



Safe Drinking Water Act 2003

2007/2008 Annual Water Quality Report

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1 Introduction

This Report, to the Secretary of the Department of Human Services, has been prepared to satisfy the annual reporting requirements of the *Safe Drinking Water Act 2003* and demonstrate Goulburn-Murray Water's ongoing commitment to Safe Drinking Water through addressing threats to raw water quality. Appendix 1 details reporting requirements under the *Safe Drinking Water Act 2003* and *Safe Drinking Water Regulations 2005*.

Members of the public requiring further information regarding the Annual Report, G-MW's monitoring activities or incident management, can contact Francine Noble, Catchment Health Co-ordinator, during business hours on (03) 5833 5500 or by email francinen@g-mwater.com.au.

2 G-MW as a Water Storage Manager

Goulburn-Murray Water (G-MW) manages the bulk water delivery and transfer for around 70% of Victoria. G-MW operates 17 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, irrigation wheel or flume gate.

Water supplied by G-MW is not chlorinated or treated to improve its taste and odour and should never be considered to be fit for human consumption without being properly treated.

G-MW also provides bulk water in accordance with Bulk Water Entitlement Agreements to urban water authorities for treatment and supply to their customers in 86 towns scattered across northern Victoria and along the River Murray as far downstream as Merbein. The Bulk Water Entitlements deal with quantity of supply rather than quality. See Appendix 2 for a list of towns supplied. G-MW does not operate the reticulated supply systems within these towns. There are some settlements, eg Goulburn Weir and Kirwans Bridge, where residents may hold a water entitlement with G-MW.

G-MW recognises that water is supplied to Urban Water Authorities for treatment and distribution for drinking water purposes. The commitment to drinking water quality management is reflected in the corporate drinking water quality policy. This Policy requires G-MW to address threats to safe drinking water by the preparation and implementation, as resources allow, of Water Storage Manager Risk Management Plans.

The *Safe Drinking Water Act 2003* (Vic) (The Act) requires water storage managers such as G-MW to prepare, implement, review and revise risk management plans (RMPs) in relation to its supply of water to any water supplier (in the Victorian context these are Regional Urban Water Authorities).

For the purposes of the Act, a water storage manager supplies water to a water supplier if the water storage manager releases water to the water supplier; or permits the water supplier to take water from the water storage.

A water storage manager is also deemed to supply water to a water supplier 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 all G-MW storages is used to supply drinking water somewhere across northern Victoria and along the River Murray the spatial scope of such plans is enormous.

The Water Storage Manager Role

G-MW as a water storage manager supplies water in a number of different ways to regional water suppliers (Coliban Water, Central Highlands Water, North East Water, Goulburn Valley Water and Lower Murray Water).

Water can be supplied via the following:

- Directly from storages.
- From the outlet of storages (eg Bendigo supply from Lake Eppalock).
- Indirectly from rivers supplied by storages (eg Shepparton from Lake Eildon and the Broken system).
- From channel systems (eg Tatura and towns in the Central Goulburn Irrigation Area) that might receive water supplies directly from storages or on river weirs.

Water storage managers need to consider risk management in terms of risks associated:

- Within the catchment to the storage
- Within the storage
- With the supply of water downstream of storages using natural carriers such as rivers and creeks
- With the supply of water from channel systems to each drinking water off take point.

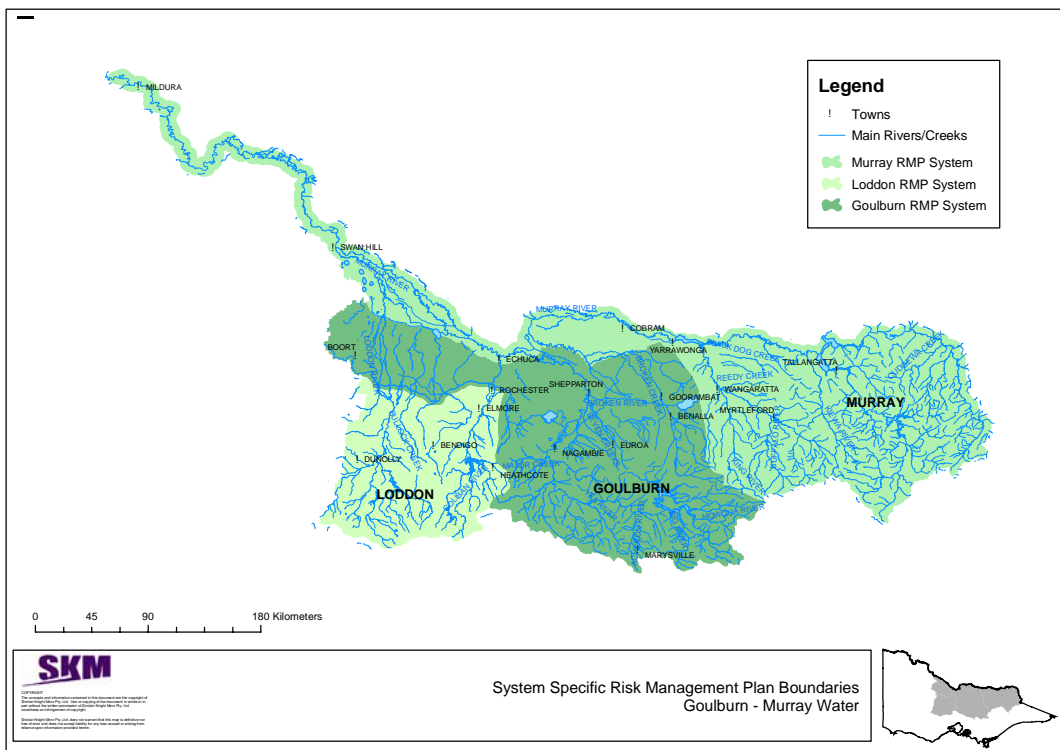
Safe Drinking Water Act Water Storage Manager Risk Management Plans (RMPs) have been prepared in accordance with the Act. Four plans have been prepared, namely:

- High Level Risk Management Plan – covering elements that are generic to all system specific plans.
- Three system specific plans for the Murray, Goulburn and Loddon systems, respectively (see Figure 1).

