

GOULBURN-MURRAY

WATER



Safe Drinking Water Act 2003

Water Storage Manager

2013/2014 Annual Report

September 2014

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1 Introduction

Goulburn-Murray Water Rural Water Corporation (GMW) is defined as a Water Storage Manager under the *Safe Drinking Water Act 2003*. This 2013/14 Annual Report to the Secretary of the Department of Health (DH) has been prepared to satisfy the annual reporting requirements of the *Safe Drinking Water Act 2003* and *Safe Drinking Water Regulations 2005* (SDWA&R). The report also demonstrates GMW's ongoing commitment in 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 SDWA&R
- Section 3 Regulations component report
- Section 4 Other relevant information and activities

Further information regarding matters relevant to 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 , 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, or approximately 68,000 km² (Figure 1). GMW operates 16 bulk water storages and an extensive network of water distribution channels, pipelines and natural carriers to deliver raw water to its customers. Customers use their own infrastructure to take water from these supply systems via a pump or gravity irrigation outlet.

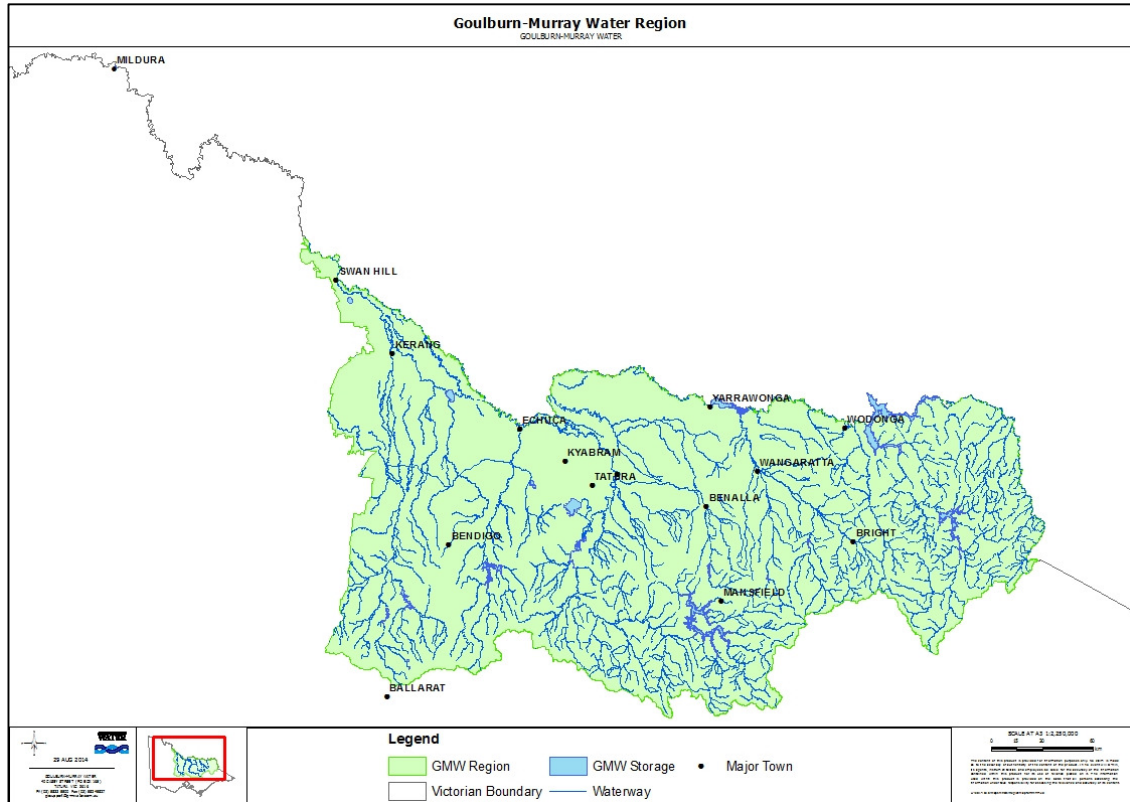


Figure 1: GMW's area of operation

Water supplied by GMW is not chlorinated or treated to improve its quality 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 urban water corporations for treatment and supply to their customers in 114 towns across northern Victoria, including the River Murray as far downstream as Mildura/Merbein (see Appendix 1 for a list of towns supplied). The Bulk Entitlements provide for quantity of supply, but make no guarantee of quality. GMW does not operate the reticulated supply systems within these towns. There are some settlements, e.g. Goulburn Weir and Kirwans Bridge, where residents may hold a water entitlement with GMW but this use is not for human consumption.

