li>v. record the estimated volume on a database</li> </ul>	Meter readings recorded in 18 <sup>th</sup> -24 <sup>th</sup> Nov, 16 <sup>th</sup> -27 <sup>th</sup> Jan, 13 <sup>th</sup> -30 <sup>th</sup> Mar & 13 <sup>th</sup> -18 <sup>th</sup> June.  Data entered into spreadsheets, Deep Lead Database and Irrigation Planning Module database at end of season.  Estimated volumes were not derived for bores, due to meters being installed on all users.  No action required. Due to all users being metered.	Yes  Yes  Yes  N/A  N/A

### 3.3.2 Metering Fitting activities

**Table 6 - Meter Fitting Activities 2005/2006**

	<b>Total for WSPA at 30 June 2006</b>	<b>Total for WSPA at 30 June 2007</b>
Number of meters installed	12	2
Meters requiring installation	1	-
Meters requiring maintenance	-	5
Meters replaced	-	5

### 3.3.3 Compliance and Exceptions

There was one operational bore that was outlined in last years annual report that required metering. This bore was metered during the winter period of 2006. Goulburn-Murray Water has developed a Meter Reading database to improve its maintenance schedule and records for metering. Five meters were replaced during the season and there were 5 meters that required maintenance during the 2006/2007 season.

### 3.3.4 Issues Affecting Implementation

Effective management of groundwater within the Katunga WSPA and elsewhere requires improved systems for the storage, retrieval, analysis and reporting of large quantities of data. Until recently groundwater resource management has been currently compromised by inadequate data management systems. G-MW is now in the midst of a three-year database development project to improve the storage and management of groundwater metering data. A Deep Lead Groundwater Database has been developed in conjunction with the development and implementation of a Geographic Information Systems during the 2006/07 season. These systems are expected to significantly improve G-MW's groundwater data management capacity into the future. Coinciding with this is the development and implementation of the Thiess Utility Services SOBN monitoring contract. This technology gives G-MW and DSE the ability to spatially assess hydrographic data quickly and accurately at the desktop level.

### 3.4 Restrictions on Licensing and Licence Transfers

#### 3.4.1 Requirements of the Plan

Table 7 details the groundwater licensing requirements of the management plan.

**Table 7 - Restrictions on Licensing and Licence Transfers**

<b>Plan Requirement:</b>	<b>Activity/Reference</b>	<b>Complies</b>
Extent to which a groundwater licence may be transferred		
a) Permanent transfers	The management plan sets the rules for permanent transfer in Prescriptions 8, 9 & 10 of the Plan.	Yes
b) Temporary transfers	The management 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 volume of temporary transfer is recorded (See section 3.4.2)	Yes
Changing the Groundwater Extraction Site		
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	No new groundwater licences issued. No amalgamations occurred.	Yes
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 licences issued. No amalgamations or cancellations occurred.	Yes

### 3.4.2 Licensing Management Summary

Table 8 provides details of licensing activities and Table 9 contains a summary of temporary transfers.

**Table 8 - Licensing Activities for 2006/2007**

<b>Year to 30 June 2005</b>	<b>No.</b>	<b>Volume ML</b>
New licences issued	0	0
Additional volumes on existing licences	0	0
Licences revoked	0	0
Licence amalgamations	0	0
*Permanent transfers	1	184
Temporary transfers	31	2734
D&S Bores notifying use	0	0

\* The permanent transfer was for 230 ML and after the 20% reduction in the transfer amount left a volume 184 ML (in accordance with Prescription 10 of the Plan).

**Table 9 – Temporary transfer summary within the zones.**

<b>Management Zone</b>	<b>Number of transfers</b>	<b>Volume transferred (ML)</b>
<b>1061</b>	2	158
<b>1062</b>	10	985
<b>1063</b>	19	1591

### 3.4.3 Compliance and Exceptions

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

The exceptions are recording of transfers. As G-MW has incorporated temporary transfer of water entitlement (TTWE) into Watermove, which does not match buyers and sellers at an individual licence level.



### 3.5 Restrictions Imposed on the Taking of Groundwater

#### 3.5.1 Requirements of the Plan

Table 10 details the requirements of the Plan regarding restrictions on taking groundwater.