Copies of these risk management plans are available to the public on request to G-MW.

G-MW meets regularly with the urban water suppliers to discuss any issues arising from the above RMPs, including incident response, BGA blooms and water resource management.

Figure 1 System boundaries for Goulburn-Murray Water Risk Management Plans



3 Report components required by Regulation

3.1 Emergency, incidents or events

(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; and

G-MW has a procedure that outlines the process for managing environmental incidents. It aims to provide a clear framework for effective response to environmental incidents via the G-MW Environmental Incident Response Guide. Incidents can be classified into four categories based on the potential or actual environmental consequence of the incident and incident response considerations.

Within the 2007/2008 year, G-MW recorded 64 environmental incidents of which 56 were regarded as potentially affecting the quality of water supplied to regional water authorities or potentially posed a risk to human health. Details of these 56 incidents are listed in Appendix 4. None of these incidents were classed as emergencies. Each recorded incident was handled using G-MW's environmental incident procedure which includes formal processes for communicating about, responding to and reviewing the incidents.

Figure 2 shows the breakdown of the 56 incident types for water quality related incidents recorded in 2007/2008.

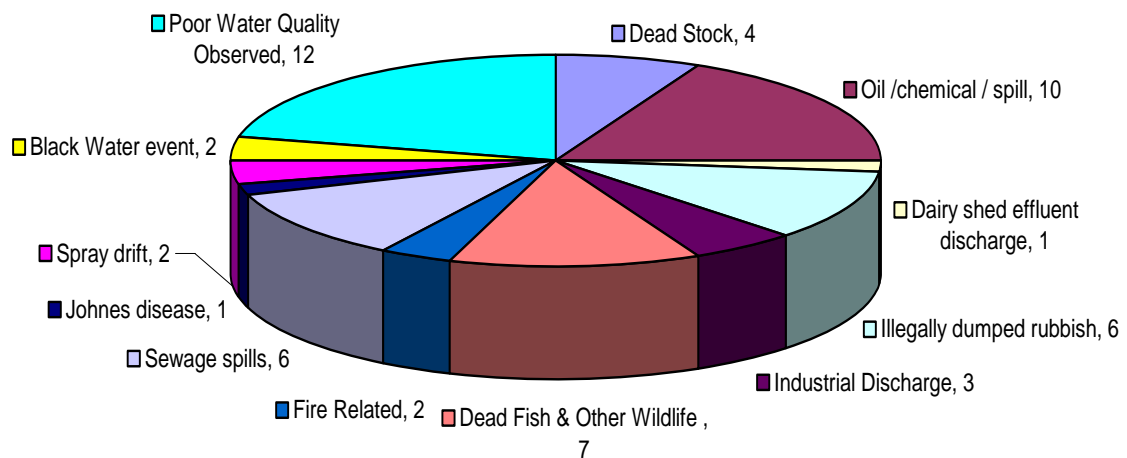


Figure 2: Types of environmental incidents (n=56) reported to G-MW in 2007/2008 that potentially affected the quality of water supplied to urban water authorities or posed a risk to human health

The most commonly reported incidents were oil/ chemical/ spills (n=10), and poor water quality observed (n=12) i.e. muddy, discoloured or foamy water where no causes were identified. The number of incidents relating to dead stock had reduced from 2006/07 (n=15 in 2006/07 to n=4 in 2007/08), whilst there appears to have been a slight increase in 2007/08 sewage spills (n=2 in 2006/07 to n=6 in 2007/08) and poor water quality being observed (n=9 in 2006/07 to n=12 in 2007/08). Of the 56 incidents, 49 of the incidents were caused by parties external to G-MW and the remaining seven by G-MW or its contractors.

3.2 Blue Green Algal (BGA) Blooms

Blue green algal blooms regularly occur across G-MW's region and have the potential to affect drinking water supplies. G-MW is the local water manager for BGA blooms occurring in its storages. G-MW is also Regional convenor for blooms that affect more than 1 local water manager. Blooms in the River Murray are managed by NSW authorities with input from G-MW.

G-MW has developed its algal response plans in line with the state wide protocols set out in the Blue-Green Algae Circular for 2007/08. Blue Green Algal Response Plans have been prepared for all G-MW managed water bodies and for river basins. These plans provide guidance on the management of any blooms that occur, including notification of relevant stakeholders.

A Blue Green Algal Bloom Status Report is regularly circulated to a broad range of stakeholders including Department of Human Services (DHS), Regional Water Authorities and Shires.

A summary of all blooms that occurred in 2007/08 is given in Appendix 3. Not all of these had the potential to impact on drinking water supplies. There were no major issues associated with management of these blooms.

