

Safe Drinking Water Act 2003

Water Storage Manager 2020-21

Water Quality Annual Report

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Excellence



Honesty



Accountability



Courage



Caring

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Front cover photo: Lake Eildon Spillway

Foreword

I am pleased to present Goulburn Murray Water's 2020/21 Water Quality Annual Report. Goulburn-Murray Water (GMW) as a water storage manager is required under Section 26 of the Safe Drinking Water Act 2003 (the Act) to provide an annual report to the Secretary of the Department of Health.

The information provided in this report demonstrates GMW's ongoing commitment to its role in catchment-to-tap risk management of drinking water and regulated water across GMW's region. The management of risks to the quality of water supplied to urban Water Suppliers is considered in all aspects of GMW operations, including blue-green algae management, perimeter land management around storages and the operation and maintenance of irrigation channels. GMW has maintained effective relationships with urban Water Suppliers through regular communication at a number of levels.

Despite the challenges of the coronavirus pandemic and a major transformation of GMW, the independent audit undertaken in 2020 found GMW to be compliant under Section 8 of the Act.

We look forward to continuing our role in the provision of an essential service to communities in northern Victoria.



Charmaine Quick
Managing Director

1. Introduction

Goulburn-Murray Rural Water Corporation, trading as Goulburn-Murray Water (GMW), is defined as a Water Storage Manager (WSM) under the *Safe Drinking Water Act 2003* (the Act). This 2020/21 Annual Report to the Secretary of the Department of Health (DH) has been prepared to satisfy the annual reporting requirements of the Act and Safe Drinking Water Regulations 2015 (Regulations).

This report demonstrates GMW's ongoing commitment to managing risks to the quality of the water the corporation delivers to urban Water Suppliers.

The report contains the following sections:

- Section 2 Goulburn-Murray Water systems and role
- Section 3 Regulations component report
- Section 4 Other relevant information and activities

Further information regarding this report can be obtained by contacting the Water Quality Manager during business hours on (03) 5826 3500 or by email reception@gmwater.com.au.

2. Goulburn-Murray Water Systems and Role

2.1. Supply Systems

GMW manages the bulk water delivery and transfer for around 30% of Victoria's land area, or approximately 68,000 km² (Figure 1). GMW operates 22 storages in its region including Murray-Darling Basin Authority storages managed by Victoria. GMW's area of operation includes the Upper Murray, Mitta Mitta, Kiewa, Ovens, King, Broken, Goulburn, Campaspe, and Loddon river basins as well as the River Murray. GMW also operates an extensive network of water distribution channels, pipelines and natural carriers to deliver raw water to its customers. Customers take water from these supply systems via a pump or a gravity irrigation outlet. Customers include irrigators, domestic (not for human consumption), stock, environment and regional water corporations (urban Water Suppliers).

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

GMW provides water to six urban Water Suppliers in accordance with bulk entitlements granted under the *Water Act 1989*:

- Coliban Water (CW)
- Central Highlands Water (CHW)
- North East Water (NEW)
- Goulburn Valley Water (GVW)
- Grampians Wimmera Mallee Water (GMMWater)
- Lower Murray Water (LMW)

At times water may also be supplied to the three metropolitan water corporations via Melbourne Water infrastructure (see Section 4.3). The Sugarloaf (North-South) Pipeline was not used for transfers in 2020/21. However, water may be taken at times for maintenance and routine testing of the system.

The bulk entitlements provide for quantity of supply, but make no guarantee of quality. Raw (untreated) water is supplied by GMW to urban Water Suppliers for treatment and distribution to their customers in 128 towns via 83 offtake points across northern Victoria (see Appendix 1 for a list of towns supplied including water sources).