There was a change in supply source to Numurkah during 2013/14; it is now supplied via GMW Murray Valley 6/6 Channel rather than Broken Creek.

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 SDWA&R requires water storage managers such as GMW to prepare, implement, review and revise a risk management plan (RMP) in relation to its supply of water to any party that treats water for human consumption. Water corporations and other parties that treat water for human consumption are known as *water suppliers* under the SDWA.

For the purposes of the SDWA, a Victorian water corporation is a water storage manager if it releases water from the storage it manages to a water supplier; or permits the water supplier to take water directly from the water storage.

A Victorian water corporation may also be deemed to be a water storage manager if the water supplier has a right to take water from the water storage or from any point downstream of the water storage; and the water storage manager is aware that the water supplier may exercise that right.

Given that water from most GMW storages is used to supply drinking water across northern and western Victoria, the spatial scope of the RMP is vast.

GMW delivers water to a number of water suppliers: Coliban Water, Central Highlands Water, North East Water, Goulburn Valley Water, Grampians Wimmera Mallee Water, Lower Murray Water and Melbourne Water.

GMW provides raw (untreated) water to water suppliers in four different ways:

1. From storages directly e.g. Nagambie from Goulburn Weir.
2. Via the outlet works of storages e.g. Bendigo from Lake Eppalock.
3. Indirectly from rivers supplied by storages e.g. Shepparton from Goulburn River, supplied by Eildon.
4. Via channel systems e.g. towns in the Central Goulburn Irrigation Area.

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 to the storage;
- with 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 RMP has been prepared in accordance with the SDWA&R 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.

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.

3 Regulation Components Report

3.1 Emergency, incidents or events

15(2)(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;

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 variety of land and water based activities and are not, for example, closed to access and/or use such as Melbourne's catchments. These land use activities include agriculture, aquaculture, forestry, industry, regional urban centres, townships, major transport infrastructure and recreation.

Within the 2013/14 year, GMW recorded 27 incidents that were regarded as having the potential to affect the quality of water supplied to a water supplier or potentially posed a risk to human health. None of these incidents were classed as emergencies. 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.

3.2 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, channels and drains; and the Regional Coordinator (RC) for widespread BGA incidents that involve multiple interconnected waterbodies. BGA in the River Murray is managed by New South Wales authorities with input from GMW and other Victorian agencies.

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 and Primary Industries (DEPI) Blue-Green Algae Circular for 2013/14 (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 via a pre-season meeting held in November 2013 which was also a requirement of the Circular.

BGA Response Plans include an alert level framework to assist staff and stakeholders with recognising the significance of BGA levels (see Table 1).

Table 1: GMW's blue green algae alert level framework

Alert Level	All species	Toxic species
No Alert	Nil - <0.04 mm ³ /L	Nil - <0.04 mm ³ /L
Alert Level 1 - Low	0.04 - <0.4 mm ³ /L	0.04 - <0.4 mm ³ /L
Alert Level 2 - Medium	≥0.4 - 10 mm ³ /L	≥0.4 - 4 mm ³ /L
Alert Level 3 - High	≥10 mm ³ /L	>4 mm ³ /L

A BGA Status Report is regularly circulated to a broad range of stakeholders including the Department of Health (DH), DEPI, water suppliers, catchment management authorities (CMA) and local government. The report contains the latest BGA laboratory results for GMW's storages and key water supply assets.

In accordance with the 2013/14 BGA response plans, GMW advised DEPI and DH of any BGA levels that had the potential to affect public health through drinking water or recreational contact via the BGA status report. BGA warnings were issued and DH and DEPI were notified via telephone and email when the total biovolume of known toxic BGA species exceeded 4mm³/L and/or widespread BGA scums were observed.

Warnings in GMW's Major Storages

There were two BGA warnings issued for GMW's major storages during 2013/14. The warnings were issued for Hepburns Lagoon from October 2013 to May 2014 and Laanecoorie Reservoir from February to May 2014.

Warnings in Irrigation Areas

The only BGA warning in 2013/14 was in the Torrumbarry Irrigation Area within the Murray River/Gunbower Creek system at Gum Lagoon.

Further information regarding GMW's responsibilities for BGA monitoring and reporting can be found on GMW's website www.g-mwater.com.au. 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.

