



# Katunga Water Supply Protection Area Groundwater Management Plan

Annual Report

For year ending 30 June 2019

# Document History and Distribution

## Versions

| Version  | Date              | Author(s)         | Notes  |
|----------|-------------------|-------------------|--|
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| Draft v2 | 21 August 2019    | Scott Ridges      | Document edits and review                              |
| Draft v3 | 22 August 2019    | Suzanne Hayes     | Document edits post review                             |
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## Distribution

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| Draft v7 | Mark Bailey<br>Acting General Manager Water<br>Delivery Services                                 | 16 September 2019 | Review and endorsement |
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| Final    | The Hon. Lisa Neville MP<br>Minister for Water   | 26 September 2019 |                        |
| Final    | Mr Chris Norman<br>Chief Executive Officer, Goulburn<br>Broken Catchment Management<br>Authority | 26 September 2019 |                        |

# Foreword

Goulburn-Murray Water (GMW) is pleased to present the annual report for the Katunga Water Supply Protection Area Groundwater Management Plan (the Plan) for the 2018/19 water year.

GMW is responsible for implementation and administration of the Plan which was approved by the Minister administering the *Water Act 1989* (the Minister) on 24 July 2006.

This report has been prepared in accordance with section 32C of the *Water Act 1989* (the Act).

The report provides an overview of the groundwater management activities administered under the Plan during the 2018/19 water year.

A copy of this report is available for inspection at the Tatura office of GMW, or for download from the GMW website.



Charmaine Quick

MANAGING DIRECTOR

23/9/19.

Date

# Executive summary

The Katunga Water Supply Protection Area Groundwater Management Plan (the Plan) was approved on 24 July 2006 by the Minister for Water.

In 2017, a Consultative Committee appointed by the Minister in accordance with section 32G of the *Water Act 1989* (the Act) recommended amendments to the Plan. The Minister approved the amendments on 22 August 2017, including a new method for determining restrictions, simplification of trading rules, salinity monitoring requirements and the establishment of a groundwater reference group.

For the third time since the Plan was implemented in 2006, licence holders had access to 100 per cent of their licensed volume in the 2018/19 water year. This is a result of the new restriction method in the amended Plan.

The newly formed Katunga Groundwater Reference Group met for the first time in Cobram on the 11 November 2018.

Groundwater use in the 2018/19 water year was 68 per cent (41,103.9 ML) of the total licensed volume in the Katunga Water Supply Protection Area (WSPA). This is a 15 per cent increase on the 2017/18 water year and is consistent with below-average rainfall during the year.

Groundwater monitoring and metering programmes continue to support the implementation of the Plan.

Groundwater monitoring shows that aquifer recovery levels rose several metres following the end of the extended dry period in 2009, however the levels are on a declining trend. If groundwater levels continue to decline a reduced allocation may be triggered in future water years.

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# 1 Introduction

## 1.1 Purpose

This annual report provides an overview of groundwater resource status and use in the Katunga Water Supply Protection Area (WSPA) throughout the 2018/19 water year (1 July 2018 to 30 June 2019).

## 1.2 Water Supply Protection Area

The Katunga WSPA is located in the Murray and Goulburn valleys, extending from Yarrawonga in the east to Barmah in the west, and from the River Murray in the north down to Wungnhu in the south. The Katunga WSPA includes the townships of Numurkah, Cobram, Nathalia, Katunga and Katamatite.

The Katunga WSPA boundary has been set to manage groundwater resources at a depth of greater than 25 metres (m) below the ground surface. The overlying groundwater resources are managed in accordance with the Shepparton Irrigation Region Groundwater Management Area Local Management Plan.

There are three management zones within the Katunga WSPA: North Western Dryland Zone (1061), Numurkah-Nathalia Zone (1062) and Cobram Zone (1063), as shown in Figure 1.

## 1.3 Groundwater Management Plan

The Katunga WSPA Groundwater Management Plan (the Plan) was approved on 24 July 2006 by the Minister for Water in accordance with section 32A(6) of the *Water Act 1989* (the Act).

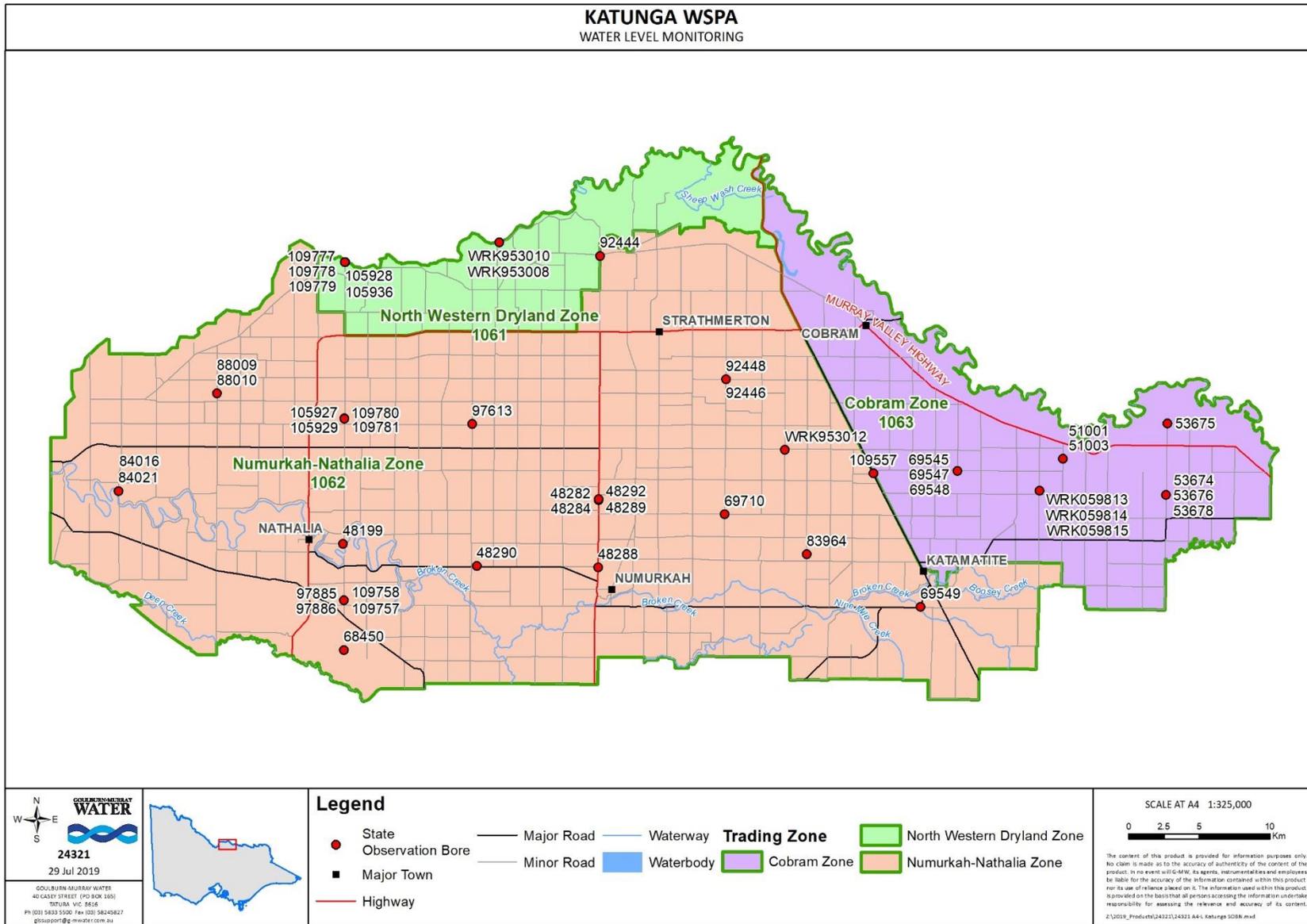
In 2017, a Consultative Committee appointed by the Minister in accordance with section 32G of the Act recommended amendments to the Plan. The Minister approved the amendments on 22 August 2017, including a new method for determining restrictions, simplification of trading rules, salinity monitoring requirements and establishment of a groundwater reference group.

