



Safe Drinking Water Act 2003

2010/2011 Annual Water Quality Report

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1 Introduction

This 2010/2011 Annual Report to the Secretary to the Department of Health (the Department), has been prepared to satisfy the annual reporting requirements of the *Safe Drinking Water Act (SDWA) 2003* and demonstrate Goulburn-Murray Water's ongoing commitment to safe drinking water by addressing threats to raw water quality. Appendix 1 details reporting requirements under the *Safe Drinking Water Act 2003* and *Safe Drinking Water Regulations 2005*.

The report is set out as follows:

- Section 2 Roles and responsibilities of Goulburn-Murray Water (G-MW) under the Safe Drinking Water Act 2003.
- Section 3 G-MW reporting against regulatory requirements.
- Section 4 Details additional activities that are undertaken by G-MW that benefit water quality in the catchment.

Members of the public requiring further information regarding the above matters can contact Anne Graesser, Manager Natural Resource Services, during business hours on (03) 5833 5500 or by email anneg@g-mwater.com.au. Water quality data collected by G-MW is available to the public via the Victorian Water Resources data warehouse site – www.vicwaterdata.net.

2 Goulburn-Murray Water

Goulburn-Murray Water (G-MW) manages the bulk water delivery and transfer for around 30% of Victoria, or approximately 68,000 square km. G-MW 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.

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

G-MW provides bulk water in accordance with Bulk Water Entitlement Agreements to urban water corporations for treatment and supply to their customers in 86 towns across northern Victoria and along the River Murray as far downstream as Merbein (See Appendix 2 for a list of towns supplied). The Bulk Water Entitlements deal with quantity of supply rather than quality. 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 but this use is not for human consumption.

G-MW recognises that water is supplied to regional 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 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* (SDWA) 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 party who treats water for human consumption. Water corporations and other parties who treat water for human consumption are known as water suppliers under the SDWA.

For the purposes of the Act, 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 of G-MW storages is used to supply drinking water across northern and western Victoria and along the River Murray, the spatial scope of the RMPs is enormous.

2.1 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, Grampians Wimmera Mallee 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 on Goulburn River).
- 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, and
- With the supply of water from channel systems to each drinking water off take point.

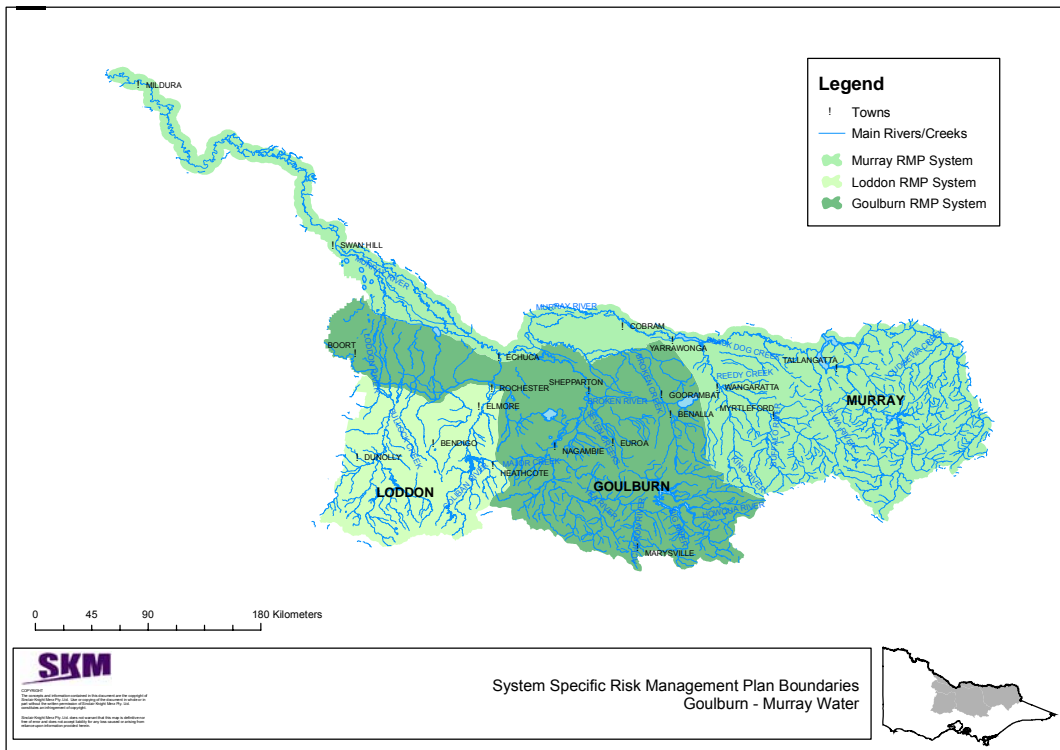
Safe Drinking Water Act Water Storage Manager Risk Management Plans (RMPs) have been prepared in accordance with the Act. Four plans have been prepared, namely:

- 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 upon 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

In order to understand incident information below, it should be noted that the catchments in northern Victorian where water may be 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 may include agriculture, aquaculture, forestry, industry, regional urban centres, townships, major transport infrastructure and recreation.

Within the 2010/2011 year, G-MW recorded 46 incidents that were regarded as potentially having the ability to affect the quality of water supplied to regional water corporation or potentially posed a risk to human health. None of these incidents were classed as emergencies. Each incident was handled using G-MW'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 3.

3.2 Blue Green Algal (BGA) Blooms

High levels of BGA regularly occur across G-MW's region and have the potential to affect drinking water supplies. G-MW is the Local Water Manager (LWM) for BGA occurring in its storages, channels and drains; and the Regional Coordinator (RC) for widespread BGA that involves multiple interconnected waterbodies. BGA in the River Murray is managed by NSW authorities with input from G-MW.

G-MW has developed its BGA Response Plans in accordance with the state wide protocols set out in the Department of Sustainability and Environment's Blue-Green Algae Circular for 2010-11. BGA Response Plans have been prepared for all G-MW managed water bodies and river basins using an alert level framework to assist staff and stakeholders in recognising the significance of BGA levels (refer Table 1). These plans provide guidance on the management BGA, including notification of relevant stakeholders.

A BGA Status Report is regularly circulated to a broad range of stakeholders including the Department of Health, regional water suppliers, Catchment Management Authorities and Shires.

