



# **Safe Drinking Water Act 2003**

## **Water Storage Manager**

### **2015-2016 Annual Report**



# Document History and Distribution

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## List of Acronyms

BGA	Blue-Green Algae
CMA	Catchment Management Authority
CHW	Central Highlands Water
CW	Coliban Water
DELWP	Department of Environment, Land, Water & Planning
DHHS	Department of Health & Human Services
GMW	Goulburn-Murray Water
GVW	Goulburn Valley Water
GWMW	Grampians Wimmera Mallee Water
LoWMP	Land and On Water Management Plan
LMW	Lower Murray Water
LWM	Local Water Manager
MVIA	Murray Valley Irrigation Area
OFI	Opportunity for Improvement
RC	Regional Coordinator
RMP	Risk Management Plan
Regulations	Safe Drinking Water Regulations 2015
The Act	Safe Drinking Water Act 2003
The Circular	Blue-Green Algae Circular for 2015/16

Front cover photo: Lake Buffalo

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# 1. Introduction

Goulburn-Murray Rural Water Corporation (GMW) is defined as a Water Storage Manager under the *Safe Drinking Water Act 2003*. This 2015/16 Annual Report to the Secretary of the Department of Health and Human Services (DHHS) has been prepared to satisfy the annual reporting requirements of the *Safe Drinking Water Act 2003* (the Act) and Safe Drinking Water Regulations 2005 and 2015 (Regulations) . The Safe Drinking Water Regulations 2015 commenced operation on 18 July 2015, therefore requirements under the 2005 Regulations apply for 1 July to 17 July 2015.

This report also demonstrates GMW's ongoing commitment to managing risks to the quality of the water the corporation delivers to water suppliers.

The report contains the following sections:

- Section 2 Roles and responsibilities of GMW under the Act and Regulations
- Section 3 Regulations component report
- Section 4 Other relevant information and activities

Further information regarding this report can be obtained by contacting Mark Bailey, Manager Water Resources, or Greg Smith, Manager Water Quality during business hours on (03) 5826 3516 or (03) 5826 3732 respectively or by email [mark.bailey@gmwater.com.au](mailto:mark.bailey@gmwater.com.au), [greg.smith@gmwater.com.au](mailto:greg.smith@gmwater.com.au).

Water quality data collected by GMW is available to the public via the Victorian Water Measurement Information System at <http://data.water.vic.gov.au/monitoring.htm> or by contacting Greg Smith on the above email.

## 2. Goulburn-Murray Water systems & role

GMW manages the bulk water delivery and transfer for around 30% of Victoria's land area, or approximately 68,000 km<sup>2</sup> (Figure 1). GMW operates 22 storages in its region including Murray-Darling Basin Authority storages managed by Victoria. GMW's area of operation includes the Upper Murray, Ovens, King, Broken, Goulburn, Campaspe and Loddon river basins as well as the Murray River. GMW also operates an extensive network of water distribution channels, pipelines and natural carriers to deliver raw water to its customers. Customers take water from these supply systems via a pump or a gravity irrigation outlet.

Water supplied by GMW is not chlorinated or treated to improve its suitability for any particular use and should never be considered fit for human consumption without first being properly treated.

GMW provides bulk water in accordance with Bulk Entitlement Orders to seven urban water corporations (water suppliers) Coliban Water, Central Highlands Water, North East Water, Goulburn Valley Water, Grampians Wimmera Mallee Water, Lower Murray Water and (potentially) Melbourne (see Section 4.3). The Bulk Entitlements provide for quantity of supply, but make no guarantee of quality. GMW does not operate the reticulated supply systems. The raw (untreated) water supplied by GMW to water suppliers for treatment and supply to their customers in 132 towns via 80 offtake points across northern Victoria (see Appendix 1 for a list of towns supplied including water sources). GMW provides raw (untreated) water to water suppliers in four different ways:

1. From storages directly (via water supplier infrastructure) e.g. Nagambie from Goulburn Weir.
2. Via the outlet works of storages (GMW infrastructure) e.g. Bendigo from Lake Eppalock.
3. Indirectly from rivers supplied by storages e.g. Seymour from Goulburn River, supplied by Lake Eildon.
4. Via GMW's channel system e.g. towns in the Goulburn Murray Irrigation District.

Changes to water supplies where GMW is the Water Storage Manager during 2015/16 were:

- Tatura supply offtake from Central Goulburn 3/5A to Central Goulburn 2/5/6 channel
- Bundalong and Devenish supplied from Lake Mulwala (previously Lake Mulwala backwater and Boosey Creek, respectively)

GMW recognises that water is supplied to urban water corporations for treatment and distribution for drinking water purposes. Our commitment to drinking water quality management is reflected in the corporate drinking water quality policy. This Policy requires GMW to *address threats to safe drinking water by preparing and implementing a Risk Management Plan to meet its obligations as a Water Storage Manager under the Safe Drinking Water Act 2003*. The Policy was reviewed and endorsed by GMW's board in May 2016.