The objective of the Plan is to make sure the groundwater resources within the WSPA are managed in an equitable and sustainable manner. When allocations are made under the Plan, all Katunga WSPA licence holders are treated in the same manner.

The Plan enables annual allocations to be set to manage groundwater extraction. The intent of the annual allocation process is to maintain groundwater access for groundwater users.

GMW is responsible for the implementation, administration and enforcement of the Plan. An assessment summary of GMW's activities in accordance with Plan prescriptions is presented in Appendix A.

A copy of the Plan can be downloaded from the GMW website: [www.g-mwater.com.au](http://www.g-mwater.com.au)



**Figure 1 Katunga Water Supply Protection Area**

# 2 Groundwater Management

## 2.1 Licensed volume

A limit on groundwater licensed volume (known as a Permissible Consumptive Volume) for the Katunga WSPA has been set by the Minister at 60,577 Megalitres per year (ML/year).

The total licensed entitlement volume in the Katunga WSPA was 60,202.9 ML/year at 30 June 2019. The number of licences in each management zone is summarised in Table 1, as well as the total number of licensed bores and total licensed entitlement volume.

**Table 1 Groundwater licensed entitlement volume in the Katunga WSPA in 2018/19**

| Management zone               | Licences   | Licensed bores | Licensed entitlement volume (ML/year) |
|-------------------------------|------------|----------------|---------------------------------------|
| Northwest Dryland Zone – 1061 | 21         | 23             | 4,824.2                               |
| Numurkah-Nathalia Zone – 1062 | 169        | 206            | 34,988.7                              |
| Cobram Zone – 1063            | 66         | 87             | 20,390.0                              |
| <b>Total</b>                  | <b>256</b> | <b>316</b>     | <b>60,202.9</b>                       |

Note: Data extracted from the Victorian Water Register 1 July 2019.

## 2.2 Groundwater allocations

Following the approval of the amended Plan by the Minister on 22 August 2017, allocations are now assessed using the amended allocation method.

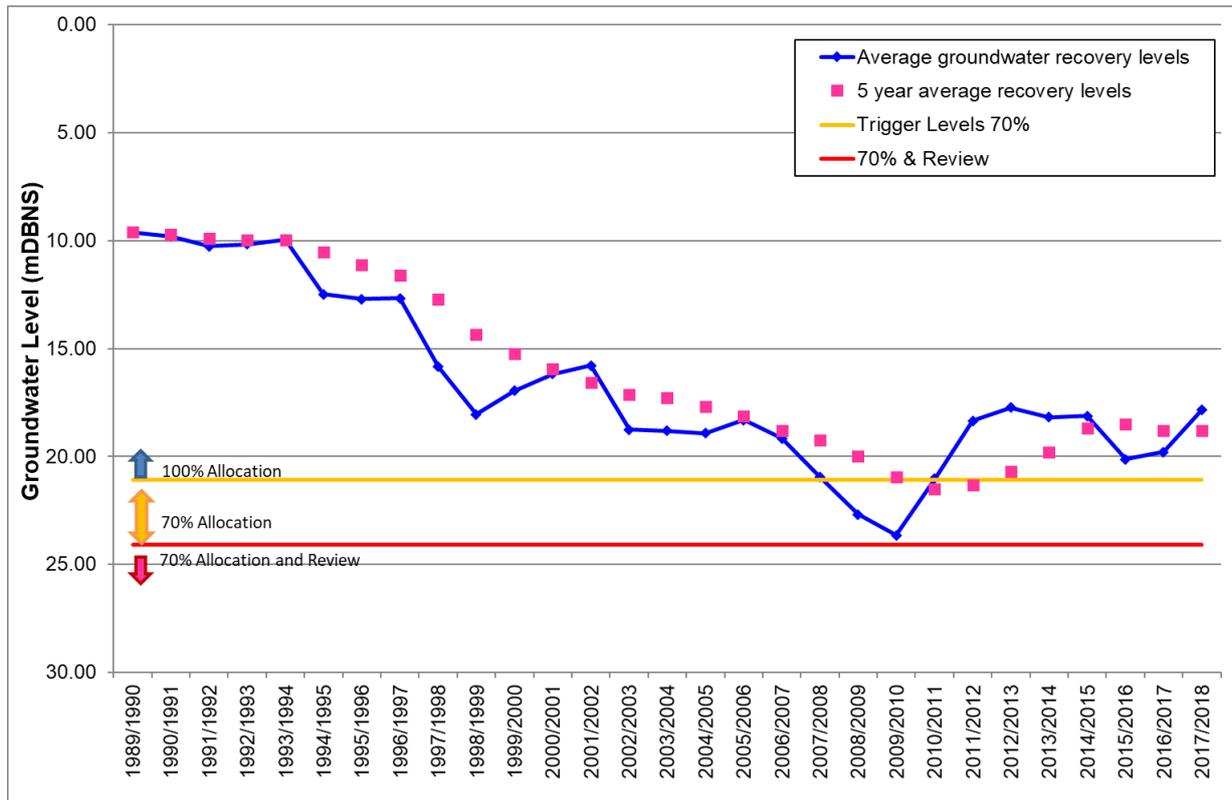
Allocations were assessed by determining the rolling average of the maximum groundwater recovery levels from the previous five irrigation years for bores listed in Schedule 1 of the Plan (Prescription 2). The allocation announced was based on the trigger levels in Table 2.