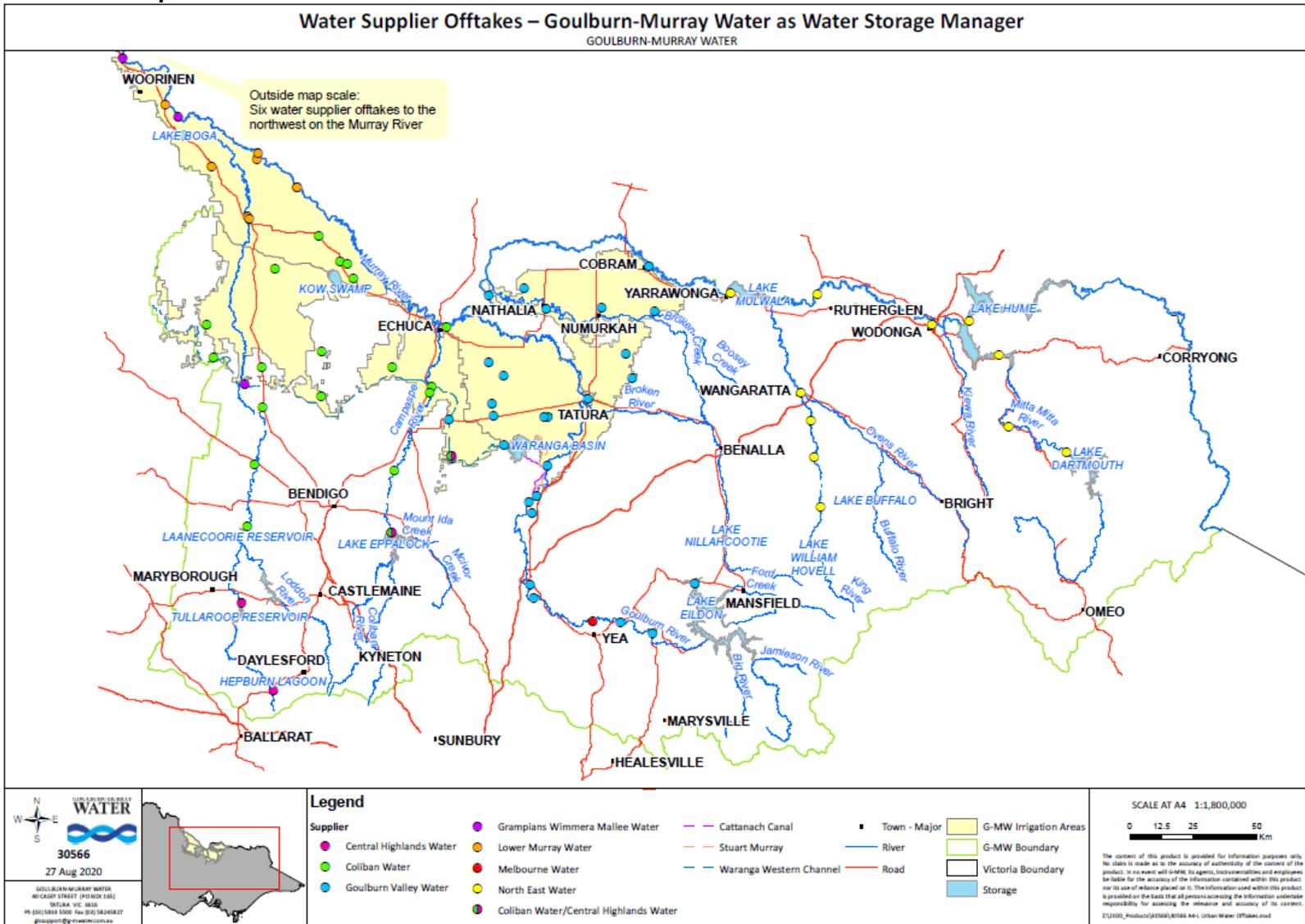
GMW provides raw water to urban Water Suppliers in four different ways:

1. From GMW storages directly via urban Water Supplier infrastructure e.g. Goulburn Valley Water supplies Nagambie township from Goulburn Weir/Lake Nagambie.
2. Via the outlet works of GMW storages e.g. Coliban Water supplies Bendigo from Lake Eppalock.
3. Indirectly from rivers supplied by GMW storages e.g. GVW supplies Seymour from the Goulburn River, downstream of Lake Eildon.
4. Via GMW's channel and pipeline systems e.g. multiple urban Water Suppliers supply towns from channels in the Goulburn Murray Irrigation District.

During the year GMMWater changed the supply source for Sea Lake from the River Murray – Pental Island offtake where GMW is the WSM to a GMMWater-managed supply source. The River Murray – Pental Island offtake is still used to supply other GMMWater towns and GMW remains the WSM.

The River Murray – Nyah offtake (where GMW is WSM) is no longer the primary supply for Berriwillock, which is now supplied from a GMMWater source. There were no other changes to water supply arrangements where GMW is the WSM during 2020/21.

Figure 1: GMW's area of operation



2.2. Policy & Plan

GMW's commitment to drinking water quality management is reflected in the corporate Safe Drinking Water policy. The policy was reviewed in April 2021 and is provided in Appendix 2. The objective of this policy is to ensure that GMW meets its obligations as a WSM under the Act and Regulations. It requires GMW to *address threats to safe drinking water as a WSM by preparing and implementing a risk management plan in relation to its supply of water to an urban Water Supplier.*

GMW is required to apply risk management for all of the water supply mechanisms it uses to provide water to urban Water Suppliers. This includes risks associated with:

- the catchment leading to each storage;
- each storage itself;
- the supply of water downstream of storages using natural carriers such as rivers and creeks; and
- the supply of water via channel and pipeline systems.