GMW is required to consider risk management for all of the water supply mechanisms it uses to provide water to water suppliers. This includes risks associated:

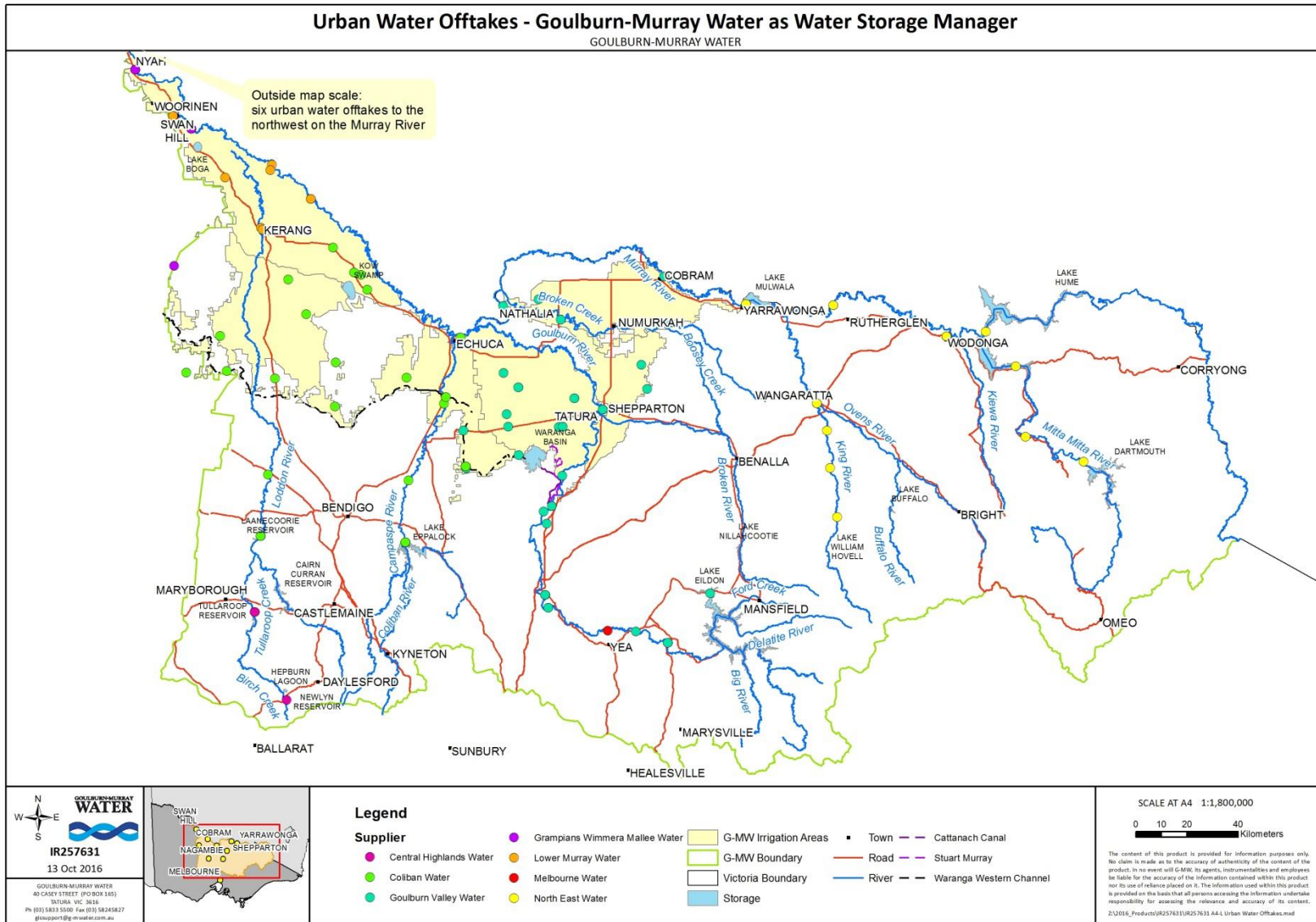
- with the catchment leading to the storage;
- within the storage itself;
- with the supply of water downstream of storages using natural carriers such as rivers and creeks; and
- With the supply of water via channel systems to each drinking water off take point.

A *Safe Drinking Water Act* Water Storage Manager Risk Management Plan (RMP) has been prepared and implemented in accordance with the Act and Regulations and is regularly reviewed by GMW. Copies of the RMP are available to the public upon request to GMW. The

plan includes general requirements and considers GMW activities to manage the risk to water quality. There is also a section that specifically focuses on risks in and around GMW's storages and within GMW's irrigation districts.

GMW meets regularly with water suppliers to discuss any issues arising from the RMP or operations including incident response, blue green algae warnings, risk identification, sharing of information and water resource management.

Figure 1: GMW's area of operation



## 3. Regulation Components Report

### 3.1 Emergency and incident management

#### Regulations

17(a) information about actions taken by the water storage manager in respect of each emergency, incident or event that has arisen that has affected—

- (i) the quality of the water supplied for drinking purposes generally; and
- (ii) the quality of the water supplied where that supply posed a risk to human health;

17(b) any issues that may have arisen out of the taking of the actions referred to in paragraph (a);

#### Section 22 Notifications

There were no incidents that required GMW to report to DHHS under Section 22 of the Act during 2015/16.

#### Other emergencies, Issues or Events

In order to understand incident information below it should be noted that the catchments in northern Victorian where water is harvested are open to a wide variety of land and water based activities and are not closed to access and/or use, like some of Melbourne's water supply catchments. These land use activities include agriculture, aquaculture, forestry, industry, regional urban centres, townships, major transport infrastructure and recreation.