**Table 10 - 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 31 July 2006.	Yes
Prescriptions 2 and 3 – How an annual allocation is to be announced c) G-MW must announce an annual allocation in accordance with Prescription 2 of the Plan	Allocations were announced through a newspaper notice and via direct correspondence to each licensee.	Yes
Prescription 3 – How an annual allocation is to be determined. In any year where the 5-year average annual groundwater use is: a) less than 30,000 ML/yr, the annual allocation must be announced at 70% or b) 30,000 ML/yr or greater, the allocation must be announced at 50%	The 5-year average usage was 28,311 ML	Yes (70% allocation announced)
Prescription 4 – Consideration previously unmetered bore usage	Recalculation not required	Yes
Prescriptions 5 and 6 – Calculating average groundwater recovery levels. The volume of groundwater must not exceed the volume that would cause the average annual groundwater level less than the five-year groundwater recovery 20m below ground level	The five year average recovery level as of end 2006/2007 was 19.1 mBNS.	Yes

**Table 11 - 2006/2007 annual allocations and the date of allocation.**

Management Zone	Seasonal Allocation Determination date	Seasonal Allocation (% of entitlement)
1061	31 July 2006	70
1062	31 July 2006	70
1063	31 July 2006	70

#### 3.5.2 Compliance and Exceptions

As of June 2007 a five average recovery level of 19.1 metres below ground surface was recorded. This was above the 20 metre (below groundwater level) target specified in the Plan. Recovery level and usage compliance targets are assessed by comparing the 5-year average groundwater use with the 5-year average recovery level using water level data listed in Schedule 2 of the Plan.

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

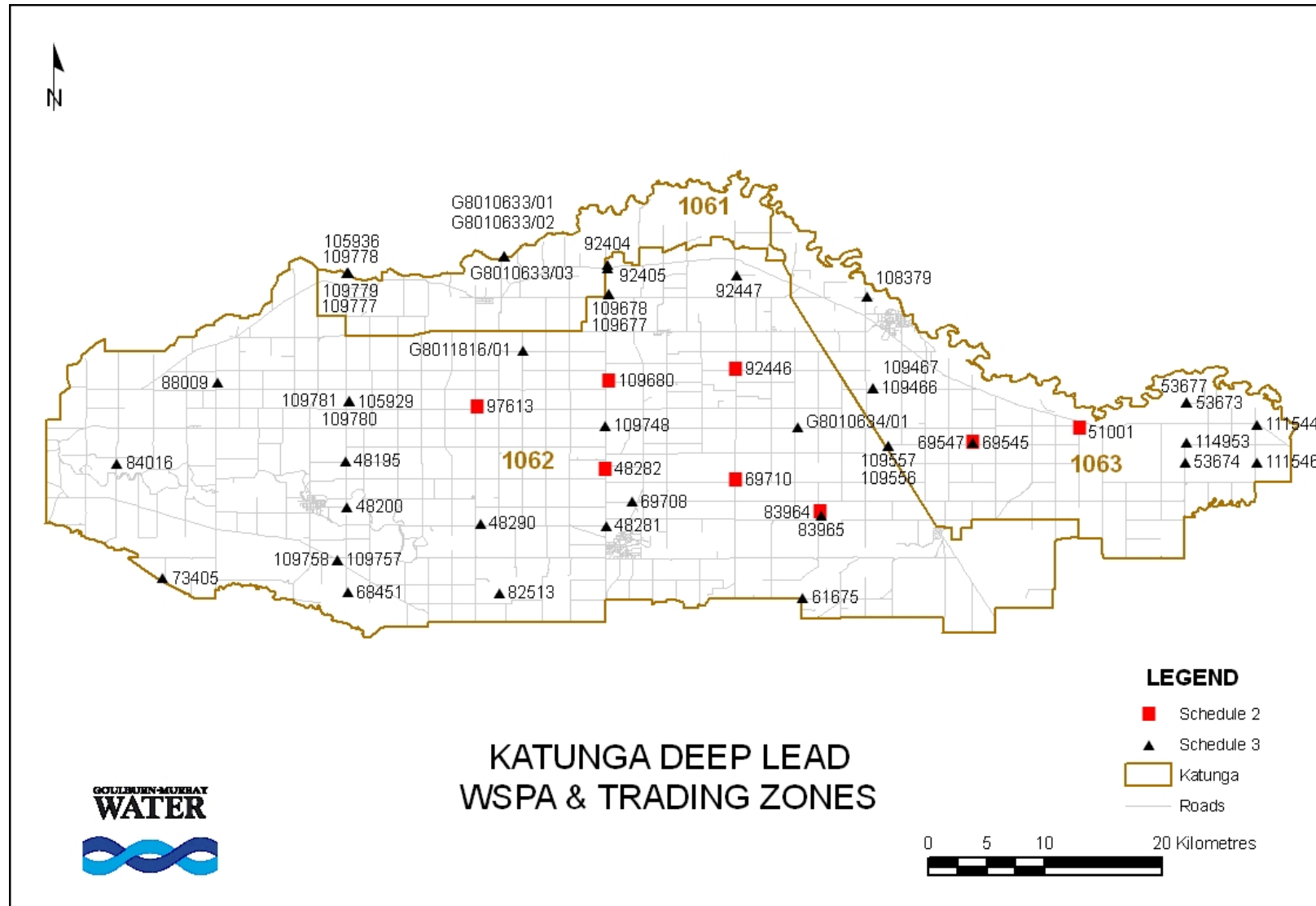
average use is less than 30,000 ML then a 70% allocation is announced. If the five year average is equal or greater than 30,000 ML then a 50% allocation is announced.