A Risk Management Plan (RMP) has been prepared and implemented in accordance with the Act and Regulations and is regularly reviewed by GMW. The plan includes requirements of the Act and Regulations and outlines GMW activities to manage the risks to water quality. The RMP includes a section that specifically focuses on risks in and around GMW's storages and within GMW's irrigation districts.

2.3. Communications

GMW communicates regularly with urban Water Suppliers to discuss any issues arising from the RMP or operations, including incident response, blue-green algae risk and water resource management as well as sharing other relevant information. Engagement with each urban Water Supplier includes two scheduled Water Supplier-WSM meetings per year and additional communication when required.

Urban Water Suppliers are invited to participate in GMW's risk identification and review process for the storages and irrigation areas relevant to their town offtakes. This involves participation in a review workshop to ensure that all hazards to water quality are identified and appropriately rated, which helps to ensure a consistent understanding of hazards amongst the organisations. The storage and irrigation areas risk assessment reviews are scheduled every two to five years based on a calculated overall risk rating for each location. During 2020/21 risk assessments were reviewed for three storages and one irrigation area (see Section 4.1).

GMW has entered into a Memorandum of Understanding with each of the six regional urban Water Suppliers (since 2009), Melbourne Water and Melbourne's three retail water businesses (since 2011) that documents commitment by the parties to work together and share information relevant to the implementation of their respective RMPs.

GMW also engages with representatives of the North East, Goulburn Broken and North Central Catchment Management Authorities (CMAs) and other organisations with a role in land and/or water management to enable knowledge exchange and a coordinated approach to issues impacting water quality. Section 4.1 provides a summary of activities GMW undertakes to manage risks to water quality, including water quality monitoring.

2.4. Monitoring

Regular water quality monitoring is undertaken at GMW storages for blue-green algae (BGA) and basic physico-chemical parameters including nutrients, pH, turbidity and electrical conductivity. The frequency of monitoring at each location is based on BGA risk, which is determined from frequency of historic blooms and the consequence of high BGA levels. The consequence takes

into consideration the presence of town offtakes, size of population supplied, the type of recreation permitted and popularity. All storages are monitored monthly at a minimum. Additional monitoring is usually undertaken at storages with a history of water quality issues during the warmer months. Water quality is generally better in the east of GMW's area of operation, so those storages are sampled monthly. In the western area sampling is generally undertaken 18 times a year, biased toward the warmer months due to BGA risk. As GMW uses a risk based approach to monitoring, extra sampling is often initiated throughout the year in response to laboratory results and field observations. Regular testing for BGA is undertaken in other parts of GMW's system where it has been determined, based on historical data, that there is a likelihood of high algae counts.

All water quality results are reviewed when received. Anomalous results are investigated, documented and reported to relevant stakeholders, including urban Water Suppliers. GMW provides advice to Water Suppliers on BGA levels at locations with direct town water supply offtakes within 48 hours of receiving the results. Section 3.1 provides an overview of BGA management and warnings during 2020/21 related to water provided to urban Water Suppliers.

3. Regulation Components Report

3.1. Emergency and incident management

Safe Drinking Water Regulation 17 – Additional details to be included in annual reports of water storage managers:

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

Section 22 Notifications

There were no incidents that required GMW to report to DH under Section 22 of the Act during 2020/21.

Other emergencies, issues or events

It should be noted that the catchments in northern Victorian where water is harvested are open to a wide variety of land and water based activities and are not closed to public access or commercial use like some of Melbourne's water supply catchments. These activities include agriculture, aquaculture, mining, forestry, industry, regional urban centres, townships, transport infrastructure and recreation. The hazardous events are documented and reviewed in the storage and irrigation area risk assessments.

During 2020/21 GMW recorded 12 incidents that had the potential to affect the quality of water delivered to an urban Water Supplier. All of these incidents related to BGA and are described in the section below. GMW notified the relevant urban Water Supplier in each instance. All incidents were managed following GMW's Incident Response and Recovery Plan and associated procedures. This plan includes processes for communicating the existence of, responding to and reviewing the incidents.