**Table 2 Trigger levels for allocations in the Katunga WSPA**

| Trigger level, depth below natural surface (m) | Allocation  |
|--|---|
| 21.0 and above                                 | 100%  |
| 21.1 to 24.0                                   | 70%   |
| Below 24.1                                     | 70% and review undertaken by GMW in consultation with Katunga Groundwater Reference Group |

The rolling average recovery level for the previous five years was above 21.0 m (Figure 2) and the Katunga WSPA allocation of 100 per cent for the 2018/19 water year and was announced on 12 June 2018.

All licence holders were informed by mail posted on 12 June 2018 and the allocation was also published on the GMW website and in the *Shepparton News* and *Country News*.

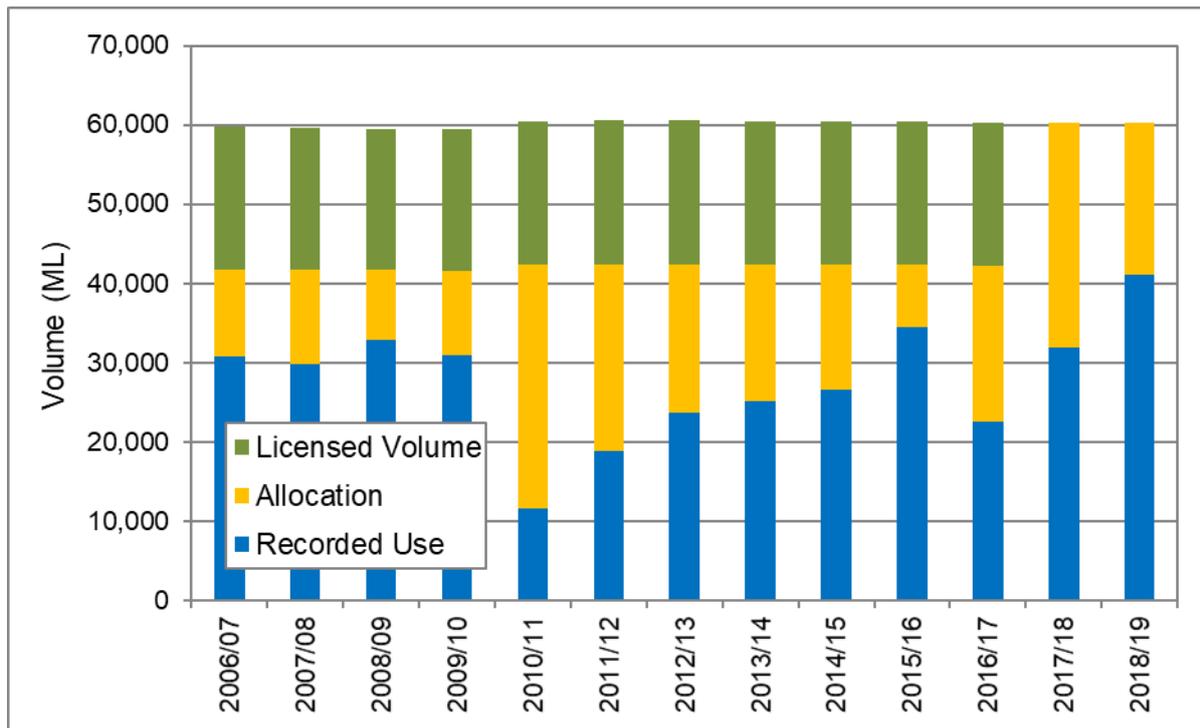


**Figure 2 Trigger levels used to determine allocations in the Katunga WSPA**

Groundwater monitoring has shown that groundwater levels are showing a declining trend, despite some aquifer recovery levels rising several metres. If groundwater levels continue to decline reduced allocation may be triggered in future water years.

### 2.3 Groundwater use

Total recorded use in 2018/19 was 41,103.9 ML, or 68 per cent of the total licensed entitlement volume (Figure 3). This is a 15 per cent increase on the volume used in 2017/18. This increased use is likely due to the below-average rainfall conditions experienced in 2018/19.



**Figure 3 Total licensed volume, allocation and recorded use in the Katunga WSPA**

Recorded use by management zone is provided in Table 3. Recorded use as a percentage of total licensed volume was greatest in the Numurkah-Nathalia Zone, 71 per cent; and lowest in the Northwest Dryland Zone, 60 per cent.

**Table 3 Recorded use by Katunga WSPA management zone in 2018/19**

| Management zone               | Licensed volume (ML/year) | Recorded use (ML) | Proportion of total licensed volume used |
|-------------------------------|---------------------------|-------------------|--|
| Northwest Dryland Zone – 1061 | 4,824.2                   | 2,914.0           | 60%                                      |
| Numurkah-Nathalia Zone – 1062 | 34,988.7                  | 24,961.3          | 71%                                      |
| Cobram Zone – 1063            | 20,390.0                  | 13,228.6          | 65%                                      |
| <b>Total</b>                  | <b>60,202.9</b>           | <b>41,103.9</b>   | <b>68%</b>                               |