Table 1: G-MW Blue Green Algae Alert Level Framework

| | All species | Toxic species |
|-------------------------------|--------------------------------|--------------------------------|
| 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 |

In accordance with the 2010/11 BGA response plans, G-MW advised the Department and any relevant regional water supplier of any BGA levels that may potentially affect public health via drinking water or recreational contact. BGA levels in 2010/11 of Medium and High significance are detailed in Appendix 4 and are summarised below.

Warnings in Lakes Eildon and Eppalock

In January 2011 high levels of BGA were detected in Lakes Eildon and Eppalock. Increased storage volumes and the subsequent deep water releases resulted in the BGA being isolated to the lakes and not transferred downstream into the Goulburn and Campaspe Rivers.

G-MW staff conducted increased monitoring, erected warning signs at major recreational areas, sent letters to affected customers, informed the public by regular media releases, and updated phone and website information services. G-MW also created a series of fact sheets on BGA to better inform the public of the risks and to enable people make informed decisions.

By the end of May the BGA warning was lifted for Lake Eppalock. Levels did not decline significantly in Lake Eildon until the end of June. Lake Eildon does not have a history of high levels of BGA and the long duration of the warning was unprecedented for the Goulburn catchment.

There was a high level of cooperation between all agencies involved at the operational level. An internal debrief was held in July 2011.

Other Warnings during 2010/11

There were also BGA warnings in Little Lake Charm, Kangaroo Lake, Kow Swamp, the Torrumbarry Irrigation Area (Excluding the Gunbower Creek System), the Loddon River and Torgannah Lagoon throughout 2010/11. Overall the number of warnings for BGA have remained the same when compared to the last BGA season.

Interestingly the Loddon catchment, which has a long history of blue-green algae warnings in storages, did not experience high BGA levels this year. Furthermore, the River Murray downstream of Lake Hume which has had significant BGA issues for the past 2 years did not experience high BGA levels either.

G-MW did not need to notify the Department under Section 22 during the 2010/11 year.

Further information regarding BGA can be found on G-MW's website at www.g-mwater.com.au, along with information regarding G-MW's responsibilities for BGA monitoring and reporting. Members of the public can access bloom information by calling G-MW's BGA Hotline on (03) 5833 5785 or by contacting G-MW directly during business hours on (03) 5833 5500 or 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 suppliers regarding their stakeholder and public notification protocols in the case of emergency discharges from wastewater treatment plants, which has been an issue for G-MW.

During the 2010/11 period, G-MW was advised that two regional water businesses were granted emergency discharge licenses under Section 30A of the Environment Protection Act 1970 to discharge treated wastewater into waterways. Because of the wet summer conditions, some of the regional water businesses were unable to dispose of their treated wastewater through irrigation of land and eventually filled their onsite wastewater storage lagoons full to capacity. EPA required that the regional water businesses had to undertake water quality and quantity monitoring and that all downstream water users were notified of the situation. In some cases, monitoring results were also provided to 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*

During 2010/11 G-MW did not required 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

(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.

Please note the following:

- G-MW sometimes applies herbicides to vegetation adjacent to channels used to supply urban water and that G-MW notifies the relevant drinking water supplier before this occurs.
- G-MW only uses pesticides that are suitable for use adjacent to waterways and in a manner consistent with current best management practices.

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.

A regulatory audit was not carried out during this reporting period.

4 Other Relevant Activities/Information

4.1 G-MW's Statement of Obligations

The Minister for Water has issued Goulburn Murray Water with a Statement of Obligations under the Water Industry Act 1994. G-MW undertakes various activities in order to meet these obligations, which can also benefit catchment water quality, namely:

- Responding to drought
- Research and development
- Regional and local government planning

These are briefly detailed below.

4.1.1 Responding to Drought

During the dry conditions, G-MW has liaised with Department of Sustainability and Environment (DSE), Catchment Management Authorities and regional water suppliers to share the limited water resources while minimizing adverse effects on the environment, town water supplies and rural water users. This work was focused predominantly on the Loddon, Campaspe and Broken River catchments.

Additional water quality monitoring programs and coordination groups were established to ensure that information is shared with relevant parties, including regional water suppliers like Coliban Water, Central Highlands Water, Goulburn Valley Water and North East Water. In some areas, notably the Goulburn and Campaspe systems, the monitoring programs have been expanded to include the effects of bushfire in the catchments.

During high rainfall periods, the monitoring results were regularly circulated to ensure that regional water suppliers were aware of the quality of raw water coming downstream from these areas.

Throughout the later part of 2010 and early 2011, significant rainfall fell across Victoria bringing to an end approximately 10 years of drought and the need for drought-related water quality monitoring programs. Associated coordination groups have likewise disbanded, however lasting relationships have been forged with member agencies and water quality information continues to be exchanged although through more informal processes.

4.1.2 Research and Development

During 2009/10, G-MW continued several research programs developing effective monitoring tools for heavy metals, pesticides and herbicides. These monitoring tools will enable G-MW to improve its understanding of the quality of water that we are delivering to our customers, and as a result, update the risk management plans associated with these water quality parameters. Some of these programs are being undertaken in conjunction with CSIRO, universities, state government agencies, catchment management authorities and other water businesses. The field component of these programs was completed during 2009/10 year, and the data analysis and reporting are now being completed.

G-MW has maintained involvement with eWater Cooperative Research Centre and Water Quality Research Australia to improve our understanding of water system management. Many of the projects are ongoing for several years.

4.1.3 Local Government Planning

G-MW assesses planning applications to meet a range of objectives, including the requirements of the Safe Drinking Water Act to minimize risks to water quality within our 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 2010/2011, over 1300 applications were referred and assessed (Table 3).

Substantial G-MW resources are applied to this function. During 2010/11, G-MW was involved in various projects (internal and external) to refine processes and ensure that only relevant applications are referred, while at the same time ensuring that applications receive appropriate scrutiny. Planning referrals received by G-MW since the implementation of the Safe Drinking Water Act 2003 are collated in Table 3.

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 Responding to Floods

In Victoria in late 2010 and early 2011 most water catchment systems experienced the highest inflows recorded since 1993, as a result of a series of high rainfall events. By late 2010 most of the dams managed by G-MW were full as a result of winter and spring rains. In January inflows peaked – well outside the traditional spring peak inflow period - with inflows into Eppalock and Cairn Curran at least 10 times the previous records for January. Stormwater runoff caused flooding in the upper catchments which flowed into the dams. These floods were passed through the dam spillways.