In accordance with its 2007/2008 BGA response plans, G-MW advises DHS of blue green algae blooms that may potentially affect public health either via drinking water or recreation. DHS was notified of blooms likely to pose a risk to users under recreational guidelines for Tullaroop Reservoir and Lake Boga during 2007/08. It should be noted the blue green algae bloom in Lake Boga actually commenced during the 2006/07 year and ceased only when the lake dried out in April 2008. The relevant regional water authorities, namely Central Highlands Water and Lower Murray Water, were also advised of the blooms in Tullaroop Reservoir and Lake Boga respectively. G-MW liaises with urban water suppliers if there is a need to notify DHS under Section 22 of the Safe Drinking Water Act in relation to blue-green algae blooms. G-MW did not need to notify DHS under Section 22s during the 2007/08 year.

Further information regarding blue-green algae can be found on G-MW's website at www.g-mwater.com.au, along with information regarding the organizations responsibilities for blue green algae monitoring and reporting. Members of the public can access bloom information by calling G-MW's Blue Green Algae Hotline on (03) 5833 5785 or by contacting us directly during business hours on (03) 5833 5500 or by email reception@g-mwater.com.au.

3.3 Issues arising from emergencies, incidents or events

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

G-MW continues to work with the regional water authorities regarding their stakeholder and public notification protocols in the case of emergency discharges from wastewater treatment plants, which has been an issue in the past for G-MW.

3.4 Summary of exemptions and undertakings

(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; and*

G-MW has not required any exemptions under section 8 of the Act or entered into any undertakings with DHS under section 30 of Act during 2007/08.

3.5 Summary of processes to disinfect or treat water

(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

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

3.6 List of chemical or substances

(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

G-MW does not supply water for drinking purposes and does not disinfect, treat or process any water for this purpose.

It should be noted that G-MW sometimes applies herbicides to vegetation adjacent to channels used to supply urban water. G-MW notifies the relevant urban water authority, if this is to occur.

3.7 Risk Management Plan audit findings and issues raised

(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.

In March 2008 the Department of Human Services, under section 11 of the *Safe Drinking Water Act 2003*, required G-MW to have its risk management plan audited by an approved auditor. The audit covered the period from 1 January 2006 to 31 December 2007 and was carried out by Sheree Feaver of Parsons Brinckerhoff Australia Pty Ltd. The initial timeframe for completion of the audit was the 15 June 2008; however G-MW sought an extension from DHS until the 30 June due to a misunderstanding relating to when the final audit report was to be submitted to the authority. The extension was granted and the audit subsequently completed within this timeframe.

G-MW received six major non-compliances and one minor non-compliance through the audit findings. These findings can be summarized into four non-compliances, which are referred to in Table 2. A copy of the audit certificate is provided in Appendix 5.

G-MW has developed an improvement plan to address these audit findings as proposed in Table 2 and in conjunction with the Department of Human Services, entered into an undertaking in September 2008 to rectify non-compliances.

Table 2 Summary of Audit Findings

NUMBER	GRADING	COMPLIANCE OR REASONS FOR NON-COMPLIANCE	PROPOSED ACTIONS	TIMEFRAME
1	Major non-compliance.	<p>The G-MW risk management plans do not adequately manage the risks arising from pathogens, which were identified as a high and very high risk to the quality of the water supplied. G-MW does not monitor for pathogenic and indicator organisms, such as <i>E coli.</i>, <i>Cryptosporidium</i> and <i>Giardia</i>. G-MW could be reasonably expected to obtain assurances from the Urban Water Authorities that they are monitoring for these organisms, and include this as a prerequisite program to manage this risk. G-MW had not obtained information about the monitoring programs of the UWA's nor received or reviewed the UWA's water quality data during the audit period.</p>	<p>G-MW has entered into an undertaking with DHS, to implement a structured process to address the risk from pathogenic and indicator organisms present in the water supply by the 31 January 2009. This will involve working with drinking water suppliers to for which GMW is a water storage manager.</p> <p>G-MW will obtain information from drinking water suppliers demonstrating that they have:</p> <ul style="list-style-type: none"> a) Appropriate monitoring programs for pathogenic and indicator organisms (Cryptosporidium, Giardia and E.coli) using an appropriately qualified analytical laboratory. b) Appropriate protocol for handling any exceedances of recommended health guidelines, or protocol for notifications under Section 22 of the Act, including notification to G-MW. c) Treatment systems in place for the potential risks involved. <p>G-MW and drinking water suppliers will agree on a schedule of meetings covering:</p> <ul style="list-style-type: none"> - Long term trends in raw water quality (especially pathogenic and indicator organisms) - Investigation of any potential actions to address these trends. <p>All above actions will be documented in G-MW's risk management plans to demonstrate the risk of pathogenic and indicator organisms are being appropriately managed.</p>	31 January 2009