3.3 Issues arising from emergencies, incidents or events

15(2)(b) any issues that may have arisen out of the taking of the actions referred to in paragraph (a);

GMW continues to work with the regional water suppliers to improve their stakeholder and public notification protocols for emergency discharges from wastewater treatment plants.

During the 2013/14 period, GMW was advised that three regional water corporations (Goulburn Valley Water (GVW), North East Water (NEW) and Coliban Water (CW)) were granted emergency discharge licenses under section 30A of the *Environment Protection Act 1970* to discharge treated wastewater into waterways. These regional water corporations were unable to dispose of their treated wastewater through land irrigation and eventually filled their onsite wastewater storage lagoons to capacity due to the wet summer and autumn conditions. The Environment Protection Authority required the regional water corporations to undertake water quality and quantity monitoring and to notify all downstream water users of the discharges. In some cases, monitoring results were provided to GMW. GMW determined that there were no other water suppliers impacted by these discharges.

3.4 Summary of exemptions and undertakings

15(2)(c) a summary of every—

- (i) exemption under section 8 of the Act and any condition imposed in relation to every exemption; and*
- (ii) written undertaking by the water storage manager accepted by the Secretary under section 30 of the Act;*

During 2013/14 GMW did not require any exemptions under section 8 of the Act or enter into any undertaking with the Department of Health under section 30 of the Act.

3.5 Summary of processes to disinfect or treat water

15(2) (d) 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

GMW does not disinfect, treat or process any water supplied to its customers, as all water supplied by GMW is not suitable for human consumption and customers are aware of this (see also Section 4.3).

3.6 List of chemical or substances

15(2) (e) 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; and

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 urban water and 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.

3.7 Risk Management Plan audit findings and issues raised

15(2) (f) 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.

Section 11 of the SDWA requires water storage managers to conduct an audit of their risk management plan and associated documents and processes. GMW engaged Mr Daniel Deere of Water Futures Pty Ltd and Mr Robert Burford of BBTech Consulting to audit the GMW Risk Management Plan in February 2014. The audit period assessed was 22 March 2012 to 7 February 2014 including progress towards addressing opportunities for improvement (OFIs) identified in the previous audit during March 2012. The auditors determined that GMW had satisfied all requirements and was compliant with relevant sections of the Act and Regulations. The auditors made three suggestions that GMW can work towards to improve future compliance. These are listed below:

1. We suggest that GMW develop a SDWA and GMW fact-sheet or equivalent 'promotional material' to be made available to external stakeholders and general public. This could be achieved by some simple modifications to the existing internal fact-sheet. In updating the fact-sheet, consideration could be given to the inclusion of some commentary on risks and obligations to promote public awareness and understanding of GMW's relevant obligations and show GMW's commitment to drinking water quality.
2. We suggest that GMW include in the RMP a systematic summary of all its operational elements that contribute to protecting or improving water quality along with an explanation of the benefits that they provide.
3. Planning control in catchments is an important and rapidly moving field. The review and enhancement of the planning control process should continue proactively to improve the quality, robustness and consistency of the process that ensures risks to water quality are adequately managed.

These OFIs have been accepted and included in the process improvement plan as part of the continuous improvement of GMW SDWA processes and programs.

4 Other Relevant Activities/Information

4.1 Statutory Planning

GMW assesses planning applications to meet a range of objectives, including the requirements of the SDWA&R to minimize risks to water quality within our catchments. Under Section 55 of the *Planning and Environment Act 1987*, GMW is a statutory referral authority for developments and subdivisions within any declared Special Water Supply Catchments. A list of the declared Special Water Supply Catchments can be found in Schedule 5 of the *Catchment and Land Protection Act 1994* and there are several of these catchments in each of the system specific risk management plans. For all other areas, GMW is only notified of any development applications as an interested or affected party under Section 52 of the *Planning and Environment Act 1987*.

GMW's role in statutory planning is a key activity to manage the risks to water quality associated with various land uses and development within GMW's area of operation. This is achieved by ensuring that GMW receives appropriate applications, provides conditions to minimize the risk to water quality or in some instances objecting to applications where it is determined that the application poses an unacceptable risk to water quality. GMW receives planning applications from 26 local government authorities and the Department of Planning and Community Development (on behalf of Alpine Resorts) (Table 2). In 2013/14 GMW received a total of 1,191 applications. GMW also provided responses for 15 Work Plans from the Department of Environment and Primary Industries (DEPI) for developments such as mines and quarries.