During the 2015/16 year GMW recorded 13 incidents that were regarded as having the potential to affect the quality of water supplied to a water supplier where GMW notified the relevant water supplier. With the exception of Blue Green Algae warnings described below, each incident was handled using GMW's incident response procedure, which includes formal processes for communicating about, responding to and reviewing the incidents. Details of these incidents are listed in Appendix 2.

#### Blue Green Algae Management

Management of Blue Green Algae (BGA) by GMW is a key program/process that manages a key risk to the safe supply of water to water suppliers.

High levels of BGA (cyanobacteria) regularly occur across GMW's region and have the potential to affect drinking water supplies. GMW is the Local Water Manager (LWM) for BGA risk management in its storages and water supply network (largely open channels) and the Regional Coordinator (RC) for regional BGA incidents. BGA in the River Murray is managed by New South Wales authorities with input from GMW and other Victorian agencies via the Murray Region Algal Coordinating Committee (MRACC).

GMW prepared BGA Response Plans for all GMW managed water bodies and river basins in accordance with the protocols set out in the Department of Environment, Land, Water and Planning (DELWP) Blue-Green Algae Circular for 2015/16 (the Circular). These plans provided guidance on the preparation for and response to BGA incidents, including notification of relevant stakeholders. GMW continued to



engage with relevant stakeholders, including hosting a pre-season meeting on 30 October 2015, which was also a requirement of the Circular.

A BGA Status Report is circulated on at least a monthly basis to a broad range of stakeholders including the DHHS, DELWP, water suppliers, catchment management authorities (CMAs) and local government. The report contains the latest BGA laboratory results for GMW's storages and key water supply assets.

### BGA Warnings

In 2015/16 13 BGA warnings were issued based on recreational guidelines. Table 1 summarises the BGA warnings issued by GMW in 2015/16 and the Water Suppliers notified.

A major regional recreational warning occurred on the Murray River from Lake Hume downstream, to beyond GMW's area of operation in early 2016. The bloom also extended into GMW's Murray Valley Irrigation Area, impacting the Broken Creek, and Torrumbarry Irrigation Area. The NSW Department of Primary Industries was the lead agency for the Murray River response, while two incident control centres (ICC) were established to deal with Victorian aspects and impacts of the bloom. Warnings were issued for different sections of the Murray as BGA testing confirmed recreational limits were exceeded. The longest warning was in place for 122 days from late February to late June 2016, for the section from Cobram to Barmah. The maximum length of river affected was around 1450 km from Hume Dam to Lock 9. GMW collected over 560 samples across 70 sites during the bloom, the results of which contributed to the collective testing effort of water agencies in NSW and Victoria. Five Water Suppliers were impacted by the bloom in Victoria. Existing arrangements for sharing of test results between water agencies continued throughout the bloom. Results were also provided to NSW and the Victorian ICCs.

GMW initiated an internal Incident Management Team (IMT) that focussed on monitoring and external communications. The GMW website became a key source of information for customers and the public. GMW's IMT was present on regular teleconferences with the ICCs and NSW. A GMW officer was also present as Liaison Officer in the Benalla Incident Control Centre for much of the event.

Multiple debriefs for this bloom were scheduled for early 2016/17. GMW will take the outcomes of these debriefs into consideration in future BGA management.

**Table 1: Blue Green Algae Warnings Issued by GMW 2015/16**

Basin/System	Location	Warning dates (duration)	WS notified <sup>1</sup>
Murray River	Murray River - Lake Hume to Lock 9 Weir (actually issued by NSW)	24/2/2016 – 24/6/2016 (121 days)	NEW, GVW, CW, LMW, GWMW
Murray River	Yarrowonga Weir	24/2/2016 – 11/5/2016 (77 days)	NEW, GVW
Murray River	Murray Valley Irrigation Area	25/2/2016 – 2/6/2016 (98 days)	GVW
Murray River	Torgannah Lagoon	1/3/2016 – 27/5/2016 (87 days)	N/A
Murray River	Torrumbarry Weir	25/2/2016 – 10/6/2016 (106 days)	CW, LMW, GWMW
Broken basin	lower Broken Creek	25/2/2016 – 2/6/2016 (98 days)	GVW

Basin/System	Location	Warning dates (duration)	WS notified <sup>1</sup>
Broken basin	Lake Nillahcootie	11/1/2016 – 4/2/2016 (24 days)	No WS on or downstream
Torrumbarry Irrigation Area	Torrumbarry Irrigation Area	26/2/2016 – 10/6/2016 (105 days)	CW, LMW
Torrumbarry Irrigation Area	Lake Boga	17/2/2016 – 19/8/2016 (184 days)	LMW
Loddon basin	Cairn Curran Reservoir	22/12/2015 – 13/7/2016 (204 days)	CW
Loddon basin	Laanecoorie Reservoir	6/1/2016 – 18/5/2016 (133 days)	CW
Loddon basin	Hepburns Lagoon	17/3/2016 – 18/5/2016 (62 days)	No WS on or downstream
Loddon basin	Loddon River between Cairn Curran and Laanecoorie reservoirs	2/3/2016 – 23/3/2016 (21 days)	CW

<sup>1</sup>North East Water (NEW), Goulburn Valley Water (GVW), Coliban Water (CW), Lower Murray Water (LMW), Grampians Wimmera Mallee Water (GMMW), Central Highlands Water (CHW).