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

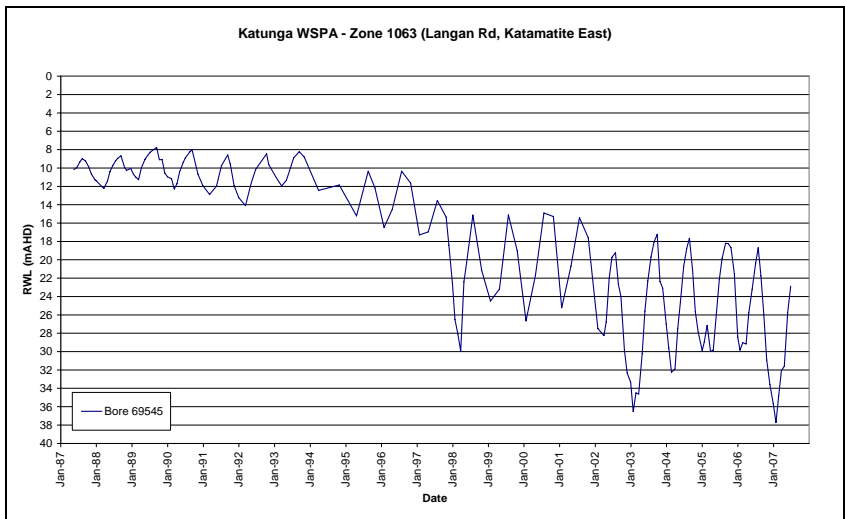
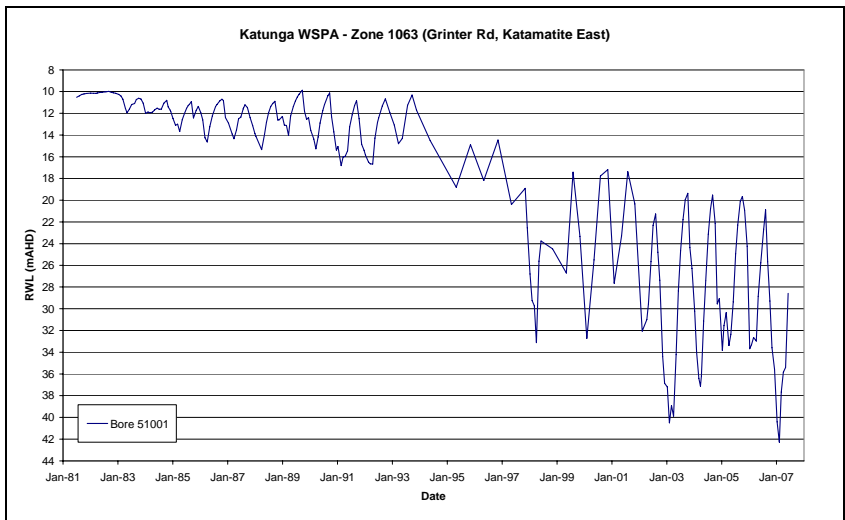
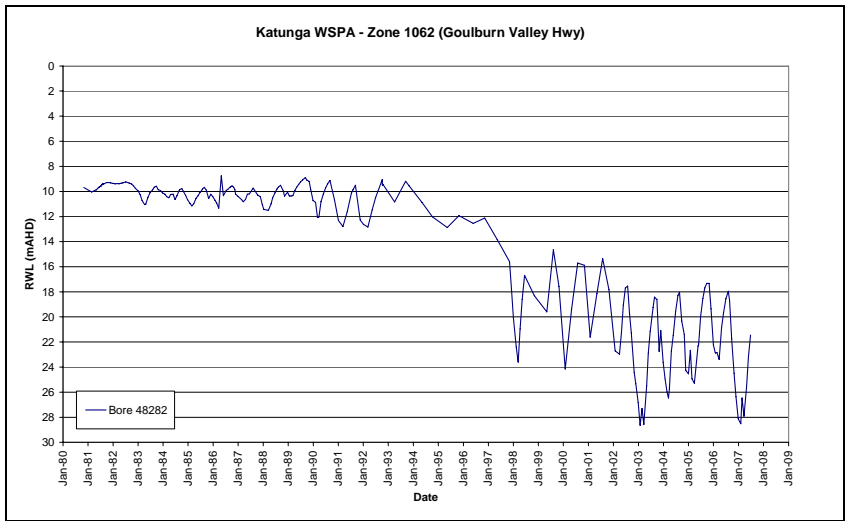
### **3.5.3 Issues Affecting Implementation**

The new management plan has been implemented from July 2006; to date there has been no issues with the implementation.