The resulting floods were widespread over central and northern Victoria, and had a significant impact on urban communities, agricultural areas and the natural environment. The floods covered some 16,000 km² of G-MW's service region, with approximately 3,000 km of channel network affected. Infrastructure was damaged and recreational areas were scoured by floodwaters. G-MW customers, staff and communities in our service area were all impacted in some way by the damage caused by these events.

Once the scale of the predicted weather event and its likely impact on G-MW's systems was evident, G-MW staff worked long hours in co-ordination with other agencies under very trying circumstances to ensure that impact of the flood water was reduced for the whole region. The floods impacted on three key storages controlled by G-MW including Laanecoorie and Cairn Curran Reservoirs (Loddon System), and Lake Eppalock (Campaspe System). Tullaroop Reservoir was impacted to a lesser extent.

Flood impacts on water quality

Flood events can impact heavily on water quality as they can carry large amounts of silt and organic material from inundated areas, including dead animals, wastewater (from humans and animals), and vegetation debris. G-MW unfortunately has no ability to control the impacts of floods on water quality and at best can only liaise with water suppliers, communities, customers and other stakeholders to raise awareness of potential and actual impacts and highlight that raw water should never be used for human consumption without appropriate treatment.

Throughout the flood events of 2010/11 G-MW liaised closely with its stakeholders regarding the impact of floods on water quality, including the Department of Health, affected urban water suppliers, Catchment Management Authorities and local Councils. In addition, G-MW also provided information to customers and the community through media releases and our website regarding poor water quality experienced during and the following the floods and the suitability of this water for various uses.

Table 3: Planning Permit Applications received from Municipalities from 2004/05 to 2010/11

| Municipality | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Alpine Shire | 46 | 23 | 105 | 85 | 69 | 57 | 70 |
| Ballarat | 2 | 10 | 13 | 11 | 4 | 9 | 10 |
| Benalla | 2 | 4 | 6 | 11 | 20 | 8 | 15 |
| Bendigo | 64 | 33 | 58 | 58 | 51 | 36 | 64 |
| Campaspe | 27 | 27 | 131 | 106 | 108 | 99 | 91 |
| Central Goldfields | 20 | 11 | 10 | 11 | 7 | 14 | 12 |
| DPCD (Alpine Resorts/ Mt Hotham) | 16 | | 2 | | 2 | 1 | 3 |
| EPA Works Approval | | 1 | 3 | 1 | | 1 | 1 |
| Gannawarra | 14 | 14 | 34 | 47 | 34 | 19 | 25 |
| Hepburn | 279 | 291 | 250 | 136 | 101 | 122 | 128 |
| Indigo | 43 | 30 | 18 | 8 | 5 | 8 | 5 |
| Loddon | 20 | 13 | 10 | 11 | 7 | 4 | 6 |
| Macedon Ranges | 142 | 95 | 87 | 101 | 124 | 114 | 35 |
| Mansfield | 38 | 18 | 30 | 46 | 74 | 49 | 105 |
| Mildura | 2 | 1 | 2 | 4 | 1 | 0 | 2 |
| Mitchell | 9 | 60 | 63 | 47 | 14 | 14 | 22 |
| Moira | 49 | 49 | 211 | 186 | 77 | 199 | 142 |
| Moorabool | | | 3 | 1 | | 2 | 2 |
| Mount Alexander | 91 | 78 | 80 | 72 | 85 | 89 | 163 |
| Murrundindi | 60 | 34 | 49 | 52 | 24 | 35 | 52 |
| Pyrenees | 4 | 3 | 11 | 5 | 10 | 6 | 14 |
| Shepparton | 157 | 98 | 197 | 169 | 174 | 108 | 139 |
| Strathbogie | 46 | 64 | 42 | 62 | 62 | 59 | 92 |
| Swan Hill | 10 | 12 | 19 | 26 | 18 | 13 | 23 |
| Towong | 22 | 33 | 48 | 65 | 69 | 61 | 72 |
| Wangaratta | 1 | 4 | 4 | 3 | 9 | 3 | 7 |
| Wodonga | 16 | 9 | 8 | 10 | 12 | 13 | 26 |
| Total | 1,180 | 1,015 | 1,413 | 1,334 | 1,161 | 1,143 | 1,326 |

4.3 Responding to Locusts

During the 2010/11 year the potential for significant hatchings of Australian Plague Locusts (APL) was identified throughout northern Victoria. All land owners / managers were required by the Department of Primary Industries to identify and spray hatchings on land they manage to assist in reducing the damage that APL can cause to agriculture once they take flight.

In response to the issue, G-MW initiated the following responses:

- G-MW participated in multiple state and agency forums to inform how it planned to respond to the issue, to assist in the exchange of information between authorities and identify any knowledge gaps. G-MW also communicated directly with water suppliers regarding potential risks to waterways from APL spray activities.
- G-MW implemented its own control programs along channel and drainage reserves with the aim of controlling locusts while protecting the environment and waterways. The program enabled field staff to advise an internal response group of locust hatchings; which then strategically allocated resources to particular locations for spraying of APL at optimum times. Mapping software also facilitated the tracking of sprayed locations for follow up monitoring of APL activity and to prevent re-spraying where it was not needed. It should be noted that G-MW only used pesticides that were suitable for use adjacent to waterways and in a manner consistent with current best management practices for working near water.
- For customers and communities G-MW developed a website and Factsheet providing them with relevant information and where to seek further advice. As APL pesticides have the potential to contaminate waterways and the environment if inappropriately managed, G-MW highlighted the importance of appropriate chemical use around sensitive areas and good management practices. The website and Factsheet also highlighted who landowners should contact if they had an incident or spill.

G-MW did not undertake any specific monitoring of waterways during the APL issue as this was being undertaken by the Centre for Aquatic Pollution Identification and Management (CAPIIM).

4.4 Supply to Melbourne Water via Sugarloaf Pipeline

In February 2010, the operation of Sugarloaf pipeline commenced and operated on an irregular basis until November 2010. Use of the pipeline since then has not been required due to strong inflows into G-MW and Melbourne Water (MW) storages alike from late 2010 onwards. G-MW has continued to be involved in engaging MW (as the Water Storage Manager of Sugarloaf Reservoir), and Yarra Valley Water, City West Water, and South East Water (as the relevant Water Suppliers) to ensure that the risk management plans currently in place appropriately reflect the new water supply and communication of water quality information and incident notification procedures are in place.