Blue text indicates warning linked with Murray regional bloom

In accordance with the 2015/16 BGA response plans, GMW advised DELWP and DHHS of any BGA levels that had the potential to affect public health through drinking water or recreational contact via the BGA status report. DHHS and DELWP were notified via telephone and email when the total biovolume of known toxic BGA species exceeded 4mm<sup>3</sup>/L and/or widespread BGA scums were observed.

BGA factsheets and information on the current status of GMW's storages and irrigation areas can be found on the BGA webpage <http://www.g-mwater.com.au/bluegreenalgae-alert/>. In addition, the public can access warning information by calling GMW's BGA Hotline on (03) 5826 3785, by contacting GMW directly during business hours on 1800 013 357 or emailing [reception@g-mwater.com.au](mailto:reception@g-mwater.com.au).

No additional issues were identified in the management of the incidents that occurred in 2015/16. GMW continues to work with water suppliers and other catchment partners to minimise the impact to water quality from incidents and events that occur within GMW's area of operation

### 3.2 Summary of exemptions and undertakings

*Regulation 17(c) a summary of every written undertaking by the water storage manager accepted by the Secretary under section 30 of the Act.*

*Regulation 17(f) details of any exemption granted to the water storage manager under section 8 of the Act and any condition imposed in relation to any exemption.*

There were no exemptions or undertakings in place with DHHS during 2015/16.

### **3.3 Risk Management Plan audit findings and issues raised**

*Regulation 17(d) a summary of the findings of the most recent risk management plan audit and any issues that the approved auditor raised during the risk management plan audit.*

The Secretary to the Department of Health and Human Services required GMW to undertake an audit of their risk management plan during the 2015-16 reporting period. The regulatory audit conducted in April 2016 found GMW to be compliant under Section 8 of the Act, see Appendix 3 for Audit Certificate. The auditors identified eight opportunities for improvements (OFIs); GMW has accepted the OFIs and developed an action plan as outlined in Appendix 4. Overall GMW was found to be compliant with “an embedded corporate culture of risk, in particular, the auditors were impressed with the level of water quality buy-in across the organisation, given that GMW is a water storage manager not a water supplier”.

### **3.4 Water treatment processes**

*Regulation 17(e) –*

*(i) a summary of the process by which the water supplied by the water storage manager is disinfected or treated and any other processes applied to the water by the water storage manager, and any issues arising out of the application of those processes; and*

*(ii) a list of all the chemicals and other substances, and any processes, used by a water storage manager to disinfect or treat the water supplied, or to be supplied, by it for drinking purposes;*

GMW does not disinfect, treat or process any water supplied to its customers. All water supplied by GMW is not suitable for direct human consumption. All GMW customers are advised of this (see also Section 4.2).

While GMW does not treat or process any water for drinking water purposes, please note the following:

- GMW sometimes applies herbicides to vegetation adjacent to channels used to supply water suppliers. When spraying is planned, GMW notifies the relevant drinking water supplier before this occurs.
- When necessary (locust plagues, for example), GMW only uses pesticides that are suitable for use adjacent to waterways and in a manner consistent with current best management practices and regulations.

## **4. Other Relevant Information**

### **4.1 Other activities**

GMW has completed individual risk assessments for GMW storages and irrigation areas as well as an organisation wide risk assessment. All assessments are regularly reviewed. GMW continues to implement a number of key programs to manage the identified risks to water quality, examples of the types of activities undertaken by GMW are summarised in Table 2.

**Table 2: GMW Key Programs**

<b>Program</b>	<b>2015/16 Activities/Achievements</b>
Blue green algae management	All warnings were managed in accordance with DELWP BGA Circular; including notification to relevant urban water corporations.
Lake Eildon Houseboat Management	Ongoing management of on-water facilities, houseboat inspections undertaken in accordance with schedule, implementation of the Water (Lake Eildon Recreational Area) (Houseboats) Regulations 2013.
Land and On Water Management Plans	Implementation and review (where required) of the existing 13 Land and On Water Management plans, including consultation with urban water corporations and other key stakeholders. New plan released for Kow Swamp.
External Stakeholder controls	Continued engagement with catchment partners including implementation of Regional Catchment Strategies, review of State Environment Protection Policies.
GMW Operations	Various activities including channel and storage erosion prevention works, fencing, licencing and monitoring of activities on GMW land. GMW activities are conducted in accordance with the ISO 14001 certified Environmental Management System. Notification to relevant urban water corporations if water quality impacted.
Statutory Planning	1478 applications reviewed from 26 local government authorities and DELWP.
Spray Operations	GMW spraying conducted in accordance with Herbicide Operating Instructions including notification to relevant urban water corporations.
Water quality monitoring	Water quality monitoring and analysis undertaken at 15 storages (242 samples). Preparation of quarterly exception reports and annual report sent to relevant stakeholders including urban water corporations.

#### **4.2 Advising People about Non-potable Water Supplies**

All water supplied by GMW is not suitable for human consumption or related uses without first being properly treated. Following consultation with DHHS and water suppliers in 2007, GMW developed a Customer Information Statement to advise customers of the non-potable nature of the water supplied. This statement was reviewed and updated in 2015/16, provided to all GMW customers and is located on the GMW website (<http://www.g-mwater.com.au>). Customer invoices include a statement regarding the non-potable nature of the water supplied by GMW.