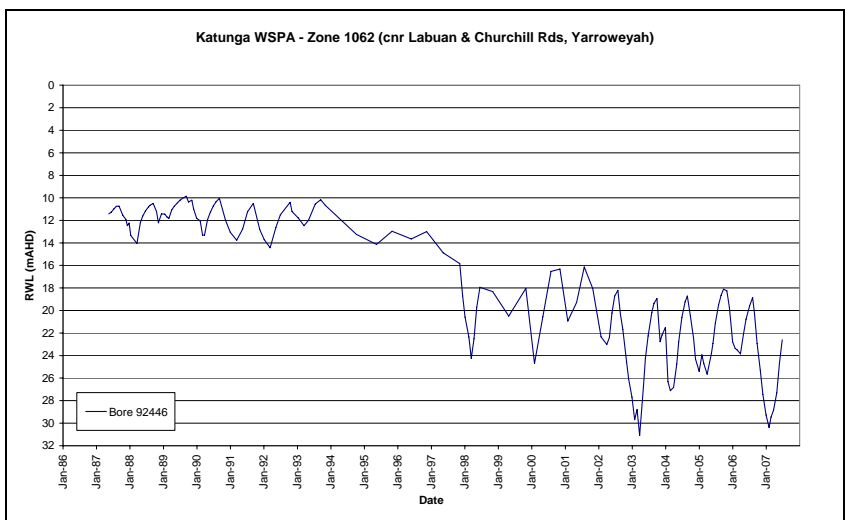
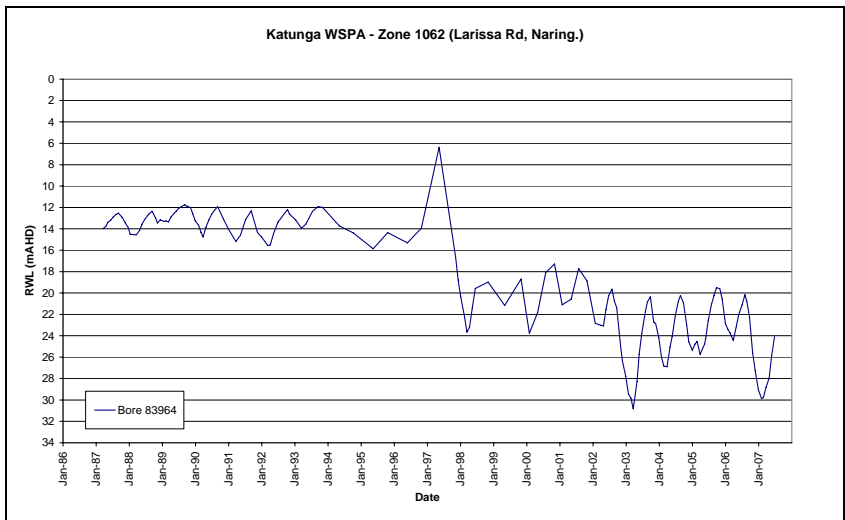
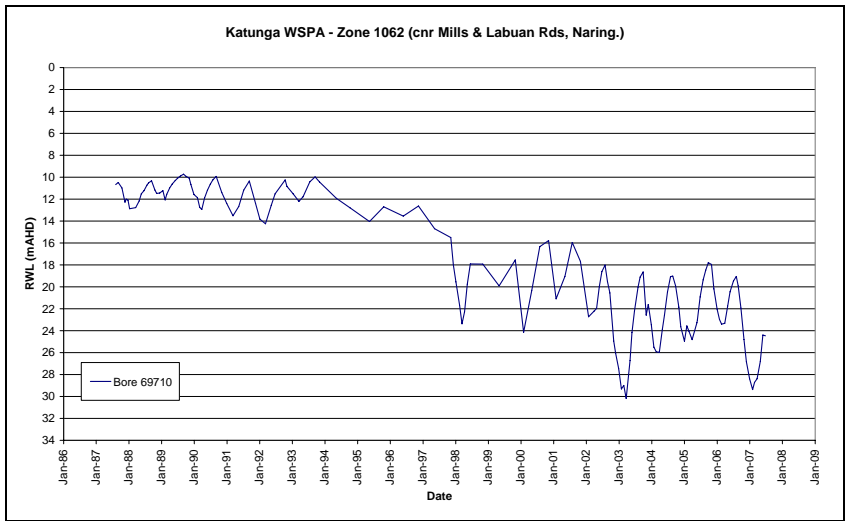
Appendix A - Monitoring Bore Locations