4.5 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. Following liaison with the Department and its water suppliers, G-MW has developed a management strategy to address supply of non-potable (non-drinking) water to its customers. Implementation of this strategy begun in 2007 and is available to the public upon request and available on our website.

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. This information is also included on G-MW accounts, detailed on our website and when relevant in our media releases.

4.6 Land and On Water Management Plans

Land and On-Water management is about managing the community, recreational and environmental aspects of dams and surrounding lands. The aim is to protect and enhance water quality, improve the ecological health of the waterway and provide safe sustainable public access. G-MW storages are easily accessible by the general public, providing highly valued recreational opportunities for tourists and local communities. G-MW is developing individual “land and on-water management plans” (L&OWMP) for its 16 water storages. These plans will guide how G-MW and other agencies manage activities, facilities and development on and around water storages over a five year period. The plans focus on cultural, environmental and water quality management issues at water storages but are not designed to make recommendations on storage operations – such as water levels and releases.

Feeding into the L&OWMP process and in accordance with G-MW’s SDWA obligations, a technical assessment of risks to water quality will also be undertaken for storages covered under the Act. These risk assessments will help to identify and prioritise actions required to maintain and/or lead to improvements in water quality and aid decision making processes regarding actions and priorities at various storages. Although the risk assessment process for some storages will not be undertaken until after the management plans have been finalised, the outcomes from the assessment will be incorporated into future versions of the Plans.

This year, draft plans were developed for Waranga Basin and the Mid-Murray Storages including Lake Boga. The Lake Nillahcootie Plan is currently being finalised following more than 18 months of consultation, feedback and discussions. The Plan is due to be launched at a community celebration in late 2011. Consultants were engaged to start developing plans for other dams. Community consultation will commence in late 2011 on plans for Lake Eildon and Goulburn Weir. 2012 will see plans commenced for Lake Eppalock and Cairn Curran. L&OWMP have already been completed for Lake Hume (in 2008) and Lake Mulwala (2004, updated in 2008). Once complete, plans will be implemented by G-MW in conjunction with community and stakeholder committees.

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

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.*

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 | Customer |
|-------------------|---|-----------------------------------|
| BARMAH | River Murray | Goulburn Valley Water |
| BELLBRIDGE | Lake Hume (River Murray arm) | North East Water |
| | River Murray | North East Water |
| BERRIWILLOCK (R) | River Murray | Grampians Wimmera Mallee Water |
| BUNDALONG | Lake Mulwala Back Water (Ovens River arm) | North East Water |
| | Ovens River | North East Water |
| CHILINOGOLLAH (R) | River Murray | Grampians Wimmera Mallee Water |
| CHINKAPOOK (R) | River Murray | Grampians Wimmera Mallee Water |
| COBRAM | River Murray | Goulburn Valley Water |
| COHUNA | Gunbower Creek | Coliban Water |
| CULGOA | River Murray | Grampians Wimmera Mallee Water |
| DARTMOUTH | Mitta Mitta River | North East Water |
| DEVENISH | Lake Mulwala (River Murray) | North East Water |
| ECHUCA | River Murray | Coliban Water |
| GUNBOWER | Taylor's Creek | Coliban Water |
| KATAMATITE | Channel No 7/3 | Goulburn Valley Water |
| KERANG | Loddon River | Lower Murray Water |
| | River Murray | |
| | TIA 14/2 Channel | |
| KOONDROOK | River Murray | Lower Murray Water |
| LALBERT | River Murray | Grampians Wimmera Mallee Water |
| LEITCHVILLE | Supply channel off Taylor's Creek | Coliban Water |
| | Gunbower Creek | |
| | TIA 5/1 Channel | |
| MANANGATONG | River Murray | Grampians Wimmera Mallee Water |
| MILDURA | River Murray | Lower Murray Water |
| MILDURA WEST | River Murray | Lower Murray Water |
| MOYHU | King River | North East Water |
| MURRABIT | River Murray | Lower Murray Water |
| MYSTIC PARK (R) | Kangaroo Lake | Lower Murray Water |
| NANDALY (R) | River Murray | Grampians Wimmera Mallee Water |
| NATHALIA | Broken Creek | Goulburn Valley Water |
| NULLAWIL | River Murray | Grampians Wimmera Mallee Water |
| NUMURKAH | Broken Creek | Goulburn Valley Water |
| OUYEN | River Murray | Grampians Wimmera Mallee Water |

| Town | Storage / Source | Customer |
|---------------------------|---|--------------------------------|
| OXLEY | King River | North East Water |
| PATCHEWOLLOCK (R) | River Murray | Grampians Wimmera Mallee Water |
| PIANGIL | River Murray | Lower Murray Water |
| PICOLA | Channel No 9/9/9 | Goulburn Valley Water |
| RED CLIFFS | River Murray | Lower Murray Water |
| ROBINVALE | River Murray | Lower Murray Water |
| RUTHERGLEN | River Murray | North East Water |
| SEA LAKE | River Murray | Grampians Wimmera Mallee Water |
| SPEED (R) | River Murray | Grampians Wimmera Mallee Water |
| ST JAMES | Lake Mulwala (River Murray) | North East Water |
| STRATHMERTON (VIA COBRAM) | River Murray | Goulburn Valley Water |
| SWAN HILL | River Murray | Lower Murray Water |
| TALLANGATTA | Lake Hume Mitta Mitta River | North East Water |
| TEMPY (R) | River Murray | Grampians Wimmera Mallee Water |
| TUNGAMAH | Lake Mulwala (River Murray) | North East Water |
| ULTIMA | River Murray | Grampians Wimmera Mallee Water |
| UNDERBOOL (R) | River Murray | Grampians Wimmera Mallee Water |
| WAHGUNYAH | River Murray | North East Water |
| WAICHIE | River Murray | Grampians Wimmera Mallee Water |
| WALPEUP | River Murray | Grampians Wimmera Mallee Water |
| WANGARATTA | King River Ovens River | North East Water |
| WODONGA | River Murray | North East Water |
| WUNGHNU | Broken Creek Via pipeline from Numurkah | Goulburn Valley Water |
| YARRAWONGA | Lake Mulwala (River Murray) River Murray | North East Water |