NUMBER	GRADING	COMPLIANCE OR REASONS FOR NON-COMPLIANCE	PROPOSED ACTIONS	TIMEFRAME
2	Major non-compliance.	The risk management plans do not identify the individuals responsible for managing the hazards and risks to water quality. They also do not include the names, contact details and positions held by the individuals responsible.	G-MW has three system specific RMPs across its region which were initially developed in July 2005, and have been regularly updated since then. The 2008/2009 RMP updates, has included the identification of individuals responsible, including names and contacts details, for managing the risks to water quality in the plans.	September 2008
3	Major non-compliance.	The reasons that the G-MW risk management plans were found to be non-compliant are: 1) they do not adequately manage the risks arising from pathogens, which were identified as a high and very high risk to the quality of the water supplied. 2) the control measures employed by the UWA's to verify the water quality for drinking were included as verification measures for G-MW, however it was evident that GMW had not obtained information about the UWA's monitoring programs or obtained water quality results from the UWA's.	Actions as for number 1. G-MW has entered into an undertaking with DHS to rectify this non compliance.	31 January 2009
4	Minor non-compliance.	The following areas of the risk management plans were not complied with during the audit period: 1) The <i>High Level Risk Management Plan (HLRMP)</i> states that a risk management plan training schedule should be developed, but no evidence was sighted that this had occurred. 2) The <i>HLRMP</i> states that the <i>Research and Development Register</i> should be reviewed annually, but there was no evidence of a review in the last two years. 3) The <i>HLRMP</i> states that internal audits shall be carried out to verify whether risk management activities comply with planned arrangements and to determine the plan's effectiveness. There was no	1) The audit findings have been discussed with Executive Managers of G-MW. In response, G-MW has developed a presentation about the RMPs and its obligations under the Safe Drinking Water Act 2003. The presentation is for G-MW senior management with more detailed information being presented to the various business groups across the organisation. Details of the presentations have been included in the RMPs. 2) As part of the process of updating the 2008/2009 RMP, the research and development registers were reviewed and updated. RMPs refer to relevant research being undertaken through G-MW's R&D Coordinating Committee, as well as detailing how the committee plans and coordinates research.	September 2008

NUMBER	GRADING	COMPLIANCE OR REASONS FOR NON-COMPLIANCE	PROPOSED ACTIONS	TIMEFRAME
		<p>evidence sighted of internal audits of risk management activities taking place.</p> <p>4) The <i>System Specific Risk Management Plans (SSRMP's)</i> state that the <i>EPA Registers</i> are required to be reviewed annually, but there was no evidence of the registers being reviewed in the last two years in some cases and three years for others.</p> <p>5) The <i>SSRMP's</i> state that the <i>Risk Registers</i> are also required to be reviewed annually, but it was evident that the <i>Risk Register</i> for Murray had not been reviewed since 2005.</p>	<p>3) An internal audit of the RMPs was completed in January 2008 (just outside the audit period. The next scheduled audit will be after 31 January 2009 once the undertaking has been completed. This has been noted in the RMPs.</p> <p>4) The EPA registers of licensed premises have been and will continue to be updated annually. In addition, G-MW meets annually with the EPA and other catchment partners to discuss regional incident response arrangements. These actions have been included in the RMPs.</p> <p>5) G-MW reviewed SSRMP's for Goulburn and Loddon systems prior to updating them (12 May 2006, 21 June 2007). G-MW will review all SSRMP's plans annually</p>	

4 Other relevant Information

4.1 Planning Referrals

G-MW assesses planning applications to meet a range of objectives, and most particularly to meet the requirements of the Safe Drinking Water Act to minimize risks and impacts to water quality within catchments. Planning controls were identified as a key risk management control during the risk management plan development process. Under Section 55 of the *Planning and Environment Act 1987*, G-MW is a statutory referral authority for developments within any declared Special Water Supply Catchments and the irrigation areas. For all other areas, G-MW is only notified of any development applications as an interested or affected party under Section 52 of the *Planning and Environment Act 1987*.

G-MW assesses a large number of development applications to ensure that potential impacts on water quality are addressed by proponents and in 2007/2008, over 1,112 applications were referred and assessed (Table 1). Substantial G-MW resources are applied to this function, and during 2007/08, G-MW was involved in various projects (internal and external) to refine processes and reduce the number of applications referred, while at the same time ensuring that relevant applications receive appropriate scrutiny. Planning referrals received by G-MW since the implementation of the Safe Drinking Water Act 2003 are detail in Table 1

A list of the declared Special Water Supply Catchments can be found in Schedule 5 of the *Catchment and Land Protection Act* and there are several of these catchments in each of the system specific risk management plans.

4.2 Multi Agency Response

G-MW has entered into waterway incident response agreements with its catchment partners in the Goulburn Broken and North East catchment regions. These agreements define the structures, roles and responsibilities for stakeholder agencies in relation waterway incident response, and provide agreed incident classification frameworks and communication protocols. There are also mechanisms for calling on response capability outside the catchment if a waterway incident exceeds the capacity of the partners to respond.

Whilst the Goulburn Broken and North East region agreements were finalised in June and September 2007 respectively, an agreement for North Central catchments is still in the process of being completed by stakeholder agencies. It is hoped that this will be finalised within the near future.

Table 1 Planning Referrals from Municipalities from 2004/05 to 2007/08

Municipality	2004/05	2005/06	2006/07	2007/08
Alpine Shire	46	23	105	85
Ballarat	2	10	13	11
Benalla	2	4	6	11
Bendigo	64	33	58	58
Campaspe	27	27	131	106
Central Goldfields	20	11	10	11
DSE (Alpine Resorts)	16	0	2	0
EPA Works Approval	0	1	3	1
Gannawarra	14	14	34	47
Hepburn	279	291	250	136
Indigo	43	30	18	8
Loddon	20	13	10	11
Macedon Ranges	142	95	87	101
Mansfield	38	18	30	46
Mildura	2	1	2	4
Mitchell	9	60	63	47
Moira	49	49	211	186
Moorabool	0	0	3	1
Mount Alexander	91	78	80	72
Murrundindi	60	34	49	52
Pyrenees	4	3	11	5
Shepparton	157	98	197	169
Strathbogie	46	64	42	62
Swan Hill	10	12	19	26
Towong	22	33	48	65
Wangaratta	1	4	4	3
Wodonga	16	9	8	10
Total	1,180	1,015	1,413	1,334

4.3 Advising Customers and Public about Non-potable Water Supplies

As all water supplied by G-MW is not suitable for human consumption, G-MW customers need to be aware of this. G-MW has developed a management strategy to address supply of non-potable water to its customers. In developing this strategy, G-MW has liaised with Grampians-Wimmera Mallee Water and Lower Murray Water. This strategy was implemented in 2007 following liaison with the Department of Human Services and is available to the public upon request.