#### **4.3 Melbourne Water**

The Sugarloaf (or North-South) Pipeline was constructed to supply water from the Goulburn catchment downstream of Lake Eildon to Melbourne Water's Sugarloaf Reservoir (and subsequently to Yarra Valley Water, City West Water, and South East Water). The pipeline has not been in operation since November 2010. GMW's agreement with Melbourne Water and associated Bulk Entitlement is still in place. GMW has therefore continued to provide the opportunity for Melbourne Water to be involved in GMW's identification and management of risks to water quality within the Goulburn catchment.

## 5. Further Information

This report and further information is available from our website <http://www.g-mwater.com.au> or by contacting:

Goulburn-Murray Water  
40 Casey Street  
PO Box 165  
Tatura VIC 3616

Free call: 1800 013 357  
Standard call: (03) 5826 3500  
Fax: (03) 5826 3334  
Email: [reception@gmwater.com.au](mailto:reception@gmwater.com.au)

# Appendix 1 - Towns supplied where GMW is the water storage manager

Water Supplier Offtakes - GMW as Water Storage Manager*		
Town Supplied	Supply Source	Water System/ Irrigation Area (IA)
<b>Central Highlands Water</b>		
ALMA/TIMOR	Tullaroop Reservoir	Loddon
BALLARAT	Newlyn Reservoir	Bullarook Creek
CARISBROOK	Tullaroop Reservoir	Loddon
DAISY HILL/MAJORCA/TALBOT	Tullaroop Reservoir	Loddon
MARYBOROUGH	Tullaroop Reservoir	Loddon
<b>Coliban Water</b>		
AXEDALE	Lake Eppalock	Campaspe
AXEDALE	Waranga Western Channel	Rochester IA
BEALIBA	Loddon River (Laanecoorie offtake)	Loddon
BENDIGO	Lake Eppalock	Campaspe
BENDIGO	Waranga Western Channel	Rochester IA
BOORT	Pyramid Hill Channel No.3	Pyramid Hill IA
BRIDGEWATER/INGLEWOOD	Loddon River (Bridgewater offtake)	Loddon
COHUNA	Gunbower Creek (Cohuna offtake)	Torrumbarry IA
DINGEE#	Pyramid Hill Channel No.1	Pyramid Hill IA
DUNOLLY	Loddon River (Laanecoorie offtake)	Loddon
ECHUCA	River Murray (Echuca offtake)	Murray
EPSOM/HUNTLY	Lake Eppalock	Campaspe
EPSOM/HUNTLY	Waranga Western Channel	Rochester IA
GOORNONG	Campaspe River (Goornong offtake)	Campaspe
GUNBOWER	Taylor's Creek	Torrumbarry IA
HEATHCOTE	Lake Eppalock	Campaspe
HEATHCOTE	Waranga Western Channel	Rochester IA
JARKLIN#	East Loddon Pipeline	Pyramid Hill IA
LAANECOORIE	Loddon River (Laanecoorie offtake)	Loddon
LEITCHVILLE	Gunbower Creek (Leitchville offtake)	Torrumbarry IA
LEITCHVILLE	Torrumbarry 5/1 Channel	Torrumbarry IA
LOCKINGTON	Waranga Western Channel (No 24 Channel)	Rochester IA
MACORNA#	Pyramid Hill 10/1 Channel	Pyramid Hill IA
MAIDEN GULLY/MARONG	Lake Eppalock	Campaspe
MAIDEN GULLY/MARONG	Waranga Western Channel	Rochester IA
MITIAMO#	Mitiamo spur off the Pyramid Hill Channel No. 1	Pyramid Hill IA
MYSIA#	Waranga Western Channel - Mysia	Pyramid Hill IA

### Water Supplier Offtakes - GMW as Water Storage Manager\*

Town Supplied	Supply Source	Water System/ Irrigation Area (IA)
PYRAMID HILL	Pyramid Hill Channel No. 1 (12/5/1)	Pyramid Hill IA
RAYWOOD	Lake Eppalock	Campaspe
RAYWOOD	Waranga Western Channel	Rochester IA
ROCHESTER	Waranga Western Channel (Rochester offtake)	Rochester IA
ROCHESTER	Campaspe River (Rochester offtake)	Campaspe
SEBASTIAN	Lake Eppalock	Campaspe IA
SEBASTIAN	Waranga Western Channel	Rochester IA
SERPENTINE	East Loddon Pipeline	Pyramid Hill IA
TARNAGULLA	Loddon River (Laanecoorie offtake)	Loddon
TOOBORAC	Lake Eppalock	Campaspe
TOOBORAC	Waranga Western Channel	Rochester IA
<b>Goulburn Valley Water</b>		
ALEXANDRA	Goulburn River at Alexandra	Goulburn
AVENEL	Goulburn River at Seymour	Goulburn
BARMAH	River Murray (Barmah offtake)	Murray
BONNIE DOON	Lake Eildon	Goulburn
BROADFORD	Goulburn River at Tallarook	Goulburn
COBRAM	River Murray at Cobram	Murray
COLBINABBIN	Waranga Western Channel at Colbinabbin	Rochester IA
CONGUPNA	Goulburn River at Shepparton	Goulburn
COROP#	Waranga Western Channel (Corop offtake)	Rochester IA
DOOKIE	East Goulburn Main Channel	Shepparton IA
EILDON	Goulburn River at Alexandra	Goulburn
GIRGARRE	Central Goulburn 12/9 Channel	Central Goulburn IA
GOULBURN WEIR (BAXTERS ROAD)#	Lake Nagambie (Baxters Rd offtake)	Goulburn
KATAMATITE	Murray Valley 7/3 Channel	Murray Valley IA
KATANDRA WEST	Shepparton 2/24 Channel (piped)	Shepparton IA
KIRWANS BRIDGE#	Lake Nagambie (Kirwans Bridge offtake)	Goulburn
KYABRAM	Central Goulburn 9 Channel	Central Goulburn IA
MERRIGUM	Central Goulburn 9 Channel	Central Goulburn IA
MOLESWORTH#	Goulburn River (Molesworth offtake)	Goulburn
MOOROOPNA	Goulburn River at Shepparton	Goulburn
MURCHISON	Goulburn River (Murchison offtake)	Goulburn
NAGAMBIE	Lake Nagambie (Nagambie offtake)	Goulburn
NATHALIA	Broken Creek	Murray Valley IA
NUMURKAH	Murray Valley 6/6 Channel	Murray Valley IA
PICOLA	Murray Valley 9/9/6 Channel	Murray Valley IA