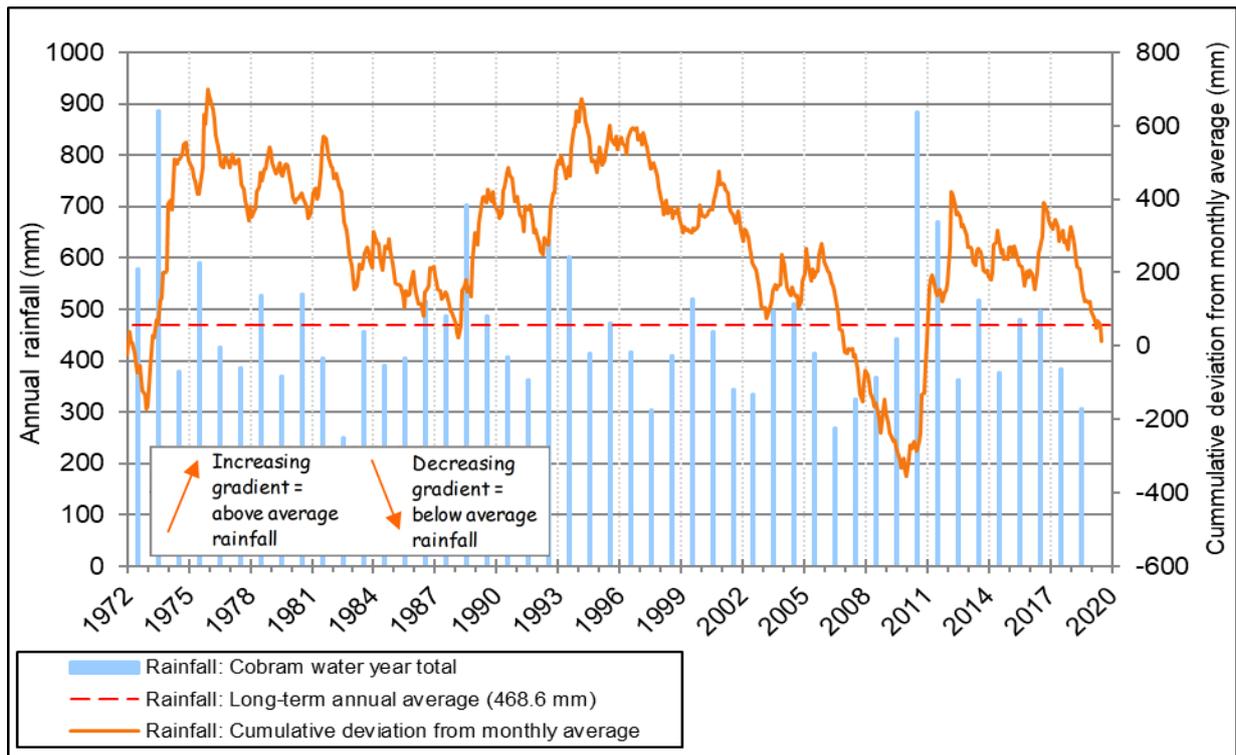
Note: Data extracted from the Victorian Water Register in August 2019.

Groundwater use in the Katunga WSPA is heavily influenced by climate and the availability and subsequent allocation price of surface water, particularly in the Goulburn and Murray Declared Water Systems. Groundwater use increases during extended periods of dry weather and when surface water seasonal determinations are low.

## 2.4 Rainfall

Historic rainfall data sourced from the Bureau of Meteorology (BoM) weather station at Cobram is presented in Figure 4 as an indicator of trends across the Katunga WSPA.

The data shows that 2018/19 rainfall in the Katunga WSPA was the below the long-term average of 468.8 mm. This may explain the increase in use compared to previous years.



**Figure 4 Rainfall recorded at Cobram (BoM station 080109) in the Katunga WSPA**

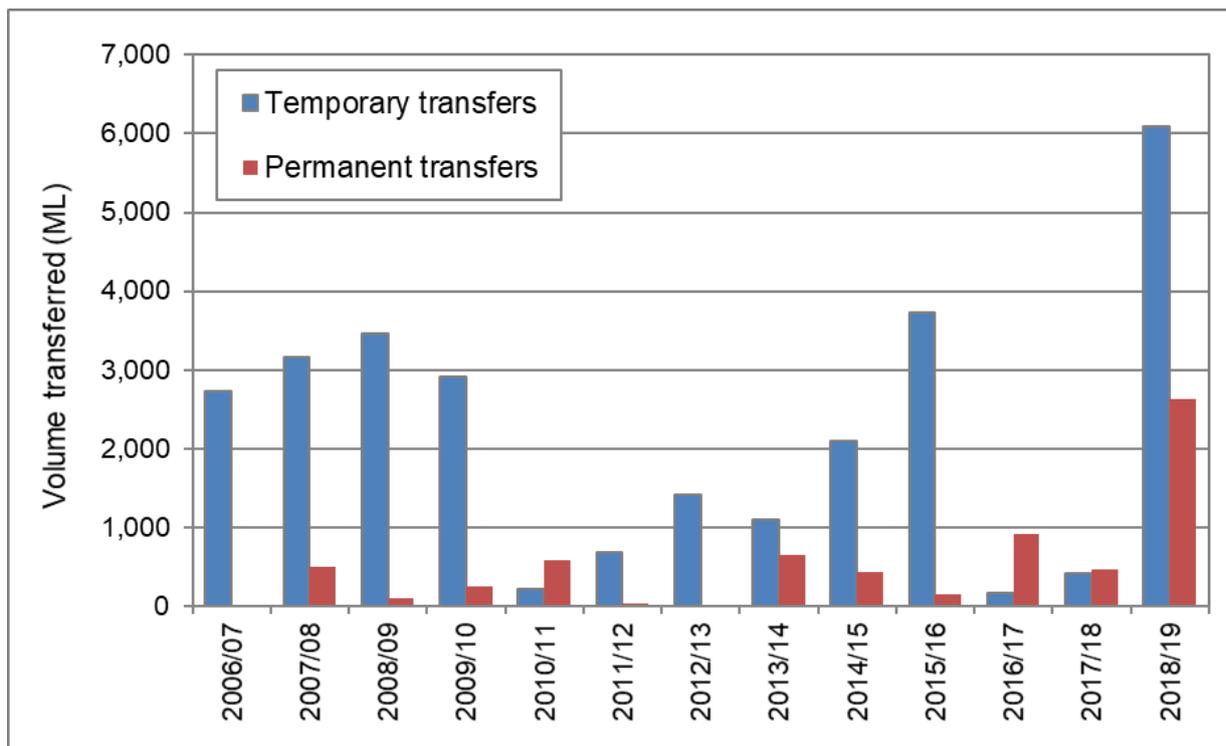
## 2.5 Licence transfers

The Plan allows groundwater licence holders to temporarily or permanently transfer licensed volume. Groundwater licence transfer activity during 2018/19 is summarised in Table 4.

