

GOLBURN-MURRAY
WATER



Upper Ovens River
Water Supply Protection Area
Water Management Plan

Annual Report for the year ending

June 2013

Final

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Foreword

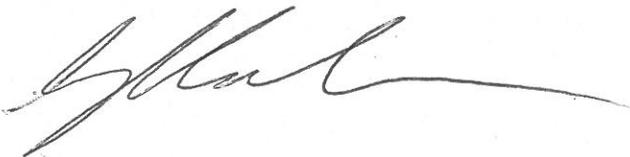
Goulburn-Murray Water (GMW) is pleased to present the annual report for the Upper Owens River Water Supply Protection Area (WSPA) Water Management Plan for the 2012/13 season.

GMW is responsible for implementation and administration of the Plan, which was approved by the Minister for Water on 11 January 2012.

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

The report documents the Plan's performance during the 2012/13 water season, including a review of groundwater and surface water use, licence transfers, groundwater levels, surface water flow as well as compliance and metering activity.

This annual report will be submitted to the Minister for Water and a notice of its availability will also be published in the Myrtleford Times Newspaper. A copy of this report is available for inspection at the Tatura office of GMW, or for download from the GMW website.



Gavin Hanlon
MANAGING DIRECTOR

Date: 26/9/2013

Executive summary

Groundwater and surface water use in the 2012/13 irrigation season was 15.3% (2,164 ML) of total entitlement in the Upper Owens River Water Supply Protection Area (WSPA). This is an increase from the 2011/12 season. The total volume of groundwater and surface water transferred during the season was 714 ML. The increased usage is consistent with the summer and autumn seasons receiving below average rainfall and shows an increased demand for groundwater and surface water within the WSPA.

With somewhat drier conditions in 2012/13, unregulated surface water licence holders and the groundwater users accessing the unconsolidated sedimentary aquifer were put on restrictions for the first time in accordance with the Plan. This was also the first time that these groundwater users have been on any form of restriction.

In meeting the recommendations of the Plan, a water balance research project has been initiated which aims to improve the current understanding of groundwater and surface water interaction in main tributary streams and to improve knowledge of water use patterns during low flow periods. This research will be ongoing for the next three years.

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1 Introduction

1.1 Purpose

This annual report provides an overview of water resource management activities and use in the Upper Ovens River Water Supply Protection Area (WSPA) throughout the 2012/13 irrigation season.

1.2 Water Supply Protection Area

The Upper Ovens River WSPA covers an area of approximately 1,580 km² of the catchment of the Upper Ovens River upstream of its confluence with the Buffalo River near Myrtleford in north east Victoria, as shown in Figure 1. The Upper Ovens River WSPA was declared on the 2 October 2008 under section 27(1) of the *Water Act 1989* (the Act).

There are two management zones within the Upper Ovens River WSPA: 1085 and 1086, as shown in Figure 1. Management Zone 1 (1085) includes the unconsolidated sedimentary aquifer and surface water licences. Management Zone 2 (1086) includes licences that access the underlying fractured bedrock aquifer.

1.3 Water Management Plan

The Upper Ovens River WSPA Water Management Plan (the Plan) was approved on 11 January 2012 by the Minister for Water in accordance with section 32A(6) of the *Water Act 1989*. The Plan is scheduled for review every five years, with the first review due in 2016/17.

The overall objective of the Plan, as set out in section 32A of the Act, is to make sure that the water resources of the WSPA are managed in an equitable manner and to ensure the long-term sustainability of those resources. The Plan enables a water sharing regime within Management Zone 1 which requires managing the surface water and the unconsolidated sedimentary aquifer as a connected system.

1.4 Plan Implementation

Implementation of the Plan began immediately after its approval. Implementation of the Plan has required:

- advising all licence holders of new management zones;
- updating administrative systems (e.g. Water Register) with new groundwater and surface water transfer rules; and,
- meter selection surveys for metering of groundwater users with licences which have volumes of 10 to 19 ML/yr.

Further implementation requirements to meet the prescriptions within the Plan are addressed in Appendix 5.2.