GMW continues to work with urban Water Suppliers and other catchment partners to minimise the impact to water quality from incidents and activities that occur within GMW's area of operation (see Section 4.1 for details). For example, GMW consulted with Coliban Water and Lower Murray Water during the planning and construction of two fishways on the Gunbower

Creek during winter 2021 in order to minimise the risk of water quality impacts at town water offtakes both upstream and downstream. GMW continued to engage with other stakeholders including North East Water in relation to water quality downstream of the catchments burnt in the 2019/20 bushfires that impacted the upper Murray, Mitta Mitta, Ovens and, to a lesser extent, upper Goulburn catchments.

Blue-green algae management

Management of BGA by GMW is a key program that addresses a common threat to the supply of safe water. The Blue-green Algae Circular (the Circular) issued by the Department of Environment, Land, Water and Planning (DELWP) provides the main guidance for BGA preparedness and response. High levels of BGA regularly occur in waterbodies within GMW's region and have the potential to affect drinking water supplies.

In accordance with the Circular, GMW is the Local Water Manager for BGA risk management in its storages and water supply network (which are largely open channels) and is the Regional Coordinator for BGA preparedness and response across the region. Algae in the River Murray is primarily monitored and managed by New South Wales authorities in partnership with GMW and other Victorian agencies via the Murray Region Algal Coordinating Committee (MRACC).

GMW updated the BGA Response Plans and monitoring programs for all GMW-managed water bodies and river basins in accordance with the protocols set out in the Circular. These plans provided guidance on the preparation for and response to BGA incidents, including notification of relevant stakeholders. GMW continued to engage with a range of stakeholders on BGA management, including hosting the pre-season meeting on 17 November 2020, which is also a requirement of the Circular.

Monitoring programs focus on those sites and parameters that can affect recreation and system operations, in particular at major storages and weirs. These assets are monitored at least monthly throughout the year, with frequency increasing during the summer months for many assets when the risk of harmful BGA levels being reached is higher.

A BGA Status Report is circulated at least monthly to a broad range of stakeholders including DH, DELWP, urban Water Suppliers, CMAs and local government. The report contains a summary of the latest BGA laboratory results for GMW's storages and key water supply assets.

BGA warnings issued by GMW are communicated to urban Water Suppliers, stakeholder agencies, customers and the public via multiple mechanisms including phone, GMW's website, GMW's BGA telephone hotline, letters, text messages, email, social media and the BGA Status Report.

Blue-green algae warnings

In 2020/21 34 BGA warnings were issued by GMW based on recreational guidelines, with 12 of these warnings also related to water provided to urban Water Suppliers. In addition, one BGA warning at Lake Eppalock issued in 2019/20 extended into 2020/21. Table 1 summarises the BGA warnings issued by GMW in 2020/21 that related to water supplied to urban Water Suppliers. Actions undertaken for each warning included notification to affected urban Water Suppliers, customers and stakeholders via phone, email, SMS or letter; advice to public via signage, media release, website, telephone hotline and social media; and additional surveillance and monitoring.

In accordance with the 2020/21 BGA response plans, GMW advised DELWP and DH via the BGA status report of any BGA levels that had the potential to affect public health. DH and DELWP were also notified via telephone and email when the concentration of BGA exceeded a recreational trigger and/or widespread BGA scums were observed.

BGA factsheets and information on the current BGA warnings for GMW's storages and irrigation areas can be found on the BGA Warnings webpage www.gmwater.com.au/bluegreenalgae-alert/.

In addition, the public can access warning information by calling GMW's BGA Hotline on (03) 5826 3785, by contacting GMW directly during business hours on 1800 013 357 or by emailing reception@gmwater.com.au.

Table 1: Blue Green Algae Recreational Warnings issued by GMW in 2020/21 related to water provided to urban Water Suppliers

Basin/System	Location	Warning dates (duration)	Urban Water Supplier notified	Risk #
Broken River Basin	Broken Creek - from the confluence of Nine Mile Creek to the Murray River	3/12/20 to 26/2/21 85 days	GVW, NEW	IRIS004364
Goulburn River Basin	Lake Eildon	17/7/20 onward >348 days	GVW	IRIS004187
	Lake Nagambie/Goulburn Weir - confined to the Turners Lane backwater east near Kirwan's Bridge	14/1/21 to 10/6/21 147 days	GVW	IRIS004399
	Lake Nagambie/Goulburn Weir - confined to the Turners Lane backwater west near Kirwan's Bridge	14/1/21 to 5/5/21 111 days	GVW	IRIS004399
Campaspe River Basin	Lake Eppalock	<i>16/12/19 to 21/8/20 249 days</i>	<i>CW, CHW</i>	<i>IRIS003985</i>
		21/1/21 to 22/7/21 182 days	CW, CHW	IRIS004406
Loddon River Basin	Tullaroop Reservoir	17/7/20 to 5/2/21 203 days	CHW	IRIS004188
	Tullaroop Reservoir	18/5/21 to 22/7/21 65 days	CHW	IRIS004588
Loddon Valley Irrigation Area	Loddon Valley channels east of the Loddon River	4/2/21 to 24/3/21 48 days	CW	IRIS004422
	Loddon Valley channels west of the Loddon River	23/2/21 to 24/3/21 29 days	CW	IRIS004457
East Loddon Water District	East Loddon Storage Dam	4/2/21 to 24/3/21 48 days	CW	IRIS004423
West Loddon Water District	Waranga Western Channel west of the Loddon River	23/2/21 to 24/3/21 29 days	CW	IRIS004457