All G-MW customers are advised through an Information Statement that the water supplied by G-MW is untreated and is not suitable for drinking or food preparation. This includes any G-MW customers that provide a water supply to residential schemes, syndicates or co-operatives.

The Information Statement is available on G-MW website (<http://www.g-mwater.com.au>) and addresses the following aspects of G-MW's water supply system:

- Sources of water
- Nature of the catchments.

-
- Untreated (or raw) water
 - Suitable uses
 - Temporal changes in water quality
 - Monitoring and data availability.
 - Catchment management
 - Incident response
 - *Safe Drinking Water Act* requirements re customer notifications

In the event of an incident affecting water quality, G-MW notifies downstream customers via letters as well as preparing media statements for the general public. In the past, this approach has been used with other incidents such as BGA blooms and sewage spills.

4.4 Mexican (Yellow) Water Lily Infestation at Lake Nagambie

The occurrence and subsequent infestation of Lake Nagambie in the early 1990's by Mexican (Yellow) Water Lily (*Nymphaea mexicana*) is believed to have negatively impacted on the lakes water quality, ecosystem, and aesthetic values for recreational users.

In an effort to control further expansion of the weed, a steering committee of agency stakeholders and community members was established in early 2007 to oversee the assessment and development of control options, particularly harvesting and the use of herbicides. In view of the potential implication of management options for water quality, both Goulburn Valley Water and the Department of Human Services are on the steering committee. In late December 2007, the committee reviewed the outcome of control option pilot trials. A steering committee meeting scheduled in the near future will identify a way forward for a treatment program.

Appendix 1 **Safe Drinking Water Act 2003 Requirements**

4.5 The Act

Section 26 of the *Safe Drinking Water Act 2003* states:

- (1) A water supplier or water storage manager must give the Secretary a report, in respect of each financial year, on the issues relating to the quality of drinking water and regulated water that are specified by the regulations for the purposes of this section.*
- (2) A water supplier or water storage manager must include in the report any other details that are required by the regulations or by the Secretary under sub-section (3).*
- (3) The Secretary may, by written notice published in the Government Gazette, require water suppliers or water storage managers to include specified details in any report required by this section.*
- (4) The water supplier or water storage manager must give the report to the Secretary no later than 31 October.*
- (5) The water supplier or water storage manager must ensure that copies of the report are made available to the public on or after the day the report is given to the Secretary.*

4.6 Safe Drinking Water Regulations

The *Safe Drinking Water Regulations 2005* Sec 15(2) set out further requirements:

- 15. Additional details to be included in annual reports of water suppliers or water storage managers*
- (2) For the purposes of section 26(1) and (2) of the Act, the required contents of the annual report of a water storage manager are—*
 - (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; and*
 - (b) any issues that may have arisen out of the taking of the actions referred to in paragraph (a); and*
 - (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; and*
 - (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*

(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

(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.

Appendix 2

Towns supplied from G-MW storages

Towns supplied from G-MW managed storages – Murray system

Town	Storage / source	Urban Water Authority
Barmah	River Murray	Goulburn Valley Water
Bellbridge	Lake Hume River Murray	North East Water
Bundalong	Ovens River Lake Mulwala Back Water	North East Water
Cobram	River Murray	Goulburn Valley Water
Cohuna	Gunbower Creek	Coliban Water
Dartmouth	Mitta River	North East Water
Echuca	River Murray	Coliban Water
Gunbower	Taylors Creek	Coliban Water
Katamatite	MV 7/3 Channel	Goulburn Valley Water
Kerang	River Murray Loddon River TO 14/2 Channel	Lower Murray Water
Leitchville	TO 5/1 Channel Gunbower Creek	Coliban Water
Mildura (7 th St WTP)	River Murray	Lower Murray Water
Mildura West	River Murray	Lower Murray Water
Moyhu	King River	North East Water
Murrabit	TO 2/11/4 Channel	Lower Murray Water
Nathalia	Broken Creek	Goulburn Valley Water
Numurkah	Broken Creek	Goulburn Valley Water
Oxley	King River	North East Water
Piangil	River Murray	Lower Murray Water
Picola	MV 9/9/6 Channel	Goulburn Valley Water
Red Cliffs	River Murray	Lower Murray Water
Robinvale	River Murray	Lower Murray Water
Rutherglen	River Murray	North East Water
Swan Hill	River Murray	Lower Murray Water
Tallangatta	Lake Hume Mitta Mitta River	North East Water
Wahgunyah	River Murray	North East Water
Wangaratta	Ovens River King River	North East Water
Wodonga	River Murray	North East Water
Wunghnu	Broken Creek via pipeline from Numurkah	Goulburn Valley Water
Yarrowonga	Lake Mulwala River Murray	North East Water