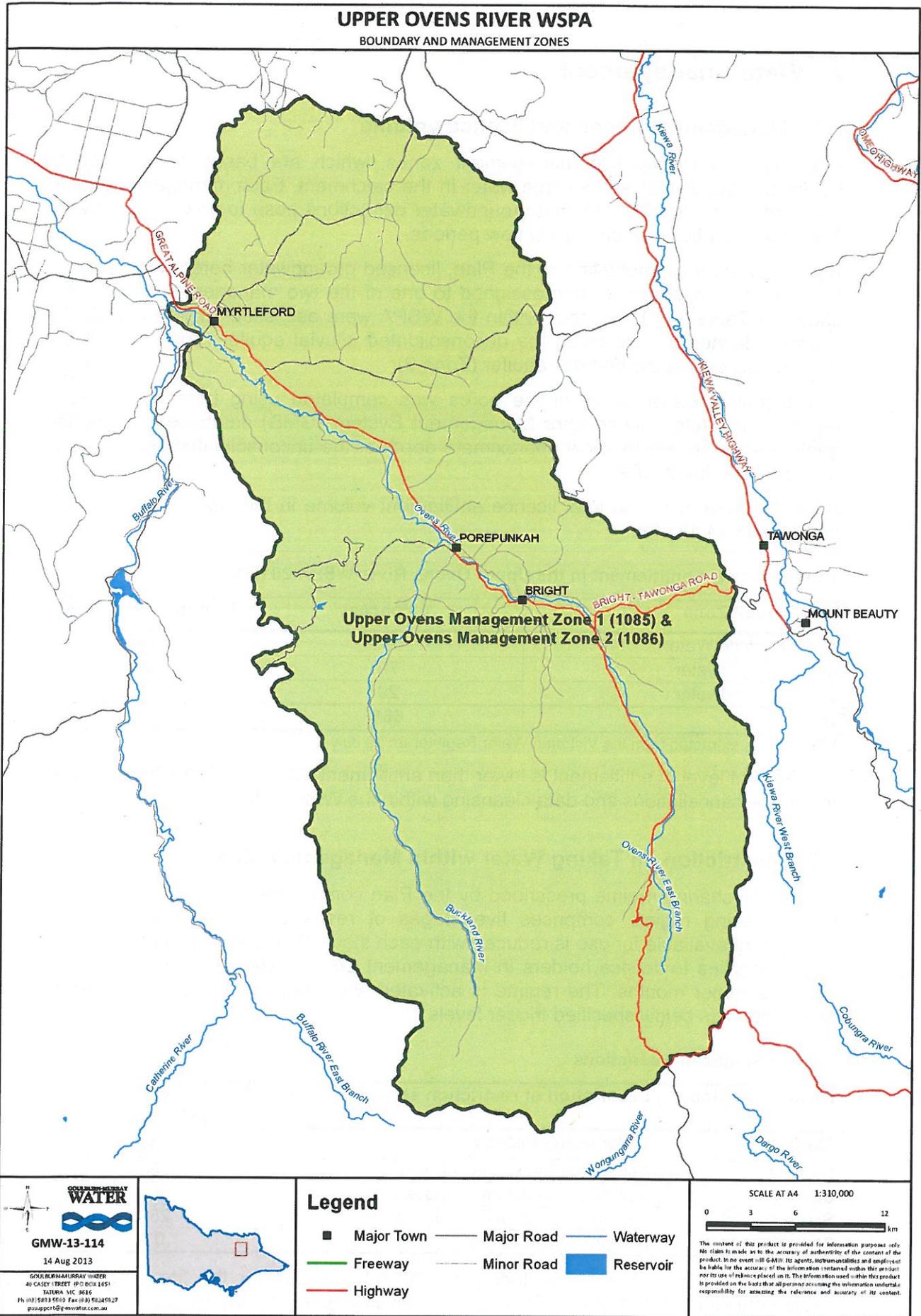


Figure 1 Upper Ovens River Water Supply Protection Area

2 Water management

2.1 Management Zones and licence volume

The Plan establishes two management zones, which are based on interaction between groundwater and surface water in the catchment. Each management zone is based on the level of risk that groundwater extractions pose to flow in the Ovens River and its tributaries during low flow periods.

As part of the implementation of the Plan, licensed groundwater bores were subject to a technical assessment and assigned to one of the two management zones. As shown in Table 1, 108 licences within the WSPA were assessed. This included 79 licences defined as accessing the unconsolidated alluvial aquifer (Zone 1) and 29 licences accessing the bedrock aquifer (Zone 2).

The technical classification of the bores was completed using bore construction reports, the State Groundwater Management System (GMS) database and spatial geological layers which show approximate depth of the unconsolidated sedimentary aquifer within the WSPA.

As at 30 June 2013 the total licence entitlement volume in the Upper Ovens River WSPA was 14,181 ML.

Table 1 Licence entitlement in the Upper Ovens River WSPA 2012/13

Management Zone	Licences	Licence volume (ML)
Zone 1 Surface Water	557	10,478
Zone 1 Groundwater	79	2,893
Zone 2 Groundwater	29	810
Total	665	14,181

NOTE: Data extracted from the Victorian Water Register on 29 July 2013

The current level of entitlement is lower than entitlement recorded within the Plan due to licence cancellations and data cleansing within the Water Register.

2.2 Restriction on Taking Water within Management Zone 1

The water sharing regime prescribed by the Plan commenced on 1 July 2012. The water sharing regime comprises five stages of restriction in which a share of entitlement available for use is reduced with each stage (Table 2). The water sharing regime applies to licence holders in Management Zone 1 who normally take water during summer months. The regime is activated when flows in the Ovens River at Myrtleford falls below specified trigger levels.

Table 2 Stages of restrictions

Restriction Stage	Description of restriction stage	Share of entitlement available %
Stage 1	Water usage rostered	100
Stage 2	Volumetric limitations imposed	75
Stage 3	Volumetric limitations imposed	50
Stage 4	Volumetric limitations imposed	25
Stage 5	No pumping permitted	0

Restrictions were put in place during the 2012/13 season for the first time since implementation of the Plan. Flow at the Ovens River at Myrtleford fell below restriction Stage 1 (Figure 2) in early February and then continued to fall at a steady

rate towards the restriction stage 2 of 60 ML/day. On 1 February 2013 restriction Stage 1 was implemented for the Ovens River and tributaries, and by mid February flow continued to drop towards 60ML/day. A Stage 2 restriction was implemented on 21 February 2013.