Grey italics indicates warning periods that commenced in 2019/20 and continued into 2020/21. All warnings and actions were completed by GMW in accordance with BGA Response Plan.

3.2. Summary of exemptions and undertakings

Safe Drinking Water Regulation 17 –

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

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

There were no exemptions or undertakings in place with DH during 2020/21.

3.3. Risk Management Plan audit findings and issues raised

Safe Drinking Water Regulation 17 –

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

The regulatory audit conducted during July and August 2020 found GMW to be compliant under Section 8 of the Act; see Appendix 3 for the Audit Certificate. The auditor identified three opportunities for improvement (OFIs) which GMW accepted and has developed an action plan for, summarised in Table 2.

Table 2: GMW's response to OFIs arising from 2020 Audit

Opportunity for Improvement and GMW response	Status
<i>OFI 2020/1. Consider including incident criticality assessment in IRIS (Incident Reporting System), to ensure that incidents are managed at the required incident level and by the responsible person.</i>	
GMW will: <ol style="list-style-type: none"> 1. Include incident criticality assessment (as linked to GMW's Incident Response and Recovery Plan) into IRIS for environmental incidents. 	In progress
<i>OFI 2020/2. Document a process to ensure that the close out of incidents triggers a review of the adequacy of the risk management framework and identifies documentation requiring review</i>	
GMW will: <ol style="list-style-type: none"> 1. Modify its annual incident summary document to include a review of the adequacy of the Risk Management Plan (including water quality risk assessment and key programs) to manage any risks identified from the incidents. 2. Document incident review process in Risk Management Plan and/or supporting documents. 	In progress
<i>OFI 2020/3. Consider rolling out contractor inductions to lease holders operating on GMW land.</i>	
GMW will: <ol style="list-style-type: none"> 1. Compare content of contractor inductions to existing information provided to lease holders regarding environmental requirements. 2. If required add relevant additional items to leaseholder information package. 	Under consideration

3.4. Water treatment processes

Safe Drinking Water Regulation 17 –

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

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

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

Chemicals are used in and adjacent to water systems to control weeds. All herbicide application is undertaken in accordance with GMW's operating guidelines, which include utilising trained staff, notifying the relevant urban Water Supplier and adherence to product labels and minor use permits.

4. Other Relevant Information

4.1. Other activities

GMW has completed individual risk assessments for each GMW storage and irrigation area as well as a region-wide risk assessment. All assessments are regularly reviewed with input from relevant urban Water Suppliers. The following reviews occurred during 2020/21: Central Goulburn Irrigation Area, Cairn Curran Reservoir, Lake Eppalock and the combined review of Hepburns Lagoon, Newlyn and Tullaroop Reservoirs.

The risk level at Central Goulburn Irrigation Area from an *Algal blooms and release of algal toxins* hazardous event was increased from high to very high due to the BGA warnings experienced at this location since the previous risk assessment.

As part of a continual review process, a new hazardous event has been added to irrigation areas risk assessments called: *Irrigation season start-up (refilling of channels leading to transfer of sediment and stagnant water)*. This hazardous event was assessed as a high risk at Central Goulburn Irrigation Area and will be assessed at other irrigation areas as part of the review process.

The risk level from *Sabotage (deliberate contamination of water systems using human waste, pesticides, chemicals)* was maintained at moderate or increased to a high risk at the locations reviewed during 2020/21 due a reassessment of the consequence of this hazardous event.

GMW continues to implement key programs to manage the identified risks to water quality. Examples of the types of activities undertaken by GMW are summarised in Table 33.

Table 3: GMW Key Programs

Program	2020/21 Activities/Achievements
Blue-green algae management	All warnings were managed in accordance with the DELWP BGA Circular, including notification to relevant urban Water Suppliers and sharing of test results (Section 3.1).
Water quality monitoring	Water quality monitoring and analysis was undertaken for GMW's major storages and key channel locations. This data was regularly sent to urban Water Suppliers.
External