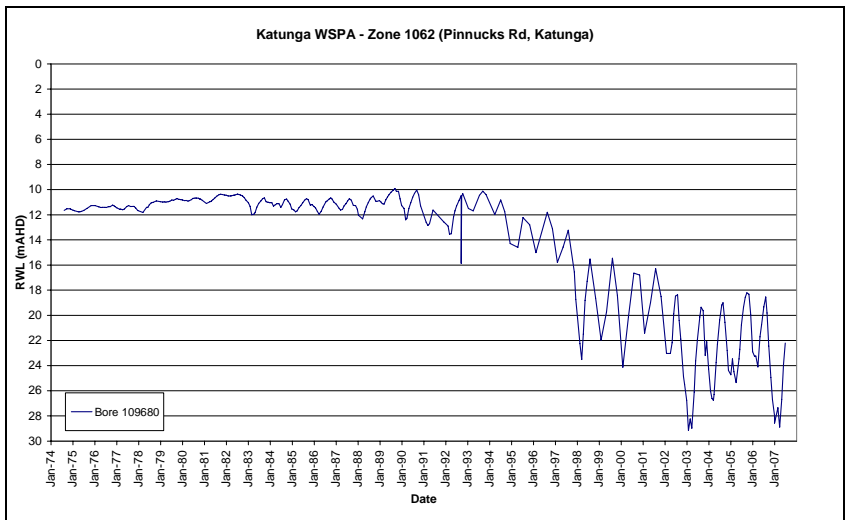
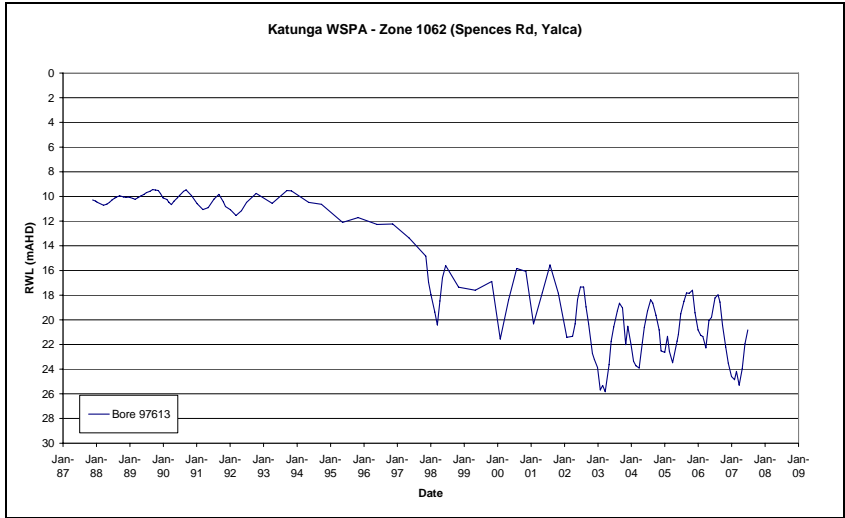
**Appendix B - Hydrographs for Monitoring Bores from Schedule 2**