In addition to GMW's role in statutory planning, GMW along with relevant water suppliers continues to be involved in the development of local government's Domestic Wastewater Management Plans (DWMPs). DWMPs are a key tool to manage the risks to water quality associated with onsite wastewater management for existing and new developments within GMW's region.

Table 2: Planning Permit Applications received from Municipalities from 2004/05 to 2013/14

Municipality	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Alpine Shire	46	23	105	85	69	57	70	66	29	46
Ballarat	2	10	13	11	4	9	10	10	7	10
Benalla	2	4	6	11	20	8	15	3	5	8
Bendigo	64	33	58	58	51	36	64	73	47	52
Campaspe	27	27	131	106	108	99	91	52	93	69
Central Goldfields	20	11	10	11	7	14	12	13	6	13
DPCD (Alpine Resorts/ Mt Hotham)	16	0	2	0	2	1	3	2	1	0
East Gippsland	-	-	-	-	-	-	-	-	-	5
Gannawarra	14	14	34	47	34	19	25	23	31	46
Hepburn	279	291	250	136	101	122	128	109	113	106
Indigo	43	30	18	8	5	8	5	19	22	23
Loddon	20	13	10	11	7	4	6	4	12	6
Macedon Ranges	142	95	87	101	124	114	120	216	155	128
Mansfield	38	18	30	46	74	49	105	99	87	120
Mildura	2	1	2	4	1	0	2	3	4	2
Mitchell	9	60	63	47	14	14	22	18	9	15
Moira	49	49	211	186	77	199	142	150	153	128
Moorabool	-	-	3	1	-	2	2	2	4	1
Mount Alexander	91	78	80	72	85	89	163	118	90	48
Murrundindi	60	34	49	52	24	35	52	37	21	19
Pyrenees	4	3	11	5	10	6	14	7	12	7
Shepparton	157	98	197	169	174	108	139	153	109	95
Strathbogie	46	64	42	62	62	59	92	77	86	70
Swan Hill	10	12	19	26	18	13	23	21	28	30
Towong	22	33	48	65	69	61	72	117	71	74
Wangaratta	1	4	4	3	9	3	7	32	27	51
Wodonga	16	9	8	10	12	13	26	23	13	19
Total	1,180	1,014	1,491	1,333	1,161	1,142	1,410	1,447	1,235	1,191

4.2 Land and On Water Management Plans

Land and On Water management is about managing community, recreational and environmental aspects of water storages and surrounding lands. The aim is to protect and enhance water quality, improve the ecological health of waterways and provide safe, sustainable public access. GMW storages are easily accessible by the general public and provide highly valued recreational opportunities for tourists and local communities.

GMW has completed the development of 11 Land and On Water Management Plans (LoWMPs) and is working on plans for an additional four water storages (including the Victorian Mid-Murray Storages which consist of a series of storages). These plans will guide how GMW and other agencies manage activities, facilities and development on and around water storages over a five year period. The plans focus on cultural, recreational, environmental and water quality management issues at storages. However, they are not designed to make recommendations on storage operations such as water levels and releases.

Technical assessments of the risks to water quality have been undertaken for most GMW storages in accordance with GMW's obligations as a water storage manager under the SDWA. These assessments help to identify and prioritise actions required to maintain and/or improve water quality and assist with decision-making processes regarding actions and priorities in and around various storages. This risk assessment process links with the LoWMP process and although some risk assessments have been completed since the finalisation of LoWMPs, outcomes from the risk assessments will be incorporated into future versions of the plans. Table 3 below provides a summary of the LoWMPs that have been developed and information regarding which storages will have plans developed in the future.