<b>Water Supplier Offtakes - GMW as Water Storage Manager*</b>		
<b>Town Supplied</b>	<b>Supply Source</b>	<b>Water System/ Irrigation Area (IA)</b>
RUSHWORTH	Waranga Basin	Central Goulburn IA
SEYMOUR	Goulburn River at Seymour	Goulburn
SHEPPARTON	Goulburn River at Shepparton	Goulburn
STANHOPE	Central Goulburn 1/12/9 Channel	Central Goulburn IA
STRATHMERTON	River Murray at Cobram	Murray
TALLAROOK	Goulburn River at Seymour	Goulburn
TALLYGARoopNA	Goulburn River at Shepparton	Goulburn
TATURA	Central Goulburn 2/5/6 Channel	Central Goulburn IA
TATURA	Central Goulburn 3/5A Channel	Central Goulburn IA
THORNTON	Goulburn River at Alexandra	Goulburn
TONGALA	Central Goulburn 28/9 Channel	Central Goulburn IA
TOOLAMBA	Goulburn River at Shepparton	Goulburn
TRAWOOL	Goulburn River at Seymour	Goulburn
WATERFORD PARK	Goulburn River at Tallarook	Goulburn
WUNGHNU	Murray Valley 6/6 Channel	Murray Valley IA
YARROWEYAH	River Murray at Cobram	Murray
<b>Grampians Wimmera Mallee Water</b>		
BERRIWILLOCK#	River Murray - Nyah	Murray
CHILINGOLLAH#	River Murray - Nyah	Murray
CHINKAPOOK#	River Murray - Nyah	Murray
CULGOA#	River Murray - Swan Hill (Pental Island)	Murray
LALBERT#	River Murray - Swan Hill (Pental Island)	Murray
MANANGATANG	River Murray - Piangil Pump Station	Murray
NANDALY#	River Murray - Nyah	Murray
NULLAWIL#	River Murray - Swan Hill (Pental Island)	Murray
OUYEN	River Murray - Wemen	Murray
PATCHEWOLLOCK#	River Murray - Wemen	Murray
QUAMBATOOK	4/1 Channel (Normanville Pipeline)	Loddon Valley IA
SEA LAKE	River Murray - Swan Hill (Pental Island)	Murray
SPEED#	River Murray - Wemen	Murray
TEMPY#	River Murray - Wemen	Murray
ULTIMA#	River Murray - Swan Hill (Pental Island)	Murray
UNDERBOOL	River Murray - Wemen	Murray
WAICHIE#	River Murray - Nyah	Murray
WALPEUP#	River Murray - Wemen	Murray
WEMEN#	River Murray - Wemen	Murray
<b>Lower Murray Water</b>		



### Water Supplier Offtakes - GMW as Water Storage Manager\*

Town Supplied	Supply Source	Water System/ Irrigation Area (IA)
IRYMPLE	River Murray (Mildura offtake)	Murray
IRYMPLE	River Murray (Mildura West offtake)	Murray
KERANG	Loddon River (Kerang Alt. offtake)	Loddon
KERANG	River Murray at Koondrook (Kerang Alt. Offtake)	Murray
KERANG	Torrumbarry 14/2 Channel (Kerang Alt. Offtake)	Torrumbarry IA
KOONDROOK	River Murray at Koondrook (Koondrook offtake)	Murray
LAKE BOGA	River Murray (Swan Hill offtake)	Murray
MERBEIN	River Murray (Mildura West offtake)	Murray
MERBEIN	River Murray (Mildura offtake)	Murray
MILDURA	River Murray (Mildura Alt. offtake)	Murray
MILDURA	River Murray (Mildura West offtake)	Murray
MILDURA WEST	River Murray (Mildura West Alt. offtake)	Murray
MURRABIT	River Murray (Murrabit Alt. offtake)	Murray
MURRABIT	Torrumbarry 2/11/4 Channel (Murrabit Alt. offtake)	Torrumbarry IA
MYSTIC PARK#	Kangaroo Lake (Mystic Park Non Potable offtake)	Torrumbarry IA
NYAH#	River Murray (Swan Hill Offtake)	Murray
NYAH WEST	River Murray (Swan Hill offtake)	Murray
PIANGIL	River Murray (Piangil town offtake)	Murray
RED CLIFFS	River Murray (Red Cliffs offtake)	Murray
ROBINVALE	River Murray (Robinvale offtake)	Murray
SWAN HILL	River Murray (Swan Hill offtake)	Murray
WOORINEN SOUTH	River Murray (Swan Hill offtake)	Murray
<b>Melbourne Water</b>		
MELBOURNE	Goulburn River (via Sugarloaf Pipeline at Killingworth)	Goulburn
<b>North East Water</b>		
BANDIANA/BARANDUDA/ BONEGILLA/EBDEN	Wodonga Creek (an anabranch of the Murray River)	Murray
BARNAWARTHA	Wodonga Creek (an anabranch of the Murray River)	Murray
BELLBRIDGE	Lake Hume	Murray
BUNDALONG	Lake Mulwala	Murray
CHILTERN	Wodonga Creek (an anabranch of the Murray River)	Murray
DARTMOUTH	Mitta Mitta River (Dartmouth offtake)	Murray
DEVENISH	Lake Mulwala	Murray
ESKDALE	Mitta Mitta River (Eskdale offtake)	Murray
GLENROWAN	Ovens River (confluence with King River)	Ovens
KIEWA	Wodonga Creek (an anabranch of the Murray River)	Murray
MOYHU	King River (Moyhu offtake)	Ovens
OXLEY	King River (Oxley offtake)	Ovens