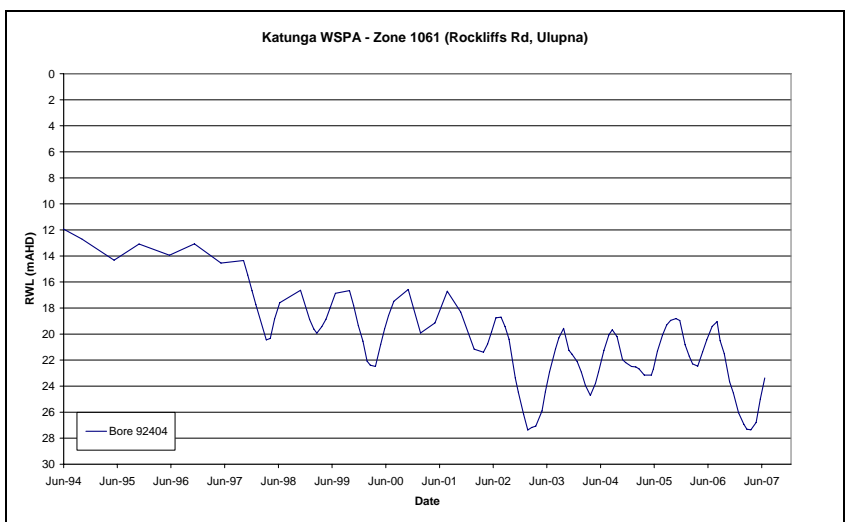
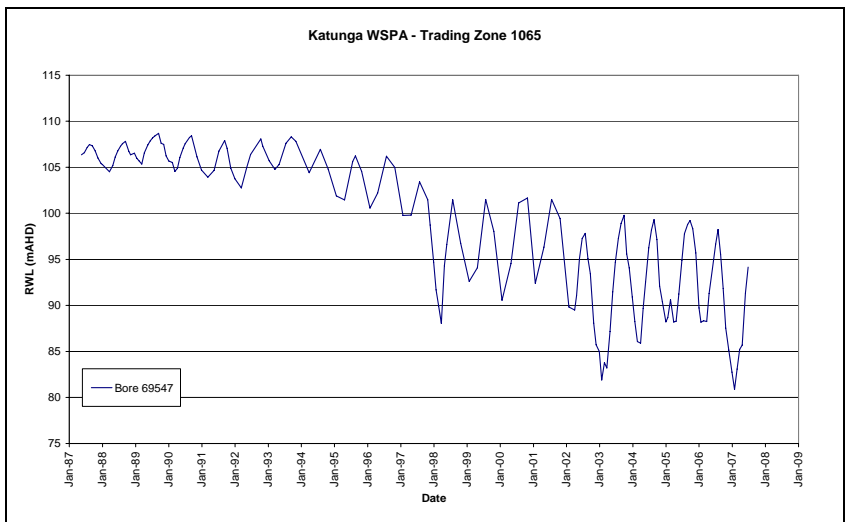
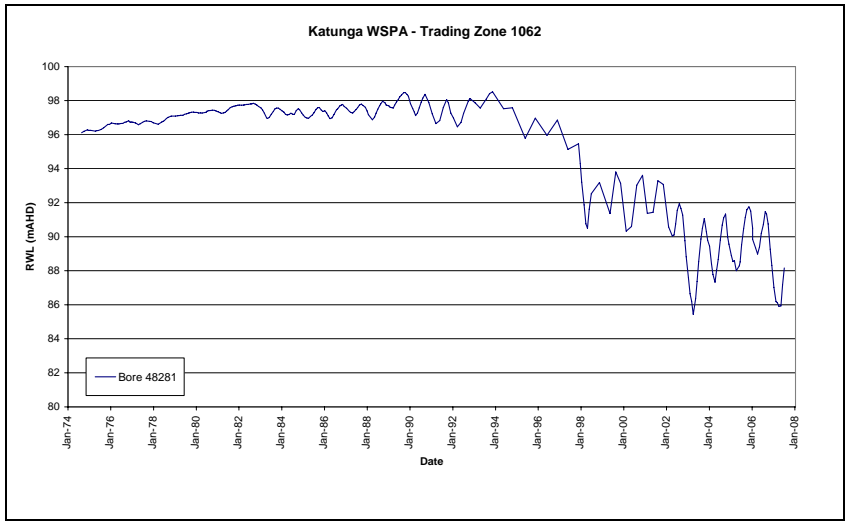
Katunga WSPA Management Plan (Groundwater) Compliance Report for Year Ended June 2007



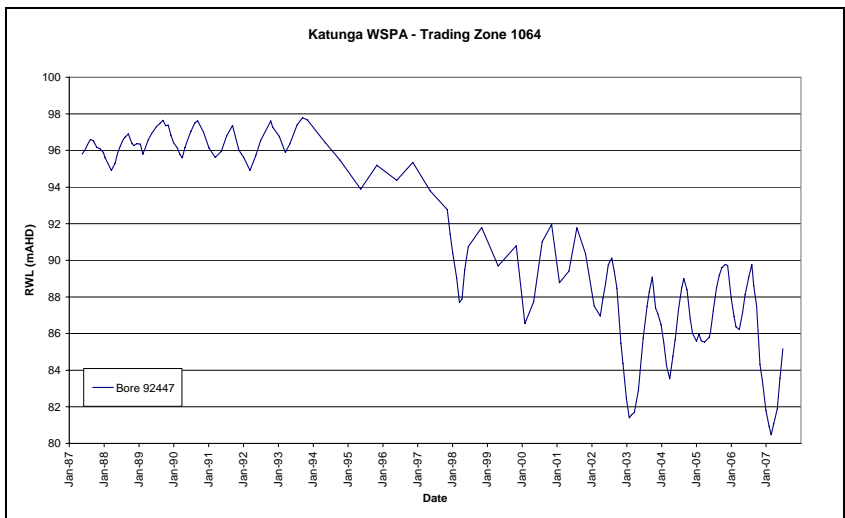
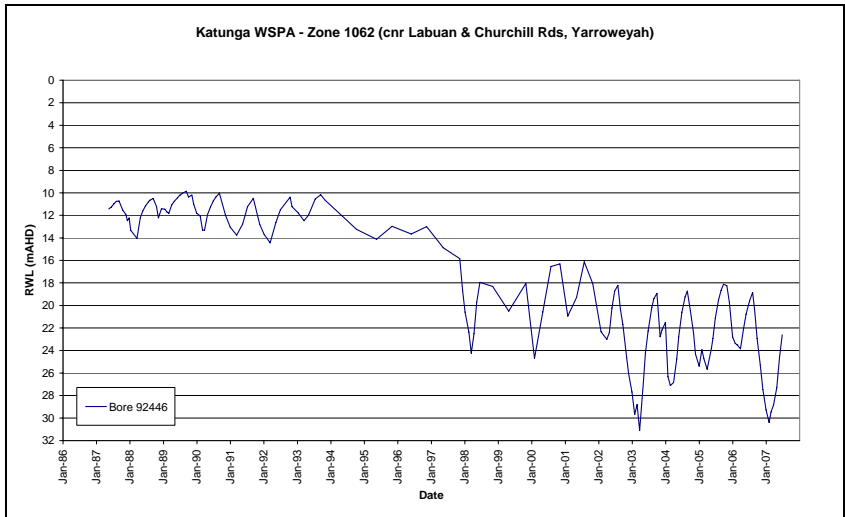
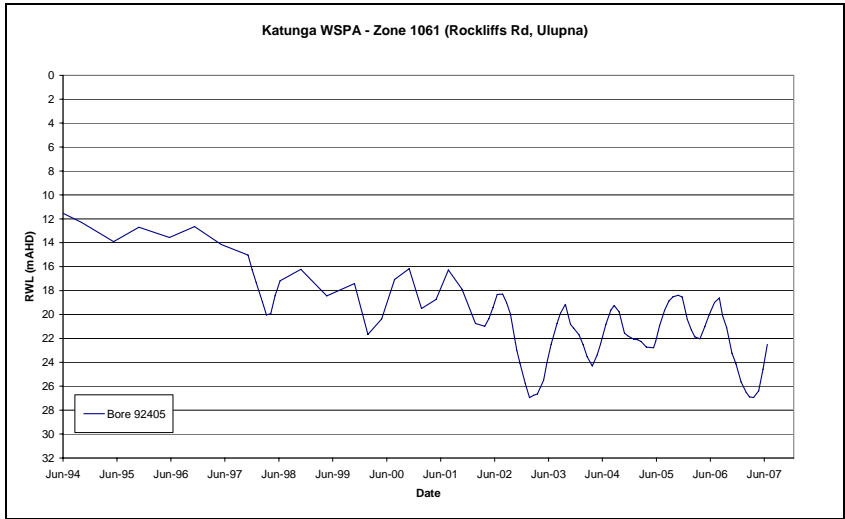
Katunga WSPA Management Plan (Groundwater) Compliance Report for Year Ended June 2007