Towns supplied from G-MW managed storages – Goulburn system

Town	Storage / source	Urban Water Authority
Alexandra	Goulburn River	Goulburn Valley Water
Avenel	Goulburn River	Goulburn Valley Water
Bonnie Doon	Lake Eildon, Brankeet Arm	Goulburn Valley Water
Boort	Channel	Coliban Water
Colbinabbin	Waranga Western Channel	Goulburn Valley Water
Congupna	Goulburn River	Goulburn Valley Water
Corop	Waranga Western Channel	Goulburn Valley Water
Devenish	Boosey Creek	North East Water
Dingee	Pyramid No 1 Channel	Coliban Water
Dookie	East Goulburn Main Channel	Goulburn Valley Water
Eildon	Lake Eildon	Goulburn Valley Water
Girgarre	CG 7/12/9 Channel	Goulburn Valley Water
Goorambat	Bore	North East Water
Goulburn Weir (#)	Lake Nagambie	Goulburn Valley Water
Jarklin	Serpentine Creek	Coliban Water
Katandra West	Shep 3/25 Channel	Goulburn Valley Water
Kirwans Bridge (#)	Lake Nagambie	Goulburn Valley Water
Kyabram	CG 23/9 Channel	Goulburn Valley Water
Lockington	Campaspe No 24 Channel	Coliban Water
Macorna	Channel	Coliban Water
Merrigum	CG 23/9 Channel via pipeline from Kyabram	Goulburn Valley Water
Mitiamo	Channel	Coliban Water
Molesworth	Goulburn River	Goulburn Valley Water
Mooroopna	Goulburn River via pipeline from Shepparton	Goulburn Valley Water
Murchison	Goulburn River	Goulburn Valley Water
Mysia	Waranga Western Channel	Coliban Water
Nagambie	Lake Nagambie	Goulburn Valley Water
Nathalia	Broken Creek	Goulburn Valley Water
Pyramid Hill	Channel	Coliban Water
Rochester	Waranga Western Campaspe No. 2 Channel Campaspe	Coliban Water
Rushworth	Lake Waranga	Goulburn Valley Water
Seymour	Goulburn River	Goulburn Valley Water
Shepparton	Goulburn River	Goulburn Valley Water
St James	Boosey Creek	North East Water
Stanhope	CG 1/12/9 Channel	Goulburn Valley Water
Tallarook	Goulburn River via pipeline from Seymour	Goulburn Valley Water
Tallygaroopna	Goulburn River via pipeline from Shepparton	Goulburn Valley Water
Tatura	CG 3/5A Channel	Goulburn Valley Water
Tongala	CG 19/28/9 Channel	Goulburn Valley Water

Town	Storage / source	Urban Water Authority
Toolamba	Goulburn River via pipeline from Shepparton	Goulburn Valley Water
Tungamah	Boosey Creek	North East Water

part of settlement supplied by G-MW directly with water not suitable for human consumption.

Towns supplied from G-MW managed storages – Loddon system

Town	Storage / source	Urban Water Authority
Axedale	Campaspe River	Coliban Water
Bendigo	Lake Eppalock	Coliban Water
Bridgewater	Loddon River	Coliban Water
Daylesford	Hepburn Reservoir	Central Highlands Water
Goornong	Campaspe River	Coliban Water
Heathcote	Lake Eppalock	Coliban Water
Jarklin	Serpentine Creek	Coliban Water
Laanecoorie	Loddon River	Coliban Water
Maryborough	Tullaroop Reservoir	Central Highlands Water
Raywood	Lake Eppalock	Coliban Water
Rochester	Campaspe River	Coliban Water
	Campaspe No 2 Channel	
	Waranga Western Channel	
Sebastian	Lake Eppalock	Coliban Water
Serpentine	Serpentine Creek	Coliban Water

Appendix 3 Summary of Blue Green Algal Blooms during 2007/08

Basin/System	Storage or Waterway	Location	Bloom Start Date	Bloom End Date	Duration (days)	Maximum Alert Level	Comment
Broken	Lake Mokoan		-	-		2	
Broken	Lake Nillahcootie		-	-		-	
Goulburn	Lake Eildon		-	-		1	
Goulburn	Greens Lake		-	-		1	
Goulburn	Lake Nagambie		-	-		2	
Goulburn	Waranga Basin		-	-		1	
Ovens	Lake William Hovell		-	-		2	
Ovens	Lake Buffalo		-	-		1	
Campaspe	Lake Eppalock		-	-		2	
Loddon	Cairn Curran Reservoir		-	-		1	
Loddon	Laanecoorie Reservoir		-	-		2	
Loddon	Tullaroop Reservoir		24/Jan/2008	10/Apr/2008	77	3	
Loddon	Newlyn Reservoir		-	-		2	
Upper Murray and Kiewa	Lake Dartmouth		-	-		1	
Upper Murray and Kiewa	Yarrowonga Weir		-	-		2	
Upper Murray and Kiewa	Lake Moodemere		-	-		2	
Upper Murray and Kiewa	Torgannah Lagoon		-	-		2	
Torrumbarry Irrigation Area	Kerang Lakes	Reedy Lake	-	-		2	
Torrumbarry Irrigation Area	Kerang Lakes	Third Lake	-	-		2	
Torrumbarry Irrigation Area	Kow Swamp System		-	-		2	
Torrumbarry Irrigation Area	Gunbower Creek System		-	-		2	
Torrumbarry Irrigation Area	Lake Boga		1/July/2007	7/Jan/2008	190	3	Carry over from 2006/07 until lake dried on 7/1/2008
Torrumbarry Irrigation Area	Loddon River	Kerang Weir	-	-		2	
Torrumbarry Irrigation Area	Macorna Main Channel		-	-		1	
Lower Murray River	Torrumbarry Weir		-	-		1	
Lower Murray River	Mildura Weir		-	-		2	
Lower Murray River	Lake Hawthorn		-	-		1	

Notes:

* Blooms are defined as any blue-green algal outbreak that is at alert level 3.

Waterbodies from which urban water authorities take their water supply.