Once sufficient flows were recorded the restrictions were removed on 9 April 2013. Roberts Creek was the only stream to be placed on suspension between restriction implementation on 10 January and removal on 9 April 2013.

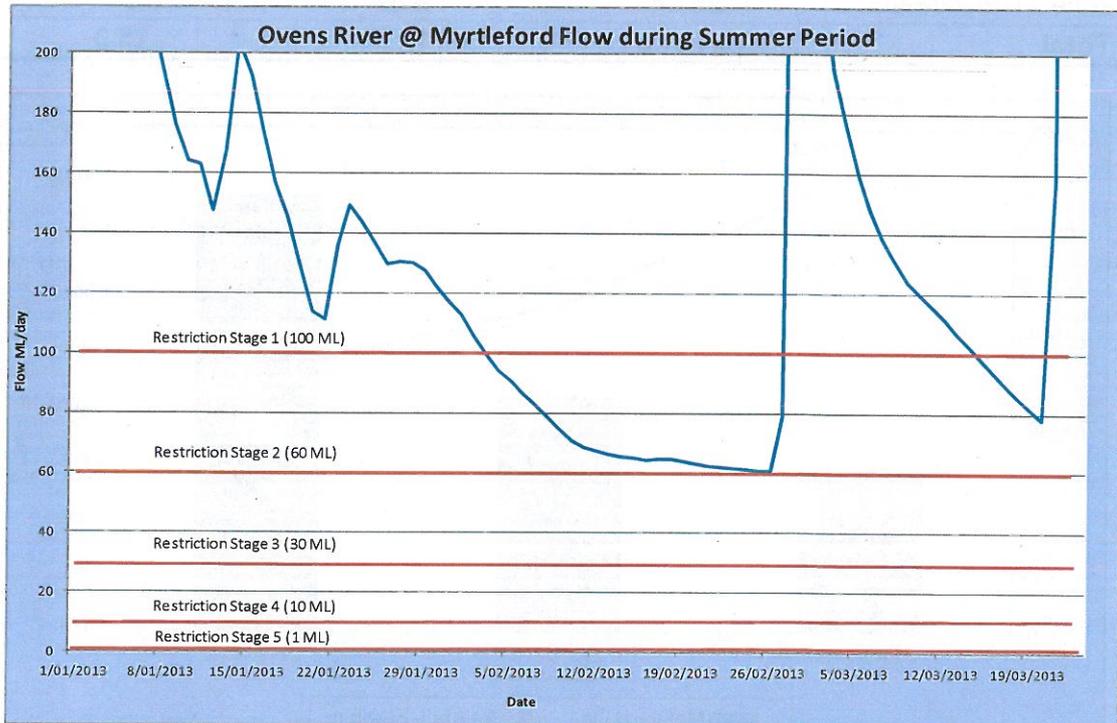


Figure 2 Ovens River at Myrtleford flows during the 2012/2013 summer period.

2.3 Groundwater and surface water use

The majority of licensed groundwater bores in the WSPA are metered, with only historic licences having entitlement of 19 ML/yr or less not currently metered as per State policy. As part of the Plan's implementation, all licensed groundwater users with a licence above 10 ML will be metered, to bring all groundwater users in line with surface water users. The majority of licensed surface water users in the WSPA are metered, with only historic licences having entitlement of 9 ML/yr or less not being metered (consistent with State policy).

The total metered surface water and groundwater usage for the 2012/13 season was 2,164.8 ML.

The pattern of groundwater and surface water use in the Upper Ovens WSPA is heavily influenced by climate and rainfall within the catchment. This is evidenced by the increased metered usage and below average rainfall in the 2012/13 season, compared to the previous two seasons (Figure 3). The rainfall during the key irrigation season (January to April) was approximately 85 mm below long term average rainfall for this period.

Table 3 Metered usage in the Upper Ovens WSPA 2012/13

Management Zone	Metered use (ML)	Total Entitlement (ML)	% of Metered Use to Licence Volume
Zone 1 Surface Water	1,498.1	10,478	14.3
Zone 1 Groundwater	415.3	2,893	14.4
Zone 2 Groundwater	251.4	810	31
Total	2,164.8	14,181	15.3