**Appendix B - Hydrographs for Selected Monitoring Bores from Schedule 3**

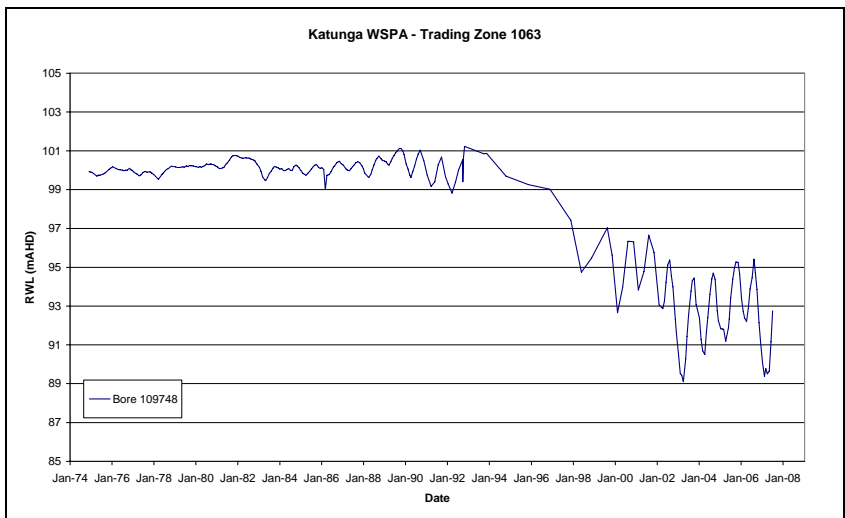
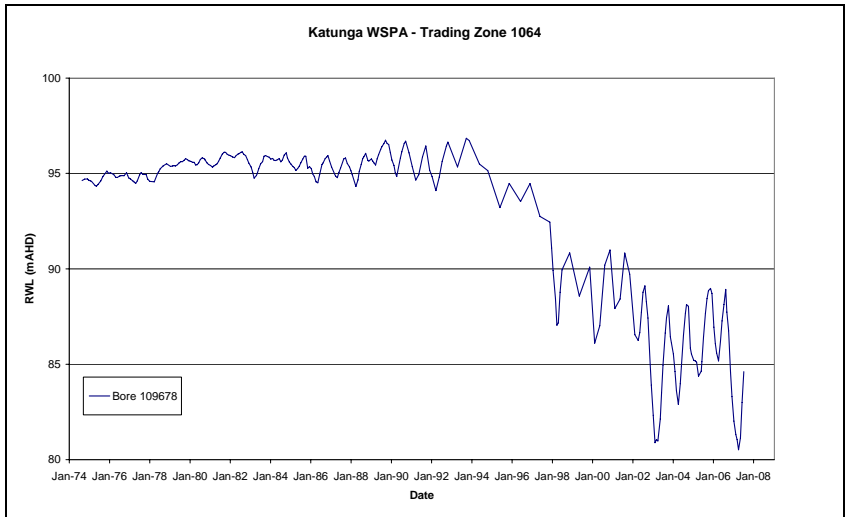
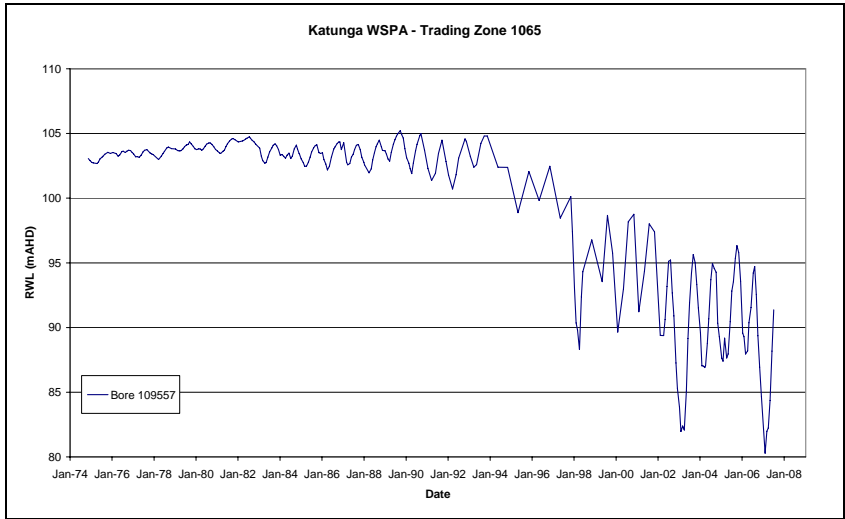