Table 3: Land and On Water Management Plan Status

Storage	Status of Plan
Murray Storages	
Dartmouth Dam	No plan exists – currently no funding available.
Lake Hume	Currently undergoing 5-yearly review.
Yarrowonga Weir	Currently undergoing 5-yearly review.
Torrumbarry Weir	No plan exists – requirement for plan being considered.
Mildura Weir	No plan exists – requirement for plan being considered.
Kangaroo Lake	Issues paper development in progress – Victorian Mid-Murray Storages.
Kow Swamp	Development underway, expected completion – October 2014.
Lake Boga	Completed – released November 2011.
Lake Charm	As for Kangaroo Lake – part of Victorian Mid-Murray Storages Plan.
Ovens Storages	
Lake Buffalo	Complete. Released early 2014.
Lake William Hovell	Complete. Released early 2014.
Lake Nillahcootie	Complete. Released March 2011.
Goulburn Storages	
Lake Eildon	Complete. Released 2012.
Goulburn Weir	Complete. Released 2012.
Waranga Basin	Complete. Released August 2011.
Greens Lake	Nearing completion – period for public comment has ended.
Campaspe Storages	
Lake Eppalock	Complete. Released late 2013.
Loddon Storages	
Cairn Curran Reservoir	Complete. Released late 2013.
Tullaroop Reservoir	Plan to be developed in 2015/16.
Laanecoorie Reservoir	Plan to be developed in 2014/15.
Bullarook Creek Storages	
Newlyn Reservoir	Development of Recreation Master Plan currently on hold.
Hepburns Lagoon	No plan to be developed - this storage is not used for recreation purposes.

4.3 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 liaison with DH 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 is provided to all GMW customers and is located on the GMW website.

4.4 Melbourne Water

The Sugarloaf 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, and is not likely to be used in the near future. 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 management of risks to water quality within the Goulburn catchment.

4.5 Other activities

GMW continues to be involved in various activities to manage risks to water quality. This includes ensuring that there are appropriate procedures, monitoring, communication and associated agreements in place with relevant stakeholders in the event of an environmental incident.

As an example, GMW worked with Goulburn Valley Water and Goulburn Broken Catchment Management Authority (GBCMA) to prioritise locations to target for promotion of fencing and revegetation incentives on private land upstream of town offtakes. A number of factors were used to come up with a priority score and the result is being used to guide GBCMA's river health program.

During 2013/14 there were no major emergencies, such as drought, fire or flood.

Appendix 1. Towns supplied where GMW is the water storage manager

Water Supplier Offtakes - GMW as Water Storage Manager	
Town Supplied	Supply Source
Central Highlands Water	
BALLARAT	Newlyn Reservoir
DAYLESFORD	Hepburns Reservoir (backup supply)
MARYBOROUGH	Tullaroop Reservoir
Coliban Water	
AXEDALE	Eppalock Reservoir
AXEDALE	Waranga Western Channel
BENDIGO	Lake Eppalock
BOORT	Pyramid-Boort Channel No.3
BRIDGEWATER	Loddon River (Bridgewater offtake)
COHUNA	Gunbower Creek (Cohuna offtake)
DINGEE	Pyramid Hill Channel No.1
ECHUCA	River Murray (Echuca offtake)
GOORNONG	Campaspe River (Goornong offtake)
GUNBOWER	Taylor's Creek
HEATHCOTE	Lake Eppalock
JARKLIN	Serpentine Creek (Jarklin offtake)
LAANECOORIE	Loddon River (Laanecoorie offtake)
LEITCHVILLE	Torrumbarry 5/1 Channel
LEITCHVILLE	Gunbower Creek (Leitchville offtake)
LOCKINGTON	Supply Channel off the Waranga Western Channel (No 24 Channel)
MACORNA	Pyramid Hill 10/1 Channel
MITIAMO	Mitiamo spur off the Pyramid Hill Channel No. 1
MYSIA	Waranga Western Channel - Mysia
PYRAMID HILL	Pyramid Hill Channel No. 1 (12/5/1)
ROCHESTER	Campaspe River (Rochester offtake)
ROCHESTER	Waranga Western Channel (Rochester offtake)
SERPENTINE	Serpentine Creek (Serpentine offtake)
Goulburn Valley Water	
ALEXANDRA	Goulburn River at Alexandra
AVENEL	Goulburn River at Seymour
BARMAH	River Murray (Barmah offtake)
BONNIE DOON	Lake Eildon
BROADFORD	Goulburn River at Tallarook
COBRAM	River Murray at Cobram
COLBINABBIN	Waranga Western Channel at Colbinabbin
CONGUPNA	Goulburn River at Shepparton
COROP	Waranga Western Channel (Corop offtake)
DOOKIE	East Goulburn Main Channel
EILDON	Goulburn River at Alexandra
GIRGARRE	Central Goulburn 7/12/9 Channel
GOULBURN WEIR (BAXTERS	Lake Nagambie (Baxters Rd offtake)