### Water Supplier Offtakes - GMW as Water Storage Manager\*

Town Supplied	Supply Source	Water System/ Irrigation Area (IA)
RUTHERGLEN	River Murray at Wahgunyah	Ovens
SPRINGHURST	Wodonga Creek (an anabranh of the Murray River)	Murray
ST JAMES	Lake Mulwala	Murray
TALLANGATTA	Lake Hume / Mitta Mitta River	Murray
TANGAMBALANGA	Wodonga Creek (an anabranh of the Murray River)	Murray
TUNGAMAH	Lake Mulwala	Murray
WAHGUNYAH	River Murray at Wahgunyah	Murray
WANGARATTA	Ovens River (confluence with King River)	Ovens
WHITFIELD	Shallow groundwater bore adjacent King River	Ovens
WODONGA	Wodonga Creek (an anabranh of the Murray River)	Murray
YARRAWONGA	Lake Mulwala	Murray

\*All water supplied by GMW is raw i.e. not treated.

#Regulated supply

## Appendix 2 - Environmental incidents reported during 2015/16 related to water quality

Risk #	Date	Incident Description	Location	Action undertaken (by GMW)
	1/08/2015	Aquatic weed management in dewatered channels using imazapyr (June and July). Decay rate of imazapyr was slower than expected and therefore GMW advised customers not to use water at the start of irrigation season. Duration ~ 50 days	Shepparton, Murray Valley, Central Goulburn and Rochester irrigation areas	Advance notification of spraying to customers in April. Extensive water quality monitoring, communication with customers. Channel flushing program. Notification and distribution of monitoring results to Goulburn Valley Water. Concentrations were always well below Australian Drinking Water Guideline health related guideline value.
1925	18/11/2015	Dumping of fuel and oil waste.	Approx. 600m u/s of the Old Kerang Bridge on the Loddon River, left hand bank	EPA notified and coordinated the incident. Lower Murray Water also notified.
2109	6/01/2016	High levels of BGA detected in Laanecoorie Reservoir for 133 days.	Laanecoorie Reservoir	Implemented actions in accordance with Laanecoorie BGA Incident Response Plan and associated alert 3 checklist. Coliban Water notified.
2129	12/01/2016	Blackwater event.	Goulburn River between Murchison and Shepparton	GV Water notified. Received and distributed updates from Goulburn Broken Catchment Management Authority.

Risk #	Date	Incident Description	Location	Action undertaken (by GMW)
2160	21/01/2016	Fuel spill from boat at Lake Eildon.	Alliance Boat Ramp, Lake Eildon	Assisted with incident management coordinated by CFA including deploying 2 booms. Goulburn Valley Water notified.
2212	17/02/2016	High levels of BGA at Lake Boga – 134 days until end of June 2016.	Lake Boga, Torrumbarry IA	Implemented actions in accordance with Lake Boga BGA Incident Response Plan and associated alert 3 checklist. Lower Murray Water notified.
2218, 6046	24/02/2016	High levels of BGA in the Murray Valley irrigation area for 98 days.	Murray Valley irrigation area including lower Broken Creek	Implemented actions in accordance with Murray Valley Irrigation Area BGA Incident Response Plan and associated alert 3 checklist. Goulburn Valley Water notified.
2219, 2235	24/02/2016	High levels of BGA in Murray River. Yarrawonga Weir (77 days), Torrumbarry Weir (106 days) and other parts of the Murray River 121 days.	Murray River – Lake Hume to Lock 9 (including Yarrawonga Weir and Torrumbarry Weir)	Incident coordinated by NSW Department of Primary Industries - Water. GMW was a key agency in Victorian response to incident including notification and sharing water quality results with North East Water, Goulburn Valley Water, Coliban Water, Lower Murray Water and Grampians Wimmera Mallee Water.
2234	26/02/2016	Ute seen in the Goulburn River near Raftery Road, Kialla.	Goulburn River, Raftery Road Kialla	GV Water notified as the location is upstream of the Shepparton (and other) town water supply offtake.