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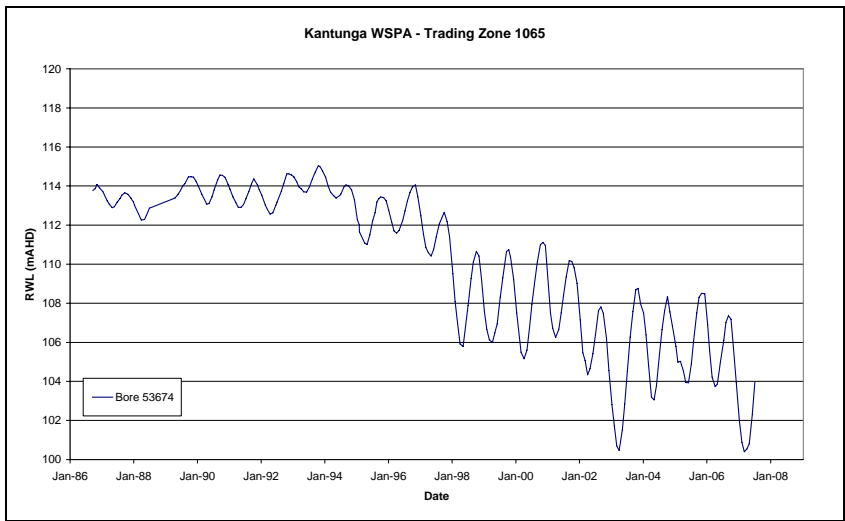
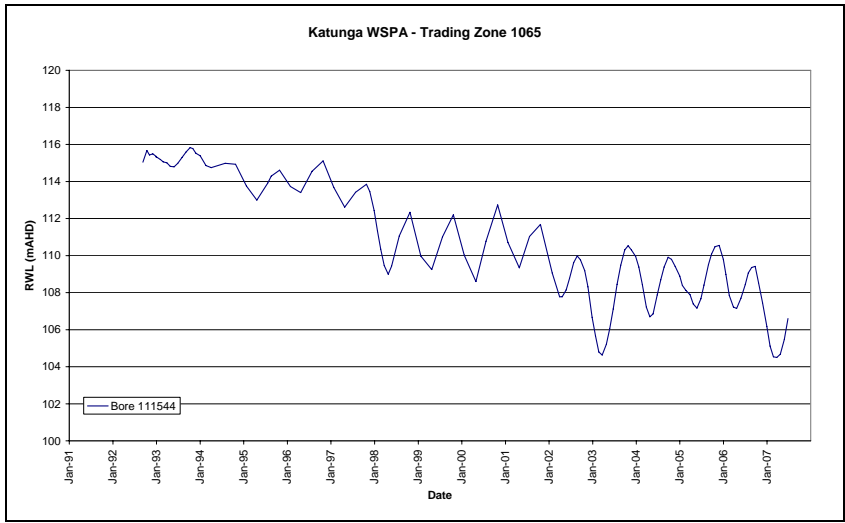




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Appendix C - Extraction Points & Metered Site Locations