**Table 4 Licence transfers in the Katunga WSPA in 2018/19**

| Management zone               | Temporary transfers |                |                  |                | Permanent transfers |                |                  |                |
|-------------------------------|---------------------|----------------|------------------|----------------|---------------------|----------------|------------------|----------------|
|                               | Transfer from       |                | Transfer to      |                | Transfer from       |                | Transfer to      |                |
|                               | No. of transfers    | Volume (ML)    | No. of transfers | Volume (ML)    | No. of transfers    | Volume (ML)    | No. of transfers | Volume (ML)    |
| Northwest Dryland Zone – 1061 | 3                   | 300.0          | 3                | 300.0          | 2                   | 247.0          | 3                | 134.0          |
| Numurkah-Nathalia Zone – 1062 | 26                  | 3,746.5        | 29               | 4,165.0        | 8                   | 1,486.0        | 6                | 1,884.0        |
| Cobram Zone – 1063            | 14                  | 2,047.0        | 11               | 1,628.5        | 3                   | 900.0          | 4                | 615.0          |
| <b>Total</b>                  | <b>43</b>           | <b>6,093.5</b> | <b>43</b>        | <b>6,093.5</b> | <b>13</b>           | <b>2,633.0</b> | <b>13</b>        | <b>2,633.0</b> |

The total volume transferred and number of transfers undertaken in the 2018/19 water year is significantly higher than previous water years, as shown in Figure 5.



**Figure 5 Total licensed volumes transferred in the Katunga WSPA**

The 2017 amendments to the Plan relaxed trading rules by allowing new development through temporary transfers and removing the 20 per cent loss for permanent transfers. Rules were also introduced which allowed additional temporary transfer into areas which would previously have been refused under the previous plan. These rules included the ability to temporarily transfer up to 125 per cent of licensed volume into areas where the intensity rule would otherwise prevent such trade. It is likely that the trading rules have contributed to improved confidence in the use of transfers to improve or maintain productivity in the 2018/19 water year.

During 2018/19, there were 38 more temporary transfers and seven more permanent transfer than during 2017/18. The total volume transferred increased from 883.0 ML to 8,726.5 ML in 2018/19. All transfers occurred within the Katunga WSPA. One licence was reallocated out of the Katunga WSPA into the Shepparton Irrigation Region GMA.

During 2018/19 there were thirteen permanent transfers totalling 2,633.0 ML/year, around five times the volume permanently transferred in 2017/18 (up from 466.0 ML/year).

Forty-three temporary transfers totalling 6,093.5 ML occurred in 2018/19, an increase in volume compared to 2017/18 when 417.0 ML was transferred temporarily.

## 2.6 Metering

There were 179 metered service points and 105 deemed service points in the Katunga WSPA as of 30 June 2019. All metered service points were read twice during 2018/19 with 15 meter-related activities undertaken during the 2018/19 water year, including inspections, maintenance, battery replacements and new installations (Table 5).

**Table 5 Metering activity in the Katunga WSPA in 2018/19**

| <b>Metering activity</b>     | <b>Year ending 30 June 2019</b> |
|------------------------------|---------------------------------|
| Total number of meters       | 179                             |
| Total number of meter reads  | 358                             |
| Meters installed or replaced | 5                               |
| Meters inspection events     | 6                               |
| Meter maintenance events     | 4                               |

## 2.7 Licence compliance

There were no prosecutions or convictions relating to groundwater matters in the Katunga WSPA during the 2018/19 water year.

There were five instances of unauthorised take and use of groundwater above licensed volume identified in 2018/19. These incidents are being investigated and GMW will take action in accordance with GMW's Risk-Based Compliance and Enforcement Framework.

## 2.8 Domestic and stock bore licences

Domestic and stock use is not required to be licensed, as it is a private right under section 8 of the Act as long as use occurs within the bounds of area and purpose constraints defined by the Act.

The installation of a bore for domestic and stock use requires a bore construction licence. Upon completion of a bore, a bore completion report (BCR) is required to be submitted to GMW; details from this report are documented in the Water Measurement Information System at <http://data.water.vic.gov.au/monitoring.htm>

During the 2018/19 water year in the Katunga WSPA, 60 licences to construct a bore for domestic and stock use were issued by GMW and the Victorian Water Register (combined). Thirty-seven bore completion reports were submitted by licensed drillers to GMW.

# 3 Monitoring Program

## 3.1 Groundwater levels

The Plan requires that groundwater levels are monitored in seven State Observation Bores Network bores, specified in Schedule 1 of the Plan.

State observation bores routinely monitored during the 2018/19 water year located in the Katunga WSPA are shown in Figure 1.

Groundwater level monitoring indicates that Deep Lead (comprising Calivil Formation and Lower Shepparton Formation) groundwater levels have steadily declined as groundwater development increased from 1990 onwards, as represented by historical water levels in three nested bores on Langan Road in Katamatite (Figure 6). Drawdown levels in some bores have reached record lows with recorded recovery levels to the 30 June also remaining low. Hydrographs of the additionally monitored bores are shown in Appendix B.