ROAD)	
KATAMATITE	Murray Valley 7/3 Channel
KATANDRA WEST	Shepparton 3/25 Channel
KIRWANS BRIDGE	Lake Nagambie (Kirwan's Bridge offtake)
KYABRAM	Central Goulburn 9 Channel
MERRIGUM	Central Goulburn 9 Channel
MOLESWORTH	Goulburn River (Molesworth offtake)
MOORoopNA	Goulburn River at Shepparton
MURCHISON	Goulburn River (Murchison offtake)
NAGAMBIE	Lake Nagambie (Nagambie offtake)
NATHALIA	Broken Creek
NUMURKAH	Murray Valley 6/6 Channel
PICOLA	Murray Valley 9/9/6 Channel
RUSHWORTH	Waranga Basin
SEYMOUR	Goulburn River at Seymour
SHEPPARTON	Goulburn River at Shepparton
STANHOPE	Central Goulburn 1/12/9 Channel
STRATHMERTON	River Murray at Cobram
TALLAROOK	Goulburn River at Seymour
TALLYGARoopNA	Goulburn River at Shepparton
TATURA	Central Goulburn 3/5A Channel
THORNTON	Goulburn River at Alexandra
TONGALA	Central Goulburn 19/28/9 Channel
TOOLAMBA	Goulburn River at Shepparton
WATERFORD PARK	Goulburn River at Tallarook
WUNGHNU	Murray Valley 6/6 Channel
Grampians Wimmera Mallee Water	
BERRIWILLOCK	River Murray - Nyah
CHILINGOLLAH	River Murray - Nyah
CHINKAPOOK	River Murray - Nyah
CULGOA	River Murray - Swan Hill (Pental Island)
LALBERT	River Murray - Swan Hill (Pental Island)
MANANGATANG	River Murray - Piangil
NANDALY	River Murray - Nyah
NULLAWIL	River Murray - Swan Hill (Pental Island)
NYAH	River Murray - Nyah
OUYEN	River Murray - Wemen
PATCHEWOLLOCK	River Murray - Wemen
QUAMBATOOK	Pyramid Boort 4/1 Channel (Normanville Pipeline)
SEA LAKE	River Murray - Swan Hill (Pental Island)
SPEED	River Murray - Wemen
TEMPY	River Murray - Wemen
ULTIMA	River Murray - Swan Hill (Pental Island)
UNDERBOOL	River Murray - Wemen
WAICHIE	River Murray - Nyah
WALPEUP	River Murray - Wemen
WEMEN	River Murray - Wemen

Lower Murray Water	
KERANG	Loddon River (Kerang offtake)
KERANG	Torrumbarry 14/2 Channel
KERANG	River Murray at Koondrook
KOONDRONK	River Murray at Koondrook
MILDURA	River Murray (Mildura offtake)
MILDURA WEST	River Murray (Mildura West offtake)
MURRABIT	Torrumbarry 2/11/4 Channel
MURRABIT	River Murray (Murrabit offtake)
PIANGIL	River Murray (Piangil town offtake)
RED CLIFFS	River Murray (Red Cliffs offtake)
ROBINVALE	River Murray (Robinvale offtake)
SWAN HILL	River Murray (Swan Hill offtake)
Melbourne Water	
MELBOURNE	Goulburn River (via Sugarloaf Pipeline at Killingworth)
North East Water	
BARNAWARTHA	Wodonga Creek (an anabranch of the Murray River)
BELLBRIDGE	Lake Hume
BONEGILLA	Wodonga Creek (an anabranch of the Murray)
BUNDALONG	Lake Mulwala Back Water
CHILTERN	Wodonga Creek (an anabranch of the Murray)
DARTMOUTH	Mitta Mitta River (Dartmouth offtake)
DEVENISH	Boosey Creek
EBDEN	Wodonga Creek (an anabranch of the Murray)
ESKDALE	Mitta Mitta River (Eskdale offtake)
GLENROWAN	Ovens River (confluence with King River)
KIEWA	Wodonga Creek (an anabranch of the Murray)
MOYHU	King River (Moyhu offtake)
OXLEY	King River (Oxley offtake)
RUTHERGLEN	River Murray at Wahgunyah
ST JAMES	Lake Mulwala
TALLANGATTA	Lake Hume / Mitta Mitta River
TANGAMBALANGA	Wodonga Creek (an anabranch of the Murray River)
TUNGAMAH	Lake Mulwala
WAHGUNYAH	River Murray at Wahgunyah
WANGARATTA	Ovens River (confluence with King River)
WHITFIELD	King River (Whitfield offtake)
WODONGA	Murray Lagoon
YARRAWONGA	Lake Mulwala