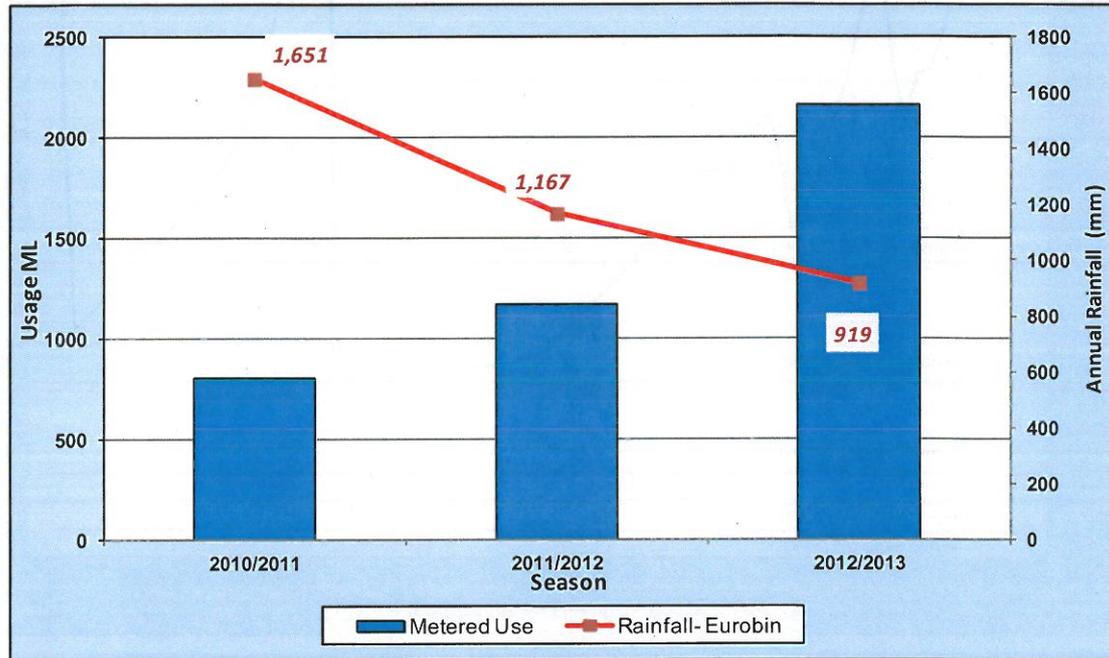


Figure 3 Metered season usage for the Upper Ovens WSPA compared with total annual rainfall (1 July to 30 June) recorded at Bureau of Meteorology station at Eurobin (BOM site 83010).

2.4 Transfer of entitlement

Groundwater and surface water licence transfer activity during 2012/13 is summarised in Table 4 below.

Table 4 Transfers in the Upper Ovens River WSPA 2012/13

Zone	Transfer from		Transfer to	
	Permanent (ML)	Temporary (ML)	Permanent (ML)	Temporary (ML)
Zone 1 Surface Water (181)	82	266	0	515.3
Zone 1 Groundwater (1085)	0	364.3	0	0
Zone 2 Groundwater (1086)	2	0	84	115
Total	84	630.3	84	630.3

Levels of temporary transfer increased in 2012/13 compared to the previous two years. This was due to increased need for water during the relatively dry summer period. In total there were six licence transfers (temporary and permanent) into Management Zone 2 which indicates that the trading rules within the Plan are facilitating trading activity across the WSPA.

3 Monitoring program

3.1 Groundwater levels

The groundwater monitoring data shows that groundwater levels (groundwater pressure heads) demonstrate a strong seasonal response to variations in climate. Groundwater levels (Appendix 5.1) were at their highest between August and September 2011 and their lowest around March 2013 due to below average rainfall. This trend was similar in both the unconsolidated sedimentary aquifer and fractured bedrock aquifers. The data does not show discernable impacts on groundwater levels due to licensed groundwater pumping.

The locations of the monitoring bores and surface water gauges are shown in Figure 5.

3.2 Surface Water

The surface water data taken from the Owens River @ Myrtleford gauge (Figure 4) show that flows were generally consistent with a winter rainfall dominated climate, characterised by low summer flow and high winter flow patterns. Flows are particularly responsive to large rainfall events as seen in July 2012 and June 2013, while the reduced rainfall during the summer allowed flows to maintain a steady decline until heavy rainfall in late March 2013.