Appendix 4 Environmental incidents related to the quality of water supplied for drinking purposes

Incident #	Incident Date	Incident Title & Location	Urgency Level	Impact location
1	10-Jul-07	Spill/Slick in the Ovens River at Wangaratta	Level 1	Unregulated waterway
2	12-Jul-07	Emergency discharge of treated effluent from Creswick wastewater treatment plant into Creswick Creek	Level 2	Regulated waterway
3	13-Jul-07	Disposal of Horse manure into Broken River at Benalla	Level 2	Unregulated waterway
4	13-Jul-07	Lake Mokoan complaint regarding aerial weed control/overspray, Benalla	Level 2	Landholder Property
5	16-Jul-07	Chlorine drums and rubbish dumped in Campbells Creek, Yea	Level 2	Unregulated waterway
6	20-Jul-07	Effluent/discharge release into the No 3 Lagoon, Gunbower Creek, Gunbower	Level 2	Regulated waterway
7	30-Jul-07	Potential for Johnes' disease outbreak Murray Valley 7/13 Channel, Murray Valley	Level 2	Channel
8	30-Jul-07	Possible Oil Slick on Lake Eildon linked to bushfires	Level 1	Reservoir
9	02-Aug-07	20T Excavator (Case 210) Hydraulic Hose Rupture Cairn Curran dam	Level 1	Reservoir
10	16-Aug-07	Engine Oil and Diesel Spill (<5L) in the Rochester No. 9 channel, Rochester	Level 1	Channel
11	29-Aug-07	Abandoned Vehicle in Rochester 2/20 Channel, Rochester	Level 1	GMW managed asset/ owned land
12	27-Aug-07	Rubbish dumping into Buffalo River at Merriang South	Level 1	Regulated waterway
13	28-Aug-07	Hydraulic Oil Spill (10L) into the Central Goulburn Channel No. 4	Level 1	Channel
14	23-Aug-07	Waranga Bendigo Pipeline - discharge during testing into Campaspe River at Axedale	Level 1	Regulated waterway
15	10-Sep-07	Possible Blue Green Algae in Crightons Creek, Ruffy	Level 1	Customer property
16	10-Sep-07	Azolla in the Murray River near Wharparilla	Level 1	Regulated waterway
17	16-Sep-07	Oil Slick in the Campaspe River at Elmore	Level 1	Regulated waterway
18	27-Sep-07	Dead calves on drain reserve adjacent Harpers Loop Drain, Shepparton	Level 1	Regulated waterway
19	05-Oct-07	Sewage spill from Tongala waste water treatment plant into farm drain leading to GMW Mosquito Drain 8	Level 2	Drain
20	16-Oct-07	Bank Clearing works along Goulburn River at Tahbilk Winery near Goulburn Weir	Level 1	Regulated waterway
21	23-Oct-07	Possible sewage pipe leak entering Drain 3 - Wanganui Rd Shepparton	Level 1	Drain
22	23-Oct-07	Fish death in Murray Valley Channel 20/5 Outfall to drain, Picola	Level 1	Channel
23	05-Nov-07	Removal of Dead Cow from No 7 Channel at Lake Charm	Level 1	Channel
24	19-Nov-07	Black sludge at Mokoan Boat Ramp Benalla	Level 1	Reservoir
25	22-Nov-07	Complaint regarding Spray drift from neighbouring property on the Central Goulburn 1/3/14/4 Channel Mooropna	Level 1	Channel

Incident #	Incident Date	Incident Title & Location	Urgency Level	Impact location
26	22-Nov-07	Water quality (Black water) East Goulburn 32 Channel, Invergordon	Level 1	Channel
27	27-Nov-07	Persons ill after swimming in lake Mulwala- concerned about possible blue green algae in lake	Level 1	Reservoir
28	28-Nov-07	Dead animal and smelly water in Sunday Creek at Seymour	Level 1	Unregulated waterway
29	03-Dec-07	Sinking Boat & Fuel Spill in Lake Nagambie at Nagambie	Level 1	Reservoir
30	05-Dec-07	Swan Hill, buried stock on old Woorinen channel reserve possibly GMW land	Level 1	G-MW managed asset/owned land
31	17-Dec-07	Dead Carp in Richardsons Lagoon Torrumbarry	Level 1	Other location
32	22-Dec-07	Discharge from broken sewer pipe entering Bendigo Creek, White Hills Bendigo.	Level 1	Regulated Waterway
33	24-Dec-2007	Low Dissolved Oxygen Level at Goulburn Weir	Level 1	Reservoir
34	27-Dec-07	Oil spill from vehicle in GMW channel at Bangerang Road, Echuca East	Level 1	Channel
35	30-Dec-07	Black water event and fish deaths in the Campaspe River	Level 1	Regulated waterway
36	03-Jan-08	Water quality issues in the Buffalo River downstream of Lake Buffalo	Level 1	Regulated waterway
37	09-Jan-08	Rubbish being dumped into Gunbower Creek, Gunbower	Level 1	Regulated waterway
38	16-Jan-08	Lightening strike leading to small fire on New Deakin Main Drain, Deakin Drain 1, and Murray Valley Highway Echuca East.	Level 2	Channel
39	17-Jan-08	Lake Eildon - Jerusalem Creek Sanitation barge, effluent	Level 1	Reservoir
40	18-Jan-08	SPC rising main burst - flow to Goulburn River at Shepparton	Level 1	Regulated
41	25-Jan-08	Dead fish and platypus in the Mitta River, upstream of Dartmouth dam	Level 1	Unregulated waterway
42	04-Feb-08	Orange water in Kiewa River at Bandiana	Level 1	Regulated Waterway
43	21-Feb-08	Unscheduled release of water from Eildon Pondage gates resulting in rapid river rise downstream of Lake Eildon	Level 1	Reservoir
44	28-Feb-08	Tobins Creek possibly contaminated at Avenel Rd, near Seymour	Level 1	Unregulated waterway
45	19-Mar-08	Fish Death at Laanecoorie Reservoir	Level 1	Reservoir
46	24-Mar-08	House boat fire on Lake Eildon	Level 1	Reservoir
47	26-Mar-08	Overtuned ski boat in the Goulburn River, Nagambie	Level 1	Regulated
48	07-Apr-08	Dead Carp in Lake Mokoan at Benalla	Level 1	Reservoir
49	04-Apr-08	White Film on Campaspe River at Rochester near town flood gauge	Level 1	Regulated waterway
50	17-Apr-08	Sewage Spill in the Campaspe River at Echuca	Level 1	Regulated waterway
51	17-Apr-08	Stock and domestic water quality complaint re suitability for drinking, Cherry Tree Creek, Kergunyah	Level 1	Regulated waterway
52	21-Apr-08	Gypsum spill from rolled truck in 3/4P Community Surface Drain at Toolamba	Level 1	Drain
53	5-May-08	Murray Valley 3/1 Spur Channel- Water Sample	Level 1	Channel
54	24-Apr-08	Dead dog and Kangaroo in Cattahnach Canal, Murchison	Level 1	Channel