Towns supplied from G-MW managed storages – Goulburn system

| Location Supplied | Supply | Customer |
|--------------------------|--|--------------------------------|
| ALEXANDRA | Goulburn River | Goulburn Valley Water |
| AVENEL | Goulburn River | Goulburn Valley Water |
| BIRCHIP* | Waranga Western Channel (Goulburn or Loddon River Water) | Grampians Wimmera Mallee Water |
| BONNIE DOON | Lake Eildon, Brankeet Arm | Goulburn Valley Water |
| BOORT | Supply Channel off the Waranga Western Channel | Coliban Water |
| BROADFORD | Goulburn River | Goulburn Valley Water |

| Location Supplied | Supply | Customer |
|--------------------------------|---|--|
| COLBINABBIN | Waranga Western Channel | Goulburn Valley Water |
| CONGUPNA | Goulburn River | Goulburn Valley Water |
| COROP | Waranga Western Channel | Goulburn Valley Water |
| DINGEE (R) | Pyramid No 1 Channel | Coliban Water |
| DOOKIE | East Goulburn Main Channel | Goulburn Valley Water |
| EILDON | Lake Eildon | Goulburn Valley Water |
| GIRGARRE | 7/12/9 Channel | Goulburn Valley Water |
| GOULBURN WEIR (BAXTERS RD) (R) | Lake Nagambie | Goulburn Valley Water |
| JARKLIN (R) | Serpentine Creek | Coliban Water |
| KATANDRA WEST | 3/25 Channel | Goulburn Valley Water |
| KIRWANS BRIDGE (R) | Lake Nagambie | Goulburn Valley Water |
| KYABRAM | Central Goulburn 9 Channel | Goulburn Valley Water |
| LOCKINGTON | Campaspe No 24 Channel | Coliban Water |
| MACORNA (R) | Supply Channel off Waranga Western Channel | Coliban Water |
| MELBOURNE | Goulburn River (VIA SUGARLOAF PIPELINE) | Melbourne Water (on behalf of City West Water, South East Water, and Yarra Valley Water) |
| MERRIGUM | Central Goulburn 9 Channel | Goulburn Valley Water |
| MITIAMO (R) | Supply Channel off Waranga Western Channel | Coliban Water |
| MOLESWORTH | Goulburn River | Goulburn Valley Water |
| MOOROOPNA | Goulburn River | Goulburn Valley Water |
| MURCHISON | Goulburn River | Goulburn Valley Water |
| MYSIA (R) | Waranga Western Channel | Coliban Water |
| NAGAMBIE | Lake Nagambie | Goulburn Valley Water |
| NATHALIA | Broken Creek | Goulburn Valley Water |
| PYRAMID HILL | Supply Channel off Waranga Western Channel | Coliban Water |
| QUAMBATOOK* | Waranga Western Channel via Normanville Pipeline (Goulburn or Loddon River water) | Grampians Wimmera Mallee Water |
| ROCHESTER | Campaspe River Campaspe No. 2 Channel Waranga Western Channel | Coliban Water |
| RUSHWORTH | Waranga Basin | Goulburn Valley Water |
| SEYMOUR | Goulburn River | Goulburn Valley Water |
| SHEPPARTON | Goulburn River | Goulburn Valley Water |

| Location Supplied | Supply | Customer |
|-------------------|--|--------------------------------|
| STANHOPE | 1/12/9 Channel | Goulburn Valley Water |
| TALLAROOK | Goulburn River | Goulburn Valley Water |
| TALLYGAROPNA | Goulburn River | Goulburn Valley Water |
| TATURA | Central Goulburn 3/5A Channel | Goulburn Valley Water |
| TONGALA | Central Goulburn 19/28/9 Channel | Goulburn Valley Water |
| TOOLAMBA | Goulburn River | Goulburn Valley Water |
| WATERFORD PARK | Goulburn River | Goulburn Valley Water |
| WHYCHEPROOF* | Waranga Western Channel (Goulburn or Loddon River water) | Grampians Wimmera Mallee Water |

(R) = Regulated supplies under the SDWA

*Supply can either be from Goulburn or Loddon River water

Towns supplied from G-MW managed storages – Loddon system

| Location Supplied | Storage /Supply | Customer |
|-------------------|--|--|
| AXEDALE | Eppalock Reservoir | Coliban Water |
| AXEDALE | Waranga Western Channel | Coliban Water |
| BALLARAT | Newlyn Reservoir | Central Highlands Water |
| BENDIGO | Eppalock Reservoir | Coliban Water |
| BENDIGO | Waranga Western Channel | Coliban Water |
| BIRCHIP* | Waranga Western Channel (Goulburn or Loddon River water) | Grampians Wimmera Mallee Water |
| BRIDGEWATER | Loddon River | Coliban Water |
| GOORNONG | Campaspe River | Coliban Water |
| HEATHCOTE | Eppalock Reservoir | Coliban Water |
| HEATHCOTE | Waranga Western Channel | Coliban Water |
| LAANECORIE | Loddon River | Coliban Water |
| MARYBOROUGH | Tullaroop Reservoir | Central Highlands Water |
| MELBOURNE | Goulburn River (via Sugarloaf Pipeline and Reservoir) | Melbourne Water on behalf of South East Water, Yarra Valley Water, & City West Water |

| Location Supplied | Storage /Supply | Customer |
|--------------------------|---|--------------------------------|
| MYSIA (R) | Waranga Western Channel | Coliban Water |
| QUAMBATOOK* | Waranga Western Channel via Normanville Pipeline (Goulburn or Loddon River water) | Grampians Wimmera Mallee Water |
| RAYWOOD | Waranga Western Channel Lake Eppalock | Coliban Water |
| ROCHESTER | Campaspe No. 2 Channel | Coliban Water |
| ROCHESTER | Campaspe River | Coliban Water |
| ROCHESTER | Waranga Western Channel | Coliban Water |
| SEBASTIAN (R) | Eppalock Reservoir | Coliban Water |
| SEBASTIAN (R) | Waranga Western Channel (Goulburn or Loddon River water) | Coliban Water |
| SERPENTINE | Serpentine Creek | Coliban Water |
| WYCHEPROOF* | Waranga Western Channel (Goulburn or Loddon River water) | Grampians Wimmera Mallee Water |