Risk #	Date	Incident Description	Location	Action undertaken (by GMW)
2241	2/03/2016	High levels of BGA recorded at Baringhup for 21 days.	Loddon River, Baringhup, d/s Cairn Curran Reservoir	Implemented actions in accordance with Loddon River BGA Incident Response Plan and associated alert 3 checklist. Coliban Water notified.
6041	9/03/2016	High levels of blue green algae have been reported in some water bodies of the TIA for 110 days.	Torrumbarry irrigation area	Implemented actions in accordance with Torrumbarry Irrigation Area BGA Incident Response Plan, associated alert 3 checklist and actions by the ICC have been followed. Coliban Water notified.
6405	6/05/2016	EPA advised GMW of a red substance coming out of the stormwater system in Echuca.	Creek flowing to Murray River, Echuca	No action requested of GMW. Coliban Water notified.
6416	10/05/2016	Numerous dead small fish found in outlet pool at Newlyn Reservoir.	Newlyn Reservoir	Central Highlands Water notified, fish removed.
-	-	27 other potential water quality incidents recorded that did not require notification to WS e.g. no offtakes located downstream of incident.	Various (storage/waterway/channel/drain)	Various <i>Note these incidents were not included in summary section 3.1 as they did not have the potential to impact WS.</i>
-	-	2 incidents where more than 5 animals have been found in GMW managed water bodies.  41 incidents where less than 5 animals have been found in GMW managed water bodies.	Various (storage/waterway/channel/drain)	All carcasses removed from waterway and buried. Weekly inspections. No further action was required.* <i>Note these incidents were not included in summary section 3.1</i>

# Appendix 3 - 2016 Audit Certificate

**Risk Management Plan Audit Certificate**

**SCHEDULE 1**

**Regulation 10**

**Safe Drinking Water Regulations 2015**  
**Risk Management Plan Audit Certificate**

Certificate Number: **GMW 2016-1**

Audit period: **7 February 2014 to 12 May 2016**

To: Greg Smith, Manager Water Quality Goulburn-Murray Water  
40 Casey Street, Tatura, VIC 3616

Australian Business Number (ABN): **46 761 336 846**

I, Dr Annette Dorothy Davison, after conducting a risk management plan audit of the water supplied by Goulburn-Murray Water, am of the opinion that—

\_\_\_\_\_ \*has /has complied with the obligations  
\*(Insert name of water supplier)

imposed by section 7(1) of the *Safe Drinking Water Act 2003* during the audit period.  
Goulburn-Murray Water has complied with the obligations  
\*(Insert name of water storage manager)

imposed by section 8(1) of the *Safe Drinking Water Act 2003* during the audit period.

\*The details of the reasons for non-compliance are—  
\_\_\_\_\_  
\_\_\_\_\_

\*insert/attach the details of the reasons for non-compliance  
\_\_\_\_\_  
\_\_\_\_\_


Signature of approved auditor: **Annette Davison**

Digitally signed by Annette Davison  
DN: cn=Annette Davison, o=Risk Edge  
Pty Ltd, ou=Company, email=annette@riskedge.com.au, c=AU  
Date: 2016.05.12 08:58:02 +10'00'

Date: \_\_\_\_\_

\* Delete if not applicable.  
Additional pages or reports can be attached to this certificate.

Department of Health & Human Services



## Appendix 4 - Goulburn-Murray Water's Action Plan to address Opportunities for Improvement arising from 2016 SDWA Audit

Action	Due
<i>OFI 1. While radiological hazards are dealt with in the risk assessment, GMW should consider natural sources of these hazards and not just those originating from landfill leachate and dumping. Consequently, GMW should review the geology in its area for natural sources of radiological hazards and assess whether there is a significant source. This information is important for groundwater sources and surface water, which is under the influence of groundwater (the latter part only being relevant for GMW).</i>	
Investigation of geology in GMW region underway. Risk Management Plan will be updated based on the outcomes of the investigation.	December 2016
<i>OFI 2. Consider whether flow management can be formalised as a method for managing/improving 'in channel' water quality.</i>	
Flow management method to be added as a potential operational tool in SDWA Risk Management Plan and included in each Irrigation Area Operation Manual.	December 2016
<i>OFI 3. Review the partnership agreements and ensure that they are updated for currency including removing the requirement for contact details to be contained in this document.</i>	
Coordination of regional incident response is not GMW's role but belongs to other/emergency agencies; hence GMW can only influence review of these agreements. GMW will raise this as an issue for discussion in regional partnership forums.	After next regional meetings
<i>OFI 4. Review how currency details are stated on documents to facilitate ease of visualisation of currency without always having to check in DM.</i> <i>OFI 7. Ensure that review dates are more clearly articulated on documents to improve currency identification.</i>	
Review of all SDWA related documents underway to ensure document reference, version and date stated.	December 2016
<i>OFI 5. Consider creating an organisational chart showing the key Water Quality Groups within the GMW region and how each relates, to help visualise linkages and key programs/responsibilities.</i>	
Added creation of a Water Quality Groups diagram as an item to Process Improvement Plan.	Complete
<i>OFI 6. The justification for sampling locations around the major storages and sampling at particular depths, where this is done, needs to be documented in the relevant plan or document.</i>	
Justification of sampling locations has been added to Risk Management Plan and sampling schedule.	Complete
<i>OFI 8. An opportunity exists to strengthen the RMP around specific procedure training and recording of competency at Section 2.5.1.</i>	
Review of procedure-specific training underway. Details Information on any procedure related training will be added to SDWA Risk Management Plan	April 2017