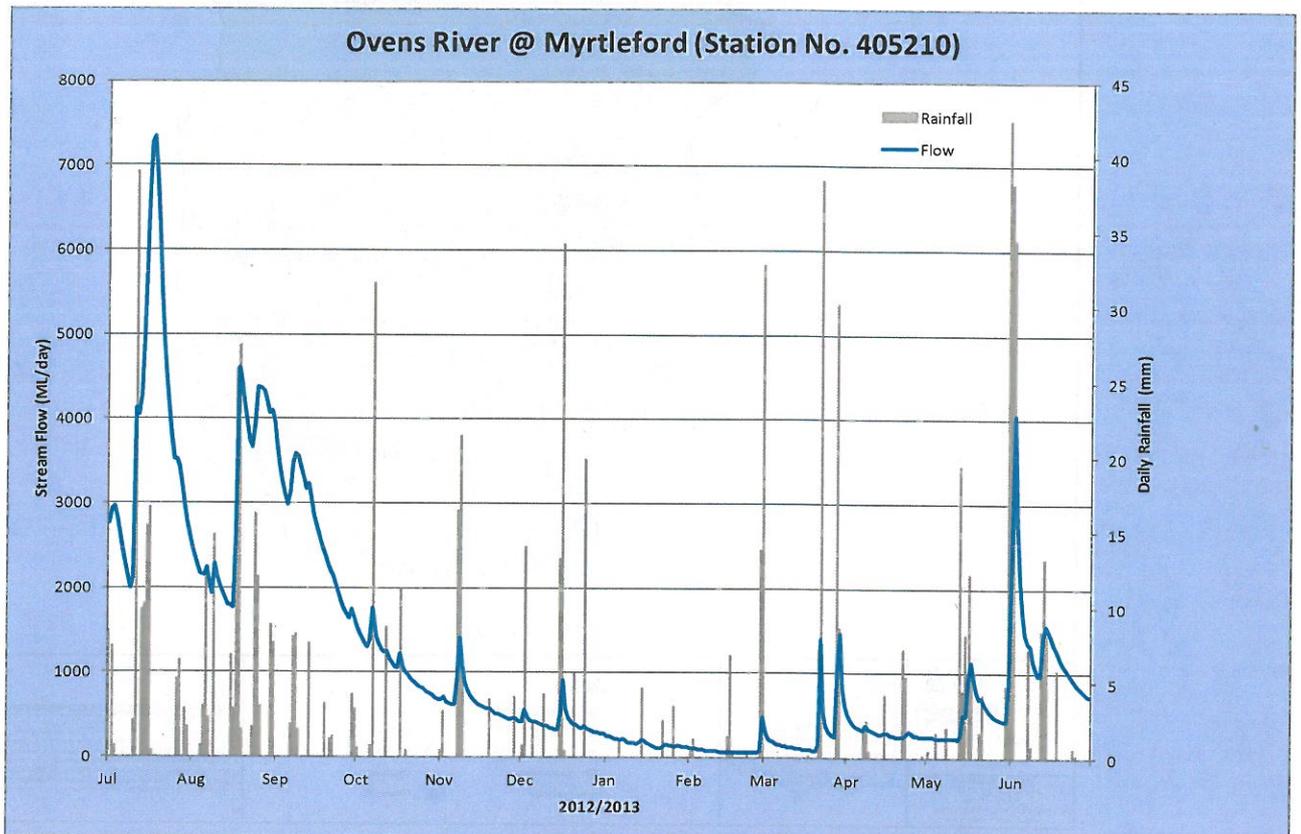


Figure 4 Daily stream flow of the Owens River at Myrtleford compared with daily rainfall (1 July 2012 to 30 June 2013) recorded at Bureau of Meteorology station at Eurobin