(R) = Regulated supplies under the SDWA

*Supply can either be from Goulburn or Loddon River water

Appendix 3 Environmental incidents reported during 2010/11 related to water quality

| Incident Date | Urgency Level | Incident Title & Location | Impact location | Action undertaken |
|---------------|---------------|---|-------------------------------|---|
| 13-Jul-10 | 1 | Lake Nagambie foreshore - Bunganail Road - Suspected unauthorised works | Reservoir | G-MW Land and On Water unit investigated and followed up as identified responsible party to ensure damage addressed to prevent any erosion. |
| 13-Jul-10 | 1 | Lake Nagambie foreshore - Saplings Cut Down at Picnic Point | Reservoir | Site inspected, unable to identify responsible party. Notice sent to adjacent landowners outlining requirements on G-MW land and concerns about removing vegetation around foreshore. |
| 15-Jul-10 | 1 | Mid Goulburn catchment response to mid July rainfall | Regulated waterway | Stakeholders notified and water quality monitoring undertaken |
| 16-Jul-10 | 1 | Buffalo River Minor Flood - Communication issues with SES | Regulated waterway | Attempts made to contact SES through various avenues. Monitoring of flood levels continued as per procedural requirements |
| 21-Jul-10 | 1 | Damage to Stuart Murray Channel bank and access tracks from cattle | Channel | Site inspected, public awareness notice regarding inappropriate cattle grazing sent to adjacent landowners |
| 23-Jul-10 | 1 | Taylor Bay - Lake Eildon - Unauthorised clearance of lakebed vegetation | Reservoir | Site inundated prior to investigation being completed. Site to be inspected if/when storage levels drop. |
| 06-Aug-10 | 1 | Eildon Pondage - Earthen Bank Subsidence | G-MW managed asset/owned land | Adjacent landowner notified, temporary barrier implemented around affected area. Council informed. |
| 17-Aug-10 | 1 | Pyramid Boort - Dead Sheep in 10/1 Channel | Channel | Dead Sheep removed from channel and buried. |
| 24-Aug-10 | 1 | Lake Mulwala - Yabbies in distress on shoreline | Reservoir | NSW Fisheries and EPA advised. EPA to investigate cause. |
| 30-Aug-10 | 1 | Lake Eppalock - Removal of native vegetation on lake bed | Reservoir | Site inspected, unable to identify responsible party. Potential recreational risks were rectified by G-MW. |
| 04-Sep-10 | 2 | Flooding - downstream of Laanecoorie (Sept Rainfall Event). | Regulated waterway | Flood flows managed as per documented procedural requirements |
| 04-Sep-10 | 2 | Flooding - downstream of Tullaroop (Sept Rainfall Event). | Regulated waterway | Flood flows managed as per documented procedural requirements |
| 04-Sep-10 | 2 | Flooding - downstream of Lake Nillahcootie (Sept Rainfall Event). | Regulated waterway | Flood flows managed as per documented procedural requirements |
| 04-Sep-10 | 2 | Flooding - downstream of Lake Buffalo (Sept Rainfall Event). | Regulated waterway | Flood flows managed as per documented procedural requirements |
| 04-Sep-10 | 2 | Flooding - downstream of Lake William Hovell (Sept Rainfall Event). | Regulated waterway | Flood flows managed as per documented procedural requirements |

| Incident Date | Urgency Level | Incident Title & Location | Impact location | Action undertaken |
|---------------|---------------|---|----------------------|--|
| 04-Sep-10 | 2 | Loddon/Campaspe - Discharge of effluent into streams | Unregulated waterway | G-MW notified downstream water users. |
| 04-Sep-10 | 2 | Flooding - downstream of Goulburn Weir (Sept Rainfall) | Regulated waterway | Flood flows managed as per documented procedural requirements |
| 06-Sep-10 | 1 | Echuca Village - Water Quality Issue - Warrigal Creek | Unregulated waterway | Issue investigated, poor water flushed/ diluted through creek flows. Source of poor water quality unable to be identified. |
| 07-Sep-10 | 1 | Murray North East - Pump & Motor washed away in floods | Channel | Landholder notified G-MW staff and police in case of recovery after the floods. No further action required. |
| 22-Sep-10 | 2 | Sunday Creek - Concern regarding levels of Simazine - Water Quality | Unregulated waterway | Stakeholders engaged and possible concerns discussed. Raw water not to be used for human consumption without treatment but levels within ADWG allowable daily intake levels. |
| 30-Sep-10 | 1 | Eildon - Potential Effluent Overflow | Reservoir | Broken pit cover causing blockage of pit outflow pipe. Pit outflow cleared and new concrete led cover installed. |
| 11-Oct-10 | 2 | Truck crash and small diesel Spill - Torrumbarry No 1 Channel, Leitchville | Channel | Stakeholders engaged and concerns discussed. Isolation booms deployed and diesel removed from waterway by approved contractor on a couple of occasions. Downstream diverters notified. Boom removed 21 October following consultation with EPA. |
| 15-Oct-10 | 1 | Disposal of building rubble and waste material on DSE River Reserve Laanecoorie | Reservoir | Stakeholders engaged and issues discussed. DSE advice requested on site remediation. G-MW implemented as requested |
| 18-Oct-10 | 1 | Sheepwash Creek - Contamination event | Landholder property | Potential contamination of creek via effluent. Source unable to be identified when inspected and most contamination gone, although an odour remained. Downstream diverters notified. Unable to take further action. |
| 26-Oct-10 | 1 | Alleged illegal construction of a dam wall on a waterway and significant dumping of building waste in a waterway. Excavation of waterway banks to allow for excavator access. | Unregulated waterway | Incident reported to CMA and EPA for investigation and action. |
| 03-Nov-10 | 2 | Goulburn River Arm of Lake Eildon near Old Eildon Road Jamieson -Boat Collision with Submerged Fence Post | Reservoir | Damage to boat did not leak any oils or fuel. The nearby boat ramp was closed one month earlier because of access issues and affected section of the lake rezoned to 5 knots (no high speed boating is permitted). The obstacle will be removed when storage levels drop enough to permit access. Should water levels rise sufficiently the 5 knot zone will be removed. |