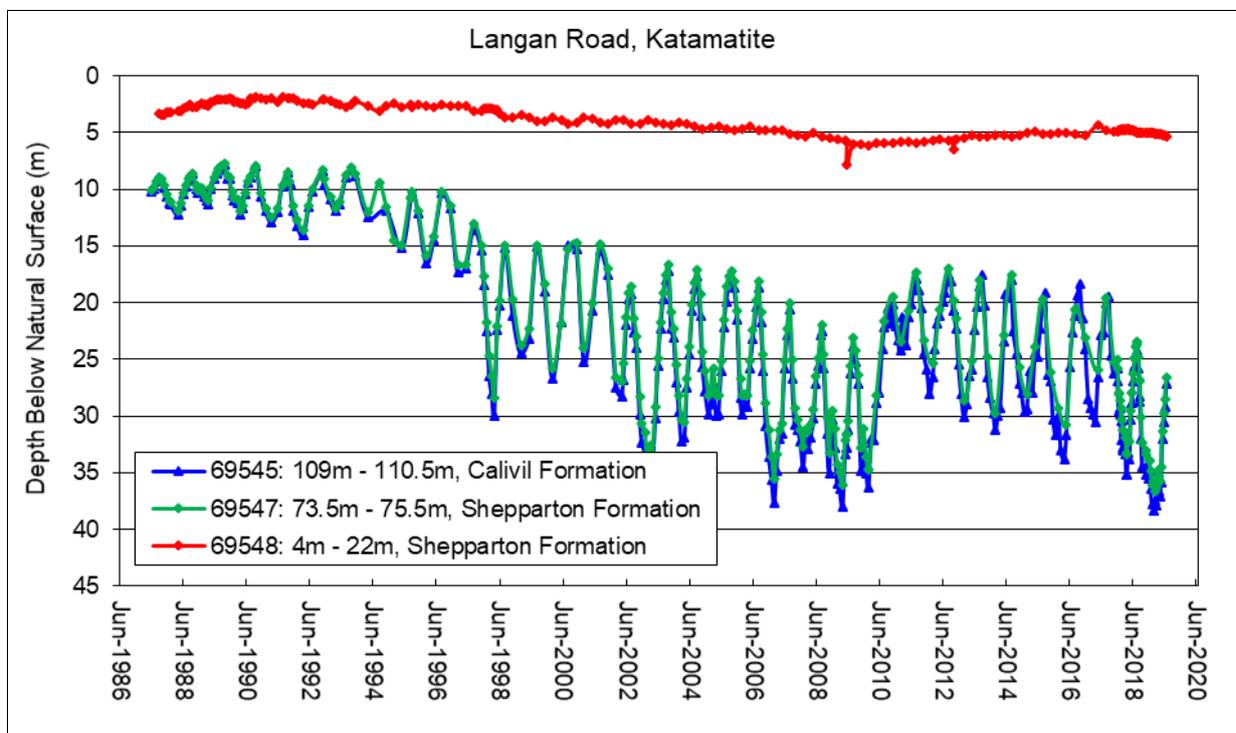


Figure 6 Groundwater monitoring in the Cobram zone in the Katunga WSPA

## 3.2 Groundwater quality

The amended Plan requires GMW to sample bores specified in Schedule 1 of the Plan and have samples analysed for salinity once a year (Prescription 5). Locations of bores sampled are shown in Figure 1. Salinity measured in these bores is uploaded to the State groundwater database, the Water Management Information System. Sampling results shown in Table 6 from October 2018 indicate Electrical Conductivity for all sampled bores have declined when compared to the sampling results measured in March 2018. This suggests that higher electrical conductivities are associated with lower groundwater levels during the irrigation season. Comparisons of trends across a number of water years will be made in subsequent annual reports when more groundwater quality sampling is available.

**Table 6 Results from groundwater quality sampling in October 2018 in the Katunga WSPA**

| Management Zone                   | Location                          | Bore ID   | Screened interval (m below natural surface) | Aquifer screened           | Electrical Conductivity (µS/cm) |
|-----------------------------------|-----------------------------------|-----------|---|----------------------------|---------------------------------|
| North Western Dryland Zone - 1061 | River Road, Barmah National Park  | WRK953007 | 84.0 – 90.0                                 | Calivil Formation          | 571                             |
|                                   |                                   | WRK953008 | 36.0 – 39.0                                 | Shepparton Formation       | 569                             |
| Numurkah-Nathalia Zone - 1062     | Goulburn Valley Highway, Numurkah | 48281     | 108.8 – 116.1                               | Calivil Formation          | 2,580                           |
|                                   |                                   | 48288     | 10.0 – 16.0                                 | Shepparton Formation       | 2,670                           |
|                                   | James Bridge Road, Picola         | 84016     | 129.0 – 146.0                               | Calivil Formation          | 7,900                           |
|                                   |                                   | 84021     | 4.5m – 14.5                                 | Shepparton Formation       | 26,400                          |
| Cobram Zone - 1063                | Langan Road, Katamatite           | 69545     | 109.0 – 110.5                               | Calivil Formation          | 925                             |
|                                   |                                   | 69547     | 73.5 – 75.5                                 | Lower Shepparton Formation | 276                             |
|                                   |                                   | 69548     | 4m – 22m                                    | Shepparton Formation       | 481                             |

Additionally, the Plan requires GMW to provide a sample bottle to any groundwater user in Katunga WSPA who requests one and to test the salinity level of returned samples. In 2018/19 no requests for sample bottles were received for the Katunga WSPA.

Domestic and stock groundwater users are also encouraged to submit a salinity sample from their groundwater bore. In accordance with the Plan, a user must contact GMW to register interest to be supplied with a sample bottle.

# 4 Future Management Considerations

## 4.1 Groundwater Reference Group

One of the amendments to the Plan approved by the Minister for Water required the appointment of a Groundwater Reference Group to:

- Consult on groundwater allocations if the rolling average of the maximum annual groundwater recovery levels from the previous five irrigation water years for bores listed in Schedule 1 fall below 24.1 m depth below natural surface (Prescription 2).
- Present annual report findings each year and discuss any need to review the Plan.

GMW has appointed a Groundwater Reference Group comprising landholders and representatives from GMW, Goulburn Valley Water and the Goulburn Broken Catchment Management Authority. GMW met with the Groundwater Reference Group on 11 November 2018 in Cobram and will do so at least annually for the next four years.

## 4.2 Management Plan review

GMW will meet with the Groundwater Reference Group in November 2019 to present a summary of the 2018/19 water year and discuss any need to review the Plan.

## 5 References

Bureau of Meteorology (BoM), 2019, *Climate Data Online – Cobram station number 080109*. Retrieved in August 2019 from:

[http://www.bom.gov.au/jsp/ncc/cdio/wData/wdata?p\\_nccObsCode=139&p\\_display\\_type=dataFile&p\\_stn\\_num=080109](http://www.bom.gov.au/jsp/ncc/cdio/wData/wdata?p_nccObsCode=139&p_display_type=dataFile&p_stn_num=080109)

Department of Environment, Land, Water and Planning, 2006. *Groundwater Management Plan for the Katunga Water Supply Protection Area*. Department of Environment, Land, Water and Planning, 2006.