Appendix 2. Environmental incidents reported during 2013/14 related to water quality

Risk #	Date	Level	Incident Description	Location	Action undertaken (by GMW)
1182	18/07/13	1	Class C recycled water was discharged by Coliban Water (CW) into Snipes Creek, a tributary of Campaspe River near Kyneton, at a flow of approximately 0.5ML/day. (30A emergency discharge licence.)	Snipes Creek, a tributary of Campaspe River.	Contact CW to ascertain details, including when discharge will recommence. Diversions to notify GMW customers of discharge.
1191	31/07/13	1	Blocked sewerage main (CW) leading to approximately 1ML of untreated effluent discharging into Long Gully Creek.	Bendigo - Long Creek Gully (tributary of Bendigo Creek)	GMW was not notified of this spill until several days after it had occurred. CW and EPA managed response to spill without GMW assistance.
1199	6/08/13	2	Water & petroleum product mix surfacing from garden bed next to Goughs Bay Caravan Park shop following heavy rain.	Goughs Bay Caravan Park-Lake Eildon (GMW lessee operates Park)	Vantage Environmental Management (VEM) to assess site and recommend clean-up actions. GMW facilities decommissioned and removed fuel tanks from site. Unlikely to have reached lake.
1201	31/07/13	1	Sewerage spill by CW at Sandy Creek	Sandy Creek on the Castlemaine-Maldon Road	CW asked to initiate early notification in future. Customer database analysed to establish extent of exposure. EPA had been notified of incident.
1205	12/08/13	1	Sewerage spill by CW at Spring Gully Creek, Bendigo	Spring Gully Creek, Bendigo	Check the existence of GMW customers within the exposure area. Reinforce need for early notification of GMW.
1225	22/08/13	1	Semi-trailer ran off Hume Freeway into 15 Mile Creek, Wangaratta	15 Mile Creek, Hume Freeway, near Wangaratta	Notified North East Water (NEW). EPA advised that dilution of contaminants did not warrant notification of downstream users.
1234	23/08/13	3	Unspecified number of dead stock in Pyramid Creek.	Pyramid Creek between Milnes Bridge and Murrabit Rd Bridge (Kerang area).	Arrange removal and disposal of stock. The incident was downstream of Kerang offtake, therefore Lower Murray Water (LMW) were not notified.
1237	27/08/13	2	Effluent pumps had stopped working and effluent was flowing into the nearby school dormitory accommodation.	Waranga Basin Caravan Park, Waranga Basin	Spill reported to Council, EPA, DEPI and Goulburn Valley Water (GVW). Pumps restarted, clean up completed and consultation with caravan park management regarding operation and incident response in relation to pumps initiated.
1262	11/09/13	1	Advance warning of non-routine wastewater discharge at Heathcote by CW (30A emergency discharge).	Mclvor Creek as it passes under the Northern Highway at Heathcote.	Diversions were advised of discharge so customers could be notified.
1273	16/09/13	1	Discharge of treated wastewater by GVW from Mansfield WWTP into Ford Creek (30A emergency discharge).	Ford Creek, upstream of Lake Eildon.	Liaison with GVW regarding monitoring and media release to notify downstream water users. Potential impact to town offtake, GVW aware of risk.
1292	7/10/13	1	Advance notice of emergency discharge of treated wastewater from Kilmore WWTP	Kilmore Creek.	Downstream users notified. Requested that GVW undertake water quality monitoring upstream and