| Incident Date | Urgency Level | Incident Title & Location | Impact location | Action undertaken |
|---------------|---------------|--|----------------------|--|
| 07-Nov-10 | 1 | Bendigo Creek - Car caught in flood waters in Bendigo Creek | Unregulated waterway | G-MW notified via 24/7 hotline. Campaspe Shire contacted to have "road closed" signs erected on road crossing. Requested flood markers be assigned to this crossing. No further action required given flood situation. |
| 25-Nov-10 | 1 | Kookaburra Point Public Reserve, Lake Hume - Ruptured Sewerage Line to Toilet Block. | Reservoir | Shire's plumbing contractor repaired the damaged pipes. G-MW inspected the site and there was no evidence of sewerage spill. No further action required |
| 09-Dec-10 | 1 | Waterways downstream of Lake Buffalo - Major Flood downstream of Lake Buffalo | Regulated waterway | Natural event caused from runoff in the Buffalo River catchment. Flood flows managed as per documented procedural requirements. |
| 13-Dec-10 | 1 | Reedy Lake, Kerang - Dead fish. 8 dead native fish, golden perch. Caused by blackwater from Loddon River flood passing into lakes. | Reservoir | EPA, NCCMA and DSE were informed of this blackwater event and the likelihood of more fish deaths occurring in the Torrumbarry Irrigation System due to the movement of flood waters. No further action required. |
| 13-Dec-10 | 1 | Kow Swamp, Leitchville - Bank erosion causing damage to private structures built on edge of Kow Swamp | Reservoir | No further action required. Issue will resolve as Swamp returns to normal Operational level. |
| 15-Dec-10 | 2 | Lower Broken Creek - Lower Broken Creek low dissolved oxygen resulting from Blackwater event | Regulated waterway | Significant rainfall in the region caused extensive flooding in the Broken Creek catchment. Poor water quality could be due to the breakdown of organic material from the floodplain. A significant amount of water needs to drain from floodplain before water will recede and flows can be used to dilute poor water quality. Stakeholders notified of event and liaison with GBCMA in relation to timing of additional (environmental) flows to continue. |
| 06-Jan-11 | 1 | Lake Eildon between Dam Wall and the Pines - Houseboat owner reported that child was sick potentially due to blue-green algae. | Reservoir | Water sampling conducted routinely at Eildon. Given the current expected use, water and weather patterns sampling for BGA has increased. As of 6th Jan BGA levels have not warranted the issue of a high level alert. Media releases have been issued and all houseboat owners received a newsletter providing information on BGA. Houseboat operator advised to seek medical advice. |
| 14-Jan-11 | 2 | Loddon and Campaspe Rivers - Major Flooding Loddon and Campaspe Rivers | Regulated waterway | Flood flows managed as per documented procedural requirements. Flood debriefs conducted locally and at a corporate level. |

| Incident Date | Urgency Level | Incident Title & Location | Impact location | Action undertaken |
|---------------|---------------|--|--------------------|--|
| 15-Jan-11 | 2 | Rochester - Rochester flood event inundated Rochester Depot, causing an oil spill from the underground tank when it filled with water. | Regulated waterway | Surrounding contaminated drains and service pit sucked out using a EPA licence truck. Contaminated soil removed and taken to licence waste facility. Incident reported to EPA and waste removal details provided. Waste oil tank removed from depot. |
| 21-Jan-11 | 1 | Cairn Curran Reservoir - Fish Kill below Spillway | Reservoir | Incident resulted from flood event when fish were killed below the gates on rock dissipater. EPA notified. Event not able to be controlled by G-MW. Fish washed away shortly after in small flood event. |
| 15-Jan-11 | 2 | Lake Eppalock - Flooding of pump wells associated with effluent removal system for club sites at Lake Eppalock. Minimal effluent in well at time of flooding as system not in use due to restricted access to club sites. | Reservoir | Two pumps in question were shut down and isolated from the effluent system. G-MW staff and contractor assessed and repaired system. Clubs affected were notified. Monitoring regime and alarm system now in place for system. 24 hr call out for effluent removal in place. |
| 15-Jan-11 | 2 | Lake Eppalock - Tertiary effluent pond at Caravan Park appears to over topped by a minor amount. Park operators confirmed ponds may have overflowed for a limited time. The tertiary pond had been recently emptied and it appears the inflow came from surface water and rain events. | Reservoir | Pond sampled to assess water quality, which will assist decision with required management of ponds. Contractor engaged to remove effluent to appropriate facility. Existing pumping procedure modified to redirect effluent to secondary pond when nearing capacity. Inspection regime put in place to ensure situation is not repeated. |
| 09-Feb-11 | 1 | Mildura Wastewater Treatment Plant to River Murray - Lower Murray Water's (LMW) emergency discharge of treated effluent from winter storage ponds. | Regulated waterway | Notification received by mail. Emergency discharge approved by EPA. Further information requested from LMW re discharge quality, quantity and duration and monitoring of receiving waters. River Murray Water and Murray Darling Basin Authority notified. |
| 01-Mar-11 | 1 | Jerusalem Creek Marina, Lake Eildon - Minor diesel fuel spill occurred when houseboat was being retrieved at Jerusalem Creek Public Boat Ramp. | Reservoir | Information and sign off of pre launch / retrieval process, now requires Houseboat Transporters to sign off they have checked and made safe fuel filler and tether pipes on houseboats prior to operation. |
| 24-Mar-11 | 1 | Lake Eppalock - Dumping of Household Rubbish | Reservoir | Investigation identified person/s responsible. Information forwarded to Council Local Laws Officer. |
| 31-Mar-11 | 2 | Goulburn River Shepparton - Waste discharge pipe into Goulburn River reported to G-MW. | Regulated waterway | G-MW notified external agencies to investigate (GBCMA and EPA). No further action required. |
| 08-May-11 | 1 | Taylor Bay, Lake Eildon - Unauthorised vegetation clearing, earthworks and burning off on lakebed /Goulburn-Murray Water land. | Reservoir | Confirm no vegetation removal permits had been issued by G-MW. Investigation undertaken in to actions by adjacent property owners. Legal action being considered. General media release issued and letter drop undertaken regarding the need to obtain permits prior to undertaking works. |