# Appendix A – Assessment of activities against Plan prescriptions

| Prescription  | Activity  | Compliant            |                                   |       |                               |          |                    |   |   |            |
|---|---|----------------------|-----------------------------------|-------|-------------------------------|----------|--------------------|---|---|------------|
| <b>PRESCRIPTION 1 Limit on groundwater licences</b>   |   |                      |                                   |       |                               |          |                    |   |   |            |
| <p>GMW must not approve an application for a groundwater licence if the approval of the application would cause:</p> <ul style="list-style-type: none"> <li>a) the total licensed volume within a 2 km radius of the proposed extraction site exceeding 3,700 ML/year; or</li> <li>b) the following zone limits to be exceeded.</li> </ul> <table border="1" data-bbox="248 550 1117 730"> <thead> <tr> <th>Management zone</th> <th>Zone limit (ML/year)</th> </tr> </thead> <tbody> <tr> <td>North Western Dryland Zone (1061)</td> <td>6,500</td> </tr> <tr> <td>Numurkah-Nathalia Zone (1062)</td> <td>No limit</td> </tr> <tr> <td>Cobram Zone (1063)</td> <td>25,000</td> </tr> </tbody> </table>   | Management zone   | Zone limit (ML/year) | North Western Dryland Zone (1061) | 6,500 | Numurkah-Nathalia Zone (1062) | No limit | Cobram Zone (1063) | 25,000  | <p>No applications were approved that contravened Prescription 1.</p>   | <p>Yes</p> |
| Management zone   | Zone limit (ML/year)  |                      |                                   |       |                               |          |                    |   |   |            |
| North Western Dryland Zone (1061)   | 6,500   |                      |                                   |       |                               |          |                    |   |   |            |
| Numurkah-Nathalia Zone (1062)   | No limit  |                      |                                   |       |                               |          |                    |   |   |            |
| Cobram Zone (1063)  | 25,000  |                      |                                   |       |                               |          |                    |   |   |            |
| <b>PRESCRIPTION 2: Restrictions on taking groundwater</b>   |   |                      |                                   |       |                               |          |                    |   |   |            |
| <p>By 15 September 2017, and by 1 July each year thereafter GMW will:</p> <ul style="list-style-type: none"> <li>a) determine the rolling average of the maximum annual groundwater recovery levels from the preceding five irrigation years for bores listed in Schedule 1 and announce a corresponding allocation for the subsequent irrigation season as detailed below:</li> </ul> <table border="1" data-bbox="248 959 1117 1209"> <thead> <tr> <th>Trigger level depth below natural surface (m)</th> <th>Allocation</th> </tr> </thead> <tbody> <tr> <td>21.0 and above</td> <td>100%</td> </tr> <tr> <td>21.1 to 24.0</td> <td>70%</td> </tr> <tr> <td>Below 24.1</td> <td>70% and review undertaken by GMW in consultation with Katunga Groundwater Reference Group</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>b) Announce allocations by listing them on its website, sending letters to all licence holders and placing public notices in local newspapers</li> </ul> | Trigger level depth below natural surface (m)   | Allocation           | 21.0 and above                    | 100%  | 21.1 to 24.0                  | 70%      | Below 24.1         | 70% and review undertaken by GMW in consultation with Katunga Groundwater Reference Group | <ul style="list-style-type: none"> <li>a) Allocations were determined in accordance with the Plan methodology and a 100 per cent allocation was announced on 12 June 2018.</li> <li>b) All licence holders were informed by mail posted on 12 June 2018. Allocation information was also published on the GMW website and Public notices announcing the revised 2018/19 allocation were printed in the <i>Shepparton News</i> and <i>Country News</i>.</li> </ul> | <p>Yes</p> |
| Trigger level depth below natural surface (m)   | Allocation  |                      |                                   |       |                               |          |                    |   |   |            |
| 21.0 and above  | 100%  |                      |                                   |       |                               |          |                    |   |   |            |
| 21.1 to 24.0  | 70%   |                      |                                   |       |                               |          |                    |   |   |            |
| Below 24.1  | 70% and review undertaken by GMW in consultation with Katunga Groundwater Reference Group |                      |                                   |       |                               |          |                    |   |   |            |

| <b>PRESCRIPTION 3 Transfer of a groundwater licence</b>  |  |     |
|--|--|-----|
| <p><b>3.1</b> GMW may approve a permanent transfer of a groundwater licence provided relevant matters have been considered and:</p> <ul style="list-style-type: none"> <li>a) zone limits in Prescription 1 will not be exceeded; and</li> <li>b) the total licensed volume within 2 km of an applicant's bore will be less than 3,700 ML/year; or</li> <li>c) where the total licensed volume within 2 km of an applicant's bore is equal to or greater than 3,700 ML/year, the permanent transfer is from other licence holders within a 2 km radius of the applicant's bore.</li> </ul>   | All applications were assessed with regard to this prescription. | Yes |
| <p><b>3.2</b> GMW may approve a temporary transfer of a groundwater licence provided relevant matters have been considered and:</p> <ul style="list-style-type: none"> <li>a) zone limits in Prescription 1 will not be exceeded; and</li> <li>b) the total licensed volume within 2 km of an applicant's bore will be less than 3,700 ML/year; or</li> <li>c) where the total licensed volume within 2 km of an applicant's bore is equal to or greater than 3,700 ML/year – <ul style="list-style-type: none"> <li>i. the applicant's licensed volume in one water season will not exceed 125% of their permanent licensed volume prior to any temporary trade occurring; or</li> <li>ii. the temporary transfer is from other licence holders within a 2 km radius of the applicant's bore</li> </ul> </li> </ul> | All applications were assessed with regard to this prescription. | Yes |
| <b>PRESCRIPTION 4 Metering of licensed take</b>  |  |     |
| <p><b>4.1</b> GMW will:</p> <ul style="list-style-type: none"> <li>a) ensure that a meter is fitted to new licensed bores;</li> <li>b) read each meter at least once a year and record take in appropriate database(s); and</li> <li>c) if GMW is unable to measure the volume of water taken through a meter it may: <ul style="list-style-type: none"> <li>i. make an estimate of take; or</li> <li>ii. request the licence holder to provide a meter reading</li> </ul> </li> </ul>   | All new bores metered. Meter readings recorded twice annually.   | Yes |