Incident #	Incident Date	Incident Title & Location	Urgency Level	Impact location
55	28-May-08	Dead Fish (carp) - Future Flow dewatering of Central Goulburn Channel 2, Murchison	Level 1	Channel
56	25-Jun-08	Dead cattle in Pyramid Creek, Cohuna	Level 1	Regulated waterway

Appendix 5 Audit Certificate



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ABN 80 078 004 798
NCSI Certified Quality System ISO 9001

Schedule 1

Regulation 8

Safe Drinking Water Regulations 2005

RISK MANAGEMENT PLAN AUDIT CERTIFICATE

Certificate Number: 08

Audit period: 1 January 2006 to 31 December 2007

To: Anne Graesser
Manager, Catchment Programs
Goulburn-Murray Rural Water Corporation
PO Box 165
Tatura, Vic, 3616

Australian Business Number (ABN): 46 761 336 846

I, Sheree Feaver, after conducting a risk management plan audit of the water supplied by Goulburn-Murray Water, am of the opinion that—

Goulburn-Murray Water has not complied with the obligations 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—

Please refer to the following sections for 1) Reasons of Non-compliance, and for 2) Summary of Corrective Actions.

Signature of approved auditor:

A handwritten signature in black ink, appearing to read 'S. Feaver'.

Date: 30 June 2008

Sheree Feaver

Parsons Brinckerhoff Australia Pty Limited
Tel: (03) 9861 2383
Email: sfeaver@pb.com.au

1. Reasons for non-compliance

Refer Table 2

2. Summary of corrective actions for non-compliances

This section outlines the general corrective actions that should be included in a strategy to rectify the above non-compliances. The corrective actions have not been assigned to individual auditable elements, because they may apply to several auditable elements.

Management of risks from pathogens being present in the water supplied (major non-compliance):

- ▶ In addition to continuing to develop and implement its storage management preventive activities, it is recommended that Goulburn-Murray Water obtain assurances from the Urban Water Authorities that they are monitoring for pathogenic and indicator organisms identified to be a risk in the supply systems, including *E. coli*, *cryptosporidium* and *giardia*.
- ▶ Goulburn-Murray Water should assure itself that the Urban Water Authorities have an appropriate protocol in place for handling exceedances of recommended health guideline values for pathogens and indicator organisms, and that they will be notified if an exceedance occurs.
- ▶ Goulburn-Murray Water should obtain the water quality results from the Urban Water Authorities to reaffirm its assurances, as required, and to assess annual and longer term trends in water quality. This may assist in assessing the effectiveness of its preventive measures.

Verification of drinking water by Urban Water Authorities (major non-compliance):

- ▶ It is recommended that the risk management plans include full information of the parameters measured by the UWA's, particularly those that are not monitored by Goulburn-Murray Water and that are known to be a risk to human health.
- ▶ The protocol by which Goulburn-Murray Water verifies these data should also be documented.

Names, contact details and positions held by persons responsible for managing identified hazards and risks to water quality (major non-compliance):

- ▶ Include the names, contact details and positions held by the individuals responsible for managing the identified hazards and risks to water quality, in the risk management plans. For example, these people may be individuals who are responsible for different aspects of risk management, such as BGA monitoring, storage management activities, verification of prerequisite programs, handling incidents, communications with the public, etc. They may be different for each individual supply system or the same.

Compliance with requirements of the risk management plan (minor non-compliances):

- ▶ Develop and implement a risk management plan training schedule.
- ▶ Review the *Research and Development Register* annually.
- ▶ In 6 months time conduct an internal audit to determine if the external audit recommendations have been implemented effectively, to verify whether risk management activities comply with planned arrangements, and to determine the plan's effectiveness.
- ▶ Review the *EPA Registers* annually.
- ▶ Review the Murray Risk Register.

Glossary of Terms

This section defines the terms used throughout the document.

Term/Acronym	Description
BGA	Blue Green Algae
DHS	Department of Human Services
E. coli	Escherichia coli
HLRMP's	High Level Risk Management Plans
SSRMP'S	System Specific Risk Management Plans
UWA	Urban Water Authority