| Incident Date | Urgency Level | Incident Title & Location | Impact location | Action undertaken |
|---------------|---------------|---|--------------------|---|
| 31-May-11 | 1 | Goughs Bay, Lake Eildon - Sewage pipe damage and spill. | Reservoir | Kevin Murphy Mansfield Shire has been assisting with issue. EPA advised. Repairs to damaged pipe undertaken by Mansfield Shire and metre to monitor flows through pipe with regular checks arranged. Area cleaned and site to be monitored |
| 27-Jun-11 | 2 | Broken Creek - Fish deaths at Rices Weir fish ladder | Regulated waterway | Combined effort by GBCMA, Fisheries Victoria, G-MW and EPA removed live (and dead) fish. |
| 15-Jan-11 | 3 | Flooding of the Campaspe and Loddon Rivers impacted on assets in the Rochester-Campaspe, the Loddon Valley and Torrumbarry Irrigation Areas. - Flooding of irrigation assets from extreme rainfall event in upper catchments of Campaspe and Loddon Rivers. | Regulated waterway | The G-MW Incident Control Centre (ICC) was established and operated until approximately February. Local area operations staff monitored assets and reported to local management any issues and/or damage. Local Operations Management and the G-MW ICC liaised with relevant authorities such as: BoM, SES, local MERC, Vic Police, MDBA, federal and State Politicians and ICC in Bendigo. As floods past, asset inspections and repairs were instigated to return supply to customers. Reviews of procedures and tasks undertaken have been completed and operating manuals reviewed. |

Appendix 4 Summary of Blue Green Algal Blooms during 2010/11

| Basin/System | Storage or Waterway | Location | Bloom Start Date | Bloom End Date | Duration (days) | Maximum Alert Level reached^ | Comment |
|-----------------------|---------------------------------|-------------|---------------------------|---------------------------|-----------------|------------------------------|---|
| Broken | Lake Nillahcootie | | - | - | - | 2 | |
| Goulburn | Lake Eildon # | Entire Lake | 11 Jan 2011 & 17 Mar 2011 | 2 Mar 2011 & 29 June 2011 | 50 & 104 | 3 | Customers notified by media release, letters and website. GVW notified via G-MW BGA status report and sent raw laboratory results |
| Goulburn | Greens Lake | | - | - | - | 2 | |
| Goulburn | Goulburn Weir # | | - | - | - | 2 | GVW notified via G-MW BGA status report and sent raw laboratory results |
| Goulburn | Waranga Basin # | | - | - | - | 2 | GVW notified via G-MW BGA status report and sent raw laboratory results |
| Campaspe | Lake Eppalock # | Entire Lake | 25 Jan 2011 | 25 May 2011 | 120 | 3 | Customers notified by media release, letters and website. CW notified via G-MW BGA status report and sent raw laboratory results |
| Loddon | Tullaroop Reservoir # | | - | - | - | 2 | CHW notified via BGA status report and sent raw laboratory results |
| Loddon | Cairn Curran Reservoir | | | | | 2 | |
| Loddon | Laanecoorie Reservoir # | | - | - | - | 2 | CW notified via G-MW BGA status report and sent raw laboratory results |
| Loddon | Newlyn Reservoir # | | - | - | - | 2 | CHW notified via G-MW BGA status report and sent raw laboratory results |
| Loddon | Hepburns Lagoon | | - | - | - | 2 | CHW notified via G-MW BGA status report and sent raw laboratory results |
| Murray (Hume to Nyah) | Yarrowonga Weir # | | - | - | - | 2 | NEW notified via G-MW BGA status report and sent raw laboratory results |
| Murray (Hume to Nyah) | Murray Valley Irrigation Area # | | - | - | - | 2 | GVW & NEW notified via G-MW BGA status report. |
| Murray (Hume to Nyah) | Torgannah Lagoon | | 17 Dec 2010 | 4 Feb 2011 | 49 | 3 | Customers notified by media release and letters |
| Murray (Hume to Nyah) | Torrumbarry Weir | | - | - | - | 2 | |

| Basin/System | Storage or Waterway | Location | Bloom Start Date | Bloom End Date | Duration (days) | Maximum Alert Level reached [^] | Comment |
|-----------------------------|------------------------------------|---|-----------------------------|------------------------------|-----------------|--|---|
| Torrumbarry Irrigation Area | Kerang Lakes | Kangaroo Lake | 1 Oct 2010 | 5 Nov 2010 | 35 | 3 | Customers notified by media release and letters |
| Torrumbarry Irrigation Area | Kerang Lakes | Little Lake Charm | 1 Oct 2010 & 19 Apr 2011 | 14 Dec 2010 & 25 May 2011 | 74 & 36 | 3 | Customers notified by media release and letters |
| Torrumbarry Irrigation Area | Kerang Lakes | Lake Charm | - | - | - | 2 | |
| Torrumbarry Irrigation Area | Kerang Lakes | Lake Boga | - | - | - | 2 | |
| Torrumbarry Irrigation Area | Channel System | Entire Irrigation Channel System affected excluding Gunbower System | 14 Oct 2010 | 14 Dec 2010 | 61 | 3 | Customers notified by media release and letters |
| Torrumbarry Irrigation Area | Kow Swamp System | Kow Swamp | 1 Oct 2010 | 14 Dec 2010 | 74 | 3 | Customers notified by media release and letters |
| Torrumbarry Irrigation Area | Loddon River | Downstream of Kerang Weir | 14 Oct 2010 | 15 Nov 2010 | 32 | 3 | Customers notified by media release and letters |
| Torrumbarry Irrigation Area | Murray River/Gunbower Creek System | | - | - | - | 2 | |

Notes:

NS Not sampled

* Blooms are defined as any blue-green algal outbreak that is \geq Alert level 3.

Waterbodies from which urban water authorities take their water supply.

[^] G-MWs alert framework is based on DSE's Algae circular for 2010/11 and is as follows:

| | All species | Toxic species |
|------------------------|------------------------------------|-----------------------------------|
| Alert Level 1 - Low | 0.04 - <0.4 mm ³ /L | 0.04 - <0.4 mm ³ /L |
| Alert Level 2 - Medium | \geq 0.4 - 10 mm ³ /L | \geq 0.4 - 4 mm ³ /L |
| Alert Level 3 - High | \geq 10 mm ³ /L | >4 mm ³ /L |

Glossary of Terms

This section defines the terms used throughout the document.

| Term/Acronym | Description |
|---------------------|---|
| BGA | Blue Green Algae (technically known as Cyanobacteria) |
| E. coli | <i>Escherichia coli</i> |
| HLRMP's | High Level Risk Management Plans |
| SSRMP'S | System Specific Risk Management Plans |
| Water Suppliers | Water Suppliers, as defined under the <i>Safe Drinking Water Act 2003</i> |
| | |