Risk #	Date	Level	Incident Description	Location	Action undertaken (by GMW)
			into Kilmore Creek by GVW.		downstream of release, provide results to GMW and prepare media release regarding planned discharge.
1296	16/10/13	2	High levels of BGA in Hepburns Lagoon.	Hepburns Lagoon (GMW storage).	Implement actions in accordance with Hepburn Lagoon BGA Management Plan. Notification to all external stakeholders and general public undertaken.
1302	21/10/13		Noticed oil leak nearby the newly installed Rubicon channel gates.	Hipwell Road, Gunbower.	Spill kit used to contain and soak up oil spilt. Contractor directed to initiate control and remediation measures in consultation with the GMW. No threat to town supply, LMW not notified.
1314	6/11/13	1	Dead cows floating in the river.	Mitta Mitta River "Pigs Point" camping ground.	EPA and North East Catchment Management Authority notified to arrange removal and clean-up.
1333	26/11/13	2	Prime Mover crashed into Indigo Creek at Barnarwartha. Suspected engine oil leak to be contained. Diesel tanks did not rupture.	Indigo Creek adjacent to Hume Freeway, Barnarwartha.	Western Truck Repairs undertaking clean-up of site. GMW ensuring adequacy of spill containment measures. EPA was aware of the incident and there was no risk to town water supply.
1364	19/12/13	2	A truck carrying a load of live pigs rolled over and became stuck in the Broken Creek channel.	Broken Creek Channel adjacent Midland Hwy.	GMW attended incident, no risk to town water supply.
1384	18/01/14	1	Approximately 500 dead Carp at Lake Leaghur.	Lake Leaghur (15km north of Boort township).	GMW contacted EPA and Parks Victoria to advise them of the incident. No towns are supplied with water from Lake Leaghur or nearby downstream.
1391	28/01/14	2	Illegal dumping of toxic waste and numerous items. Approx. 20 x 220L drums labelled TOXIC -Perchloroethylene where found along with several old truck tyres during a routine inspection after the long weekend. Several drums showed signs of leakage, unclear if any chemical reached the lake.	Upstream of Lake Buffalo, Buffalo River arm, approx. 10m metres from roadside.	EPA, Council, NEW notified. No town offtakes from Lake Buffalo. Site clean-up completed by VEM.
1403	5/02/14	2	High levels of blue-green algae at Laanecoorie Reservoir.	Laanecoorie Reservoir.	BGA response plan initiated, including installation of warning signage, initiation of water quality sampling program and media release. Due to risk to water supply, CW was notified.
1420	15/02/14	2	Heavy Rigid Vehicle entered GMW 2/14/2 Channel. Emergency Services Responded to Incident. G-MW provided support in isolating channel for Environmental purposes. Potential fuel leak.	2/14/2 Channel, Murray Valley Highway, Kerang.	2/14/2 isolated from potential contamination downstream (oil spills). Irrigators informed of incident & temporary disruption of supply. Assisted Emergency Services for salvaging vehicle. Channel flushed once vehicle was recovered & supply

Risk #	Date	Level	Incident Description	Location	Action undertaken (by GMW)
					reinstated. The incident was downstream of the town water supply.
1433	26/02/14	1	Approx. 100 dead carp in the Victorian Waters of Lake Hume. It has also been reported that the isolated pool within which the carp are contained is bright green and may contain high levels of algae.	Victorian waters of Lake Hume. Near corner of Murray Valley Highway and Bryants Gap Road.	All relevant stakeholders (including NEW) notified, reported to the EPA.
1456	23/02/14	2	Operational failure of NEW pump well resulting in sewerage entering Lake Hume.	Mitta Avenue pump station, Bellbridge, Lake Hume.	Risk to town water offtake, NEW were already aware of incident, therefore did not need to report.
1461	21/03/14	1	Effluent leak suspected to be from recently installed effluent transfer pipeline.	Waranga Basin Caravan Park Reserve, Waranga Basin.	Arranged for storage staff to undertake inspection and confirm leak. Arrange with plumber to excavate pipeline and repair. Incident reported to GVW due to risk to town water supply.
1476	3/04/14	1	Discharge of highly alkaline, unknown substance into Goulburn River, twice each day, 40,000 to 60,000 litres each time.	Goulburn River at Shepparton. Corner of Fryers and Marungi Streets, near City of Greater Shepparton Offices.	Advised EPA and City of Greater Shepparton. No further action was required. Incident location was downstream of GVW offtake.
-	1/5/14	-	Non-routine wastewater discharge at Walwa to Murray River by NEW.	Murray River at Walwa.	Potential impact to town offtake, NEW aware of risk.
1515	4/06/14	2	A temporary diesel pump discovered on the shoreline of the Derrinal Pool, adjacent to Victorian Speed Boat Club (Vye Inlet) at Lake Eppalock.	Derrinal Pool, Lake Eppalock.	Diversions staff to contact pump owner to ensure compliance: pump must be removed/bunded immediately. Not reported to CW as no immediate impact to water quality.
-	Various	1	10 incidents where single animals have been found in GMW managed water bodies.	Various (channel/waterway/storage)	All carcasses removed from waterway and buried in designated location. Weekly inspections. No further notification was required.