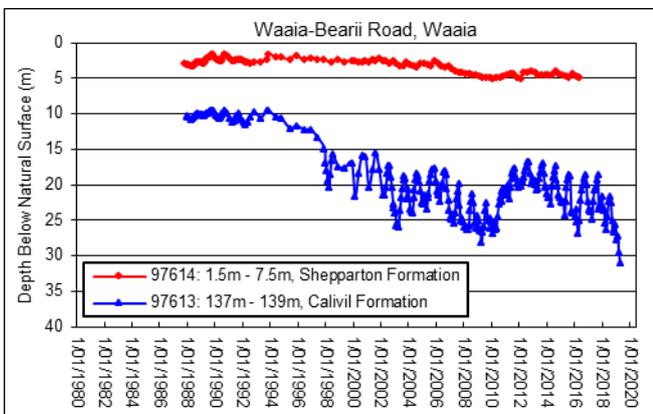
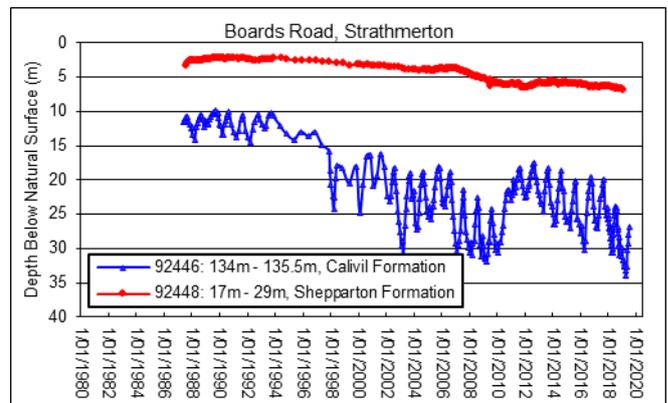
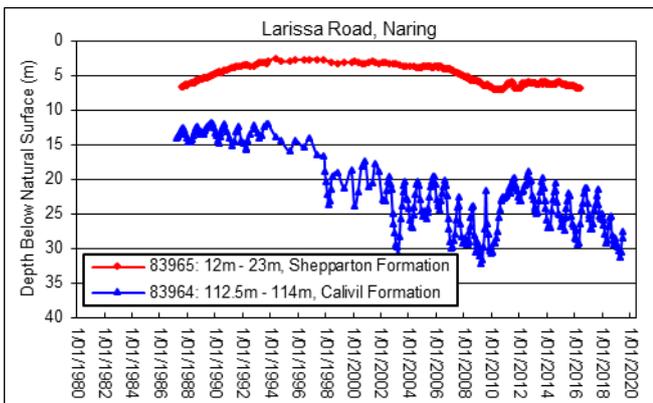
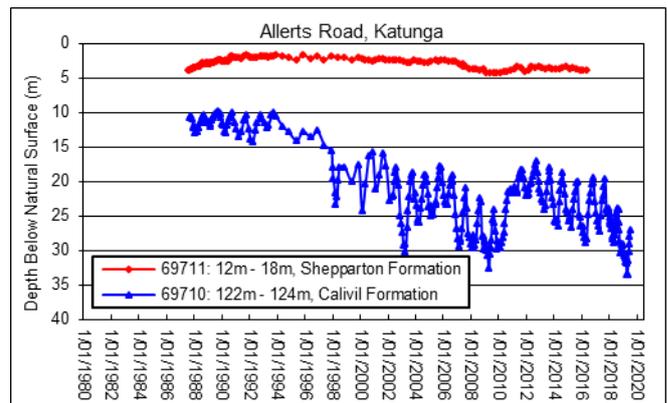
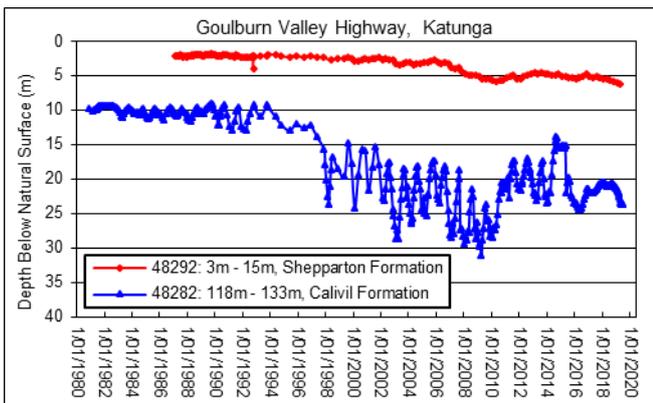
| <b>PRESCRIPTION 5 Groundwater level monitoring</b>  |  |     |
|---|--|-----|
| <p><b>5.1</b> GMW will:</p> <ul style="list-style-type: none"> <li>a) obtain groundwater levels from bores used for allocation assessments (listed in Schedule 1) on a monthly basis. If a bore used for allocation assessments becomes defective an alternative bore may be monitored and the defective bore should be decommissioned. The alternative bore will be selected by consensus between DELWP and GMW.</li> <li>b) undertake water level monitoring at appropriate locations throughout the Katunga WSPA to: <ul style="list-style-type: none"> <li>i. assess annual and long-term impact on water levels from groundwater pumping;</li> <li>ii. monitor regional and local seasonal drawdown; and</li> <li>iii. monitor the impacts of groundwater pumping generally across the Katunga WSPA and in areas of high intensity groundwater pumping.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>a) Groundwater levels for allocation assessments are being obtained on a monthly basis.</li> <li>b) Water level monitoring is undertaken at appropriate locations in Katunga Water Supply Protection Area.</li> </ul>   | Yes |
| <p><b>5.2</b> DELWP will manage the State observation bore network so that:</p> <ul style="list-style-type: none"> <li>a) continuous regional baseline monitoring is maintained to provide sufficient information to identify changes in groundwater resource availability and condition;</li> <li>b) State observation bores are properly maintained; and</li> <li>c) data collected from the bores is entered into the groundwater database, within 30 days after it has been collected.</li> </ul>   | <ul style="list-style-type: none"> <li>a) Baseline monitoring is being supported by DELWP.</li> <li>b) State observation bores are maintained by DELWP. Data collected from the bores is entered into the groundwater database by DELWP.</li> </ul>  | Yes |
| <b>PRESCRIPTION 6 Groundwater salinity monitoring</b>   |  |     |
| <p><b>6.1</b> GMW must:</p> <ul style="list-style-type: none"> <li>a) sample bores specified in Schedule 1 and have the samples analysed at an accredited laboratory for salinity once a year;</li> <li>b) enter salinity measured in bores referred to in Schedule 1 to the State groundwater database; and</li> <li>c) provide a sample bottle to any groundwater user in the Katunga WSPA who requests one, test the salinity level of returned samples and provide the results to the groundwater user.</li> </ul>  | <ul style="list-style-type: none"> <li>a) Bores specified in Schedule 1 were sampled and analysed for salinity in October 2018.</li> <li>b) Salinity results were entered into the State groundwater database.</li> <li>c) No groundwater users in the Katunga WSPA requested a sample bottle in 2018/19.</li> </ul> | Yes |
| <b>PRESCRIPTION 7 Annual reporting</b>  |  |     |
| <p>By 30 September each year GMW will prepare an annual report on the enforcement and administration of the Plan. The report will be provided to the Minister and the Goulburn Broken Catchment Management Authority and made publicly available on GMW's website.</p>  | <p>An annual report was prepared by GMW and provided to the Minister and the Goulburn Broken Catchment Management Authority on 21 September 2018.</p> <p>The annual report was also published on GMW's website.</p>  | Yes |

# Appendix B – Hydrographs for key monitoring bores

Hydrographs are provided for key monitoring bores listed in Schedule 1 of the Plan, available data has been extracted from Water Measurement Information System. Note monitoring has ceased on some bores.

Further groundwater level information from other State observation bores is available on the Water Measurement Information System at <http://data.water.vic.gov.au/monitoring.htm>

## Numurkah-Nathalia Zone – 1062



## Cobram Zone – 1063