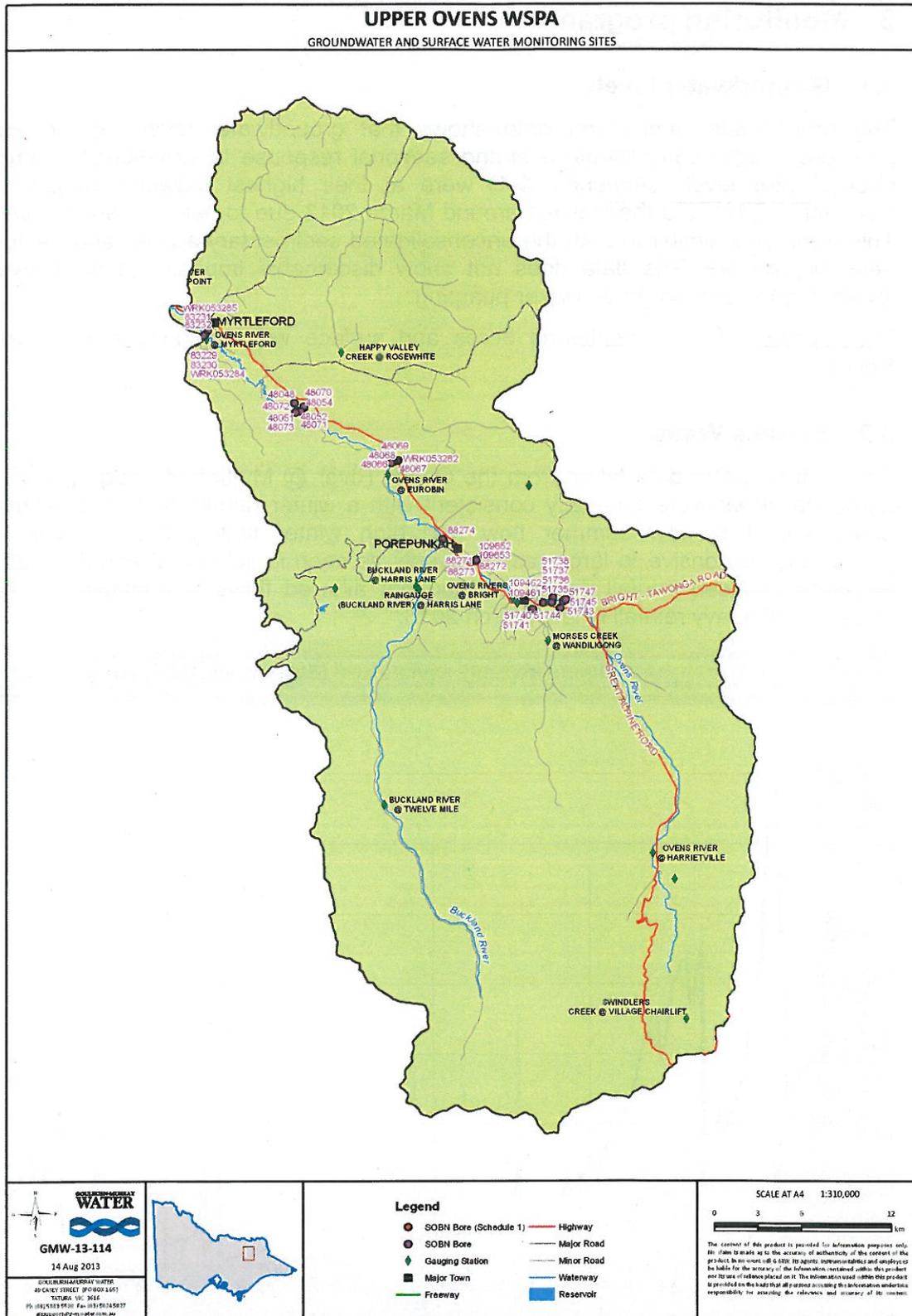


Figure 5 Location of groundwater monitoring bores and surface water gauging stations.

3.3 Metering

The condition of meters is noted when readings are taken in January and June of each year. Some form of maintenance (including minor repairs) was required at four meters in 2012/13. Five meters were replaced, and seven new meters were installed during 2012/13 season (Table 5).

Table 5 Meter installations and maintenance activities 2011/12 – 2012/13

Activity	Year to 30 June 2012	Year to 30 June 2013
Number of new meters installed	17	7
Meters replaced	4	5
Meters requiring maintenance	22	4

4 Future management considerations

4.1 Upper Ovens WSPA Water Balance Research Project

In preparation for a future review of the Plan, recommendations were made to improve the understanding of groundwater and surface water interaction in main tributary streams and better understand water use patterns during low flow periods in the Upper Ovens River WSPA (including the impact of groundwater use on stream flows and the lag time between groundwater use and stream flow impacts).

This will be achieved through:

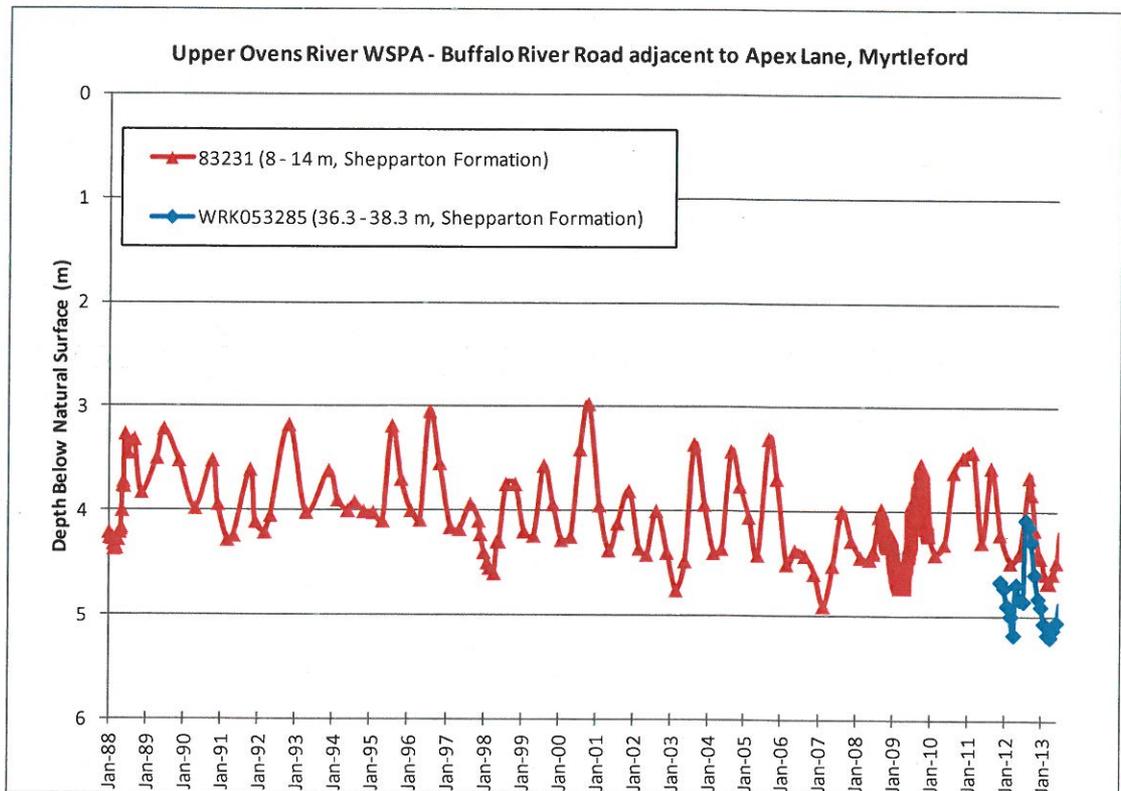
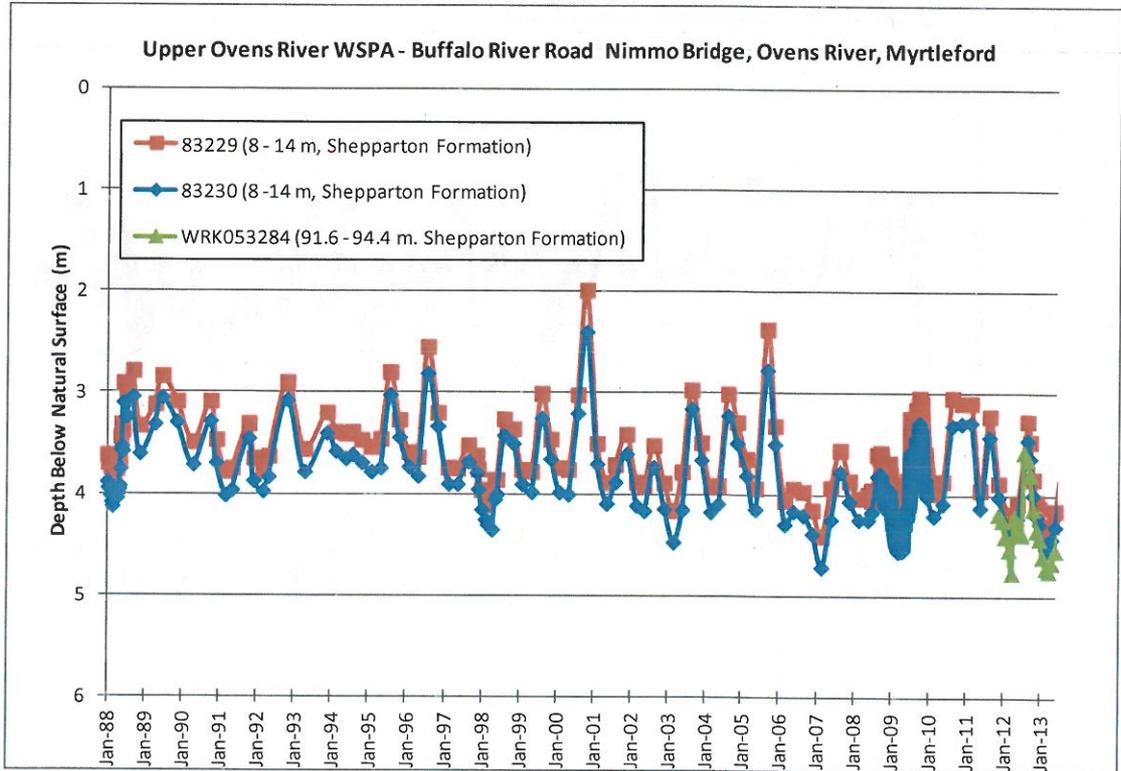
- The installation of two new bores, to the construction standard of the State Observation Bore Network, near Buffalo Creek;
- The addition of data loggers in key observation bores to monitor groundwater levels;
- The installation of a stream flow monitoring site on Buffalo Creek (funded by the Monash University Super Science Initiative); and
- The installation of an additional 24 water meters at groundwater sites which were identified in the WMP.

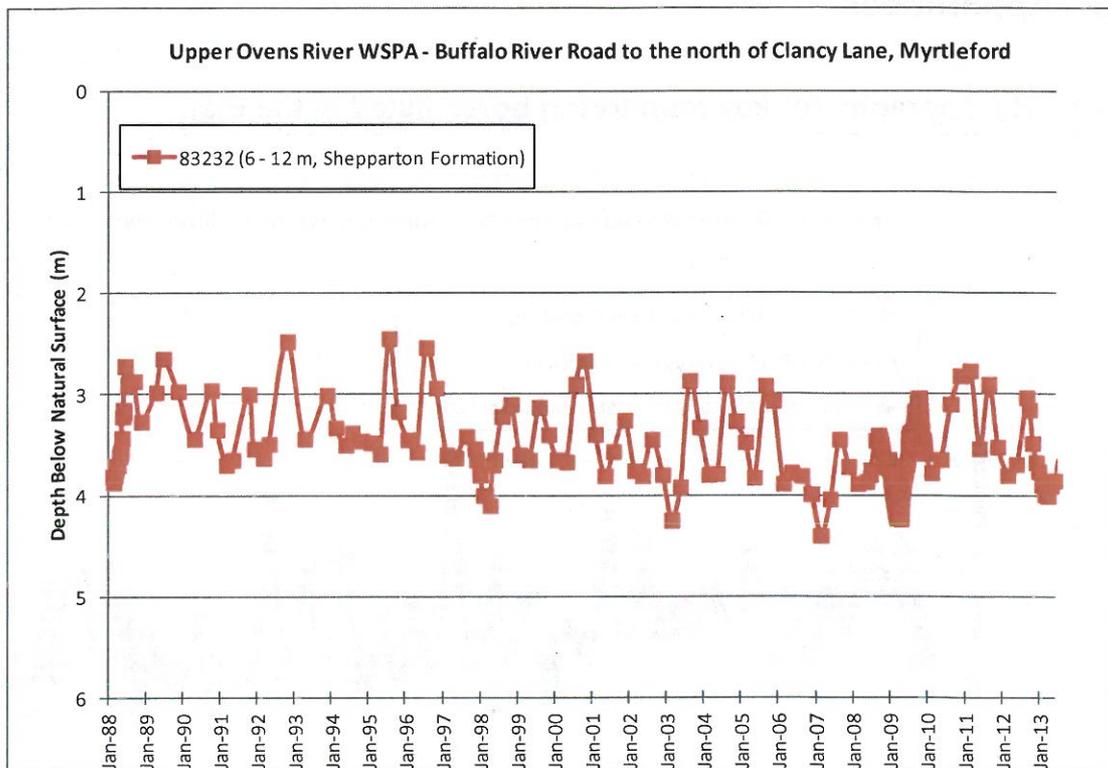
This research project aims to bring about advances in resource management by:

- improving the accounting of water resources and water use;
- improving the understanding of groundwater and surface water interaction in main tributary streams; and
- reducing uncertainty about the current water balance understanding of the catchment, particularly during low flow period.

5 Appendices

5.1 Hydrographs for key monitoring bores listed in the Plan





5.2 Compliance with Groundwater Management Plan

Management Zones

Plan Requirement	Activity	Complies
1. Prescriptions that apply to the taking of groundwater in Management Zone 1 apply to the taking of groundwater from all bores in the Protection Area unless the bore is only capable of extracting groundwater from the fractured rock aquifer.	All groundwater licences have been identified as either being located in Management Zone 1 or 2.	Yes

Prescriptions on Taking water in Management Zone 1

Plan Prescription Number/ Requirement	Activity	Complies
2-11. Management of restrictions for Management Zone 1. Prescription to begin from 1 July 2012.	Restrictions were implemented during the 2012/13 season, in line with Plan requirements.	Yes

Restrictions and prohibitions on issuing take and use licences

Plan Prescription Number/ Requirement	Activity	Complies
18 to 25. Prescriptions listed in Upper Ovens River Water Supply Protection Area Plan	Two new licences were created due to a permanent transfer from Zone 1 to Zone 2 in accordance with the Plan.	Yes

Transfers between Management Zone 1 and 2

Plan Prescription Number/ Requirement	Activity	Complies
29. The Corporation may approve an application for the transfer of a licence from Management Zone 1 to Management Zone 2 without any change to the licence volume of the licence being transferred.	Six transfers occurred from Management Zone 1 to 2. These included both temporary and permanent transfers.	Yes
30. The Corporation must refuse an application for the transfer of a licence from Management Zone 2 to Management Zone 1 unless the transfer results in the issue of a winter-take licence.		

Meter Installation

Plan Prescription Number/ Requirement	Activity	Complies
43. Within five years from the time the Plan is approved, the Corporation must ensure that a meter is fitted to every operational works used to take water under a surface water or a groundwater licence, other than a registration licence, that authorises the extraction of 10 ML/yr or more.	Site inspections have been undertaken for groundwater licence holders above 10 ML but less than 20 ML for the purposes of meter installation. A site appraisal has been completed based on active use and has identified the meter type needed.	Yes

Meter Reading and Account for Use

Plan Prescription Number/ Requirement	Activity	Complies
44. The Corporation must - (a) read each meter at least twice every year; and (b) determine the volume of water taken each year under the relevant licence.	All meters for both groundwater and surface water were read twice during the 2012/13 season. Meter reads were completed in January and June 2013.	Yes
45. If for any reason the Corporation is unable to determine the volume of water by means of a meter it must estimate the volume of water taken.		Yes
46. If water is taken under a licence for irrigation use and is not metered, the Corporation must - a. prior to the commencement of each irrigation season determine the area to be irrigated for that season; b. inspect each place at which water is taken as frequently as it inspects meters; and c. estimate the volume of water taken each year.		Yes
47. The Corporation must, within 30 days after a meter is read or an estimate of the amount of water taken is made, record the amount of water taken in a database		Yes

48. If the Corporation requests the Licensee to read a meter or to estimate the amount of water used, the Licensee must comply with the request.	No requests were made to licensees by the Corporation	Yes
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Monitoring

Plan Prescription Number/ Requirement	Activity	Complies
49. The Corporation must ensure that an appropriate monitoring program is undertaken to ensure that: <ul style="list-style-type: none"> a. the flows in the Ovens River at Myrtleford are continuously recorded; b. the flows in key tributaries are recorded or estimated in low flow periods; c. the water levels in observation bores at Myrtleford are continuously recorded; d. the water sharing regime is able to be implemented; and the relationship between groundwater levels and stream levels can be observed. 	Groundwater levels are monitored and recorded using the State Observation Bore Network. River flows are monitored and recorded under the Victorian Regional Monitoring Partnership.	Yes

Revocation of the Permissible Consumptive Volume

Plan Prescription Number/ Requirement	Activity	Complies
50. Within three months of the approval of the Plan, the Corporation must request the Minister revoke the permissible consumptive volume (PCV) of 4,010 ML in place for groundwater in the Protection Area.	The Minister for Water revoked the PCV on 3 March 2013.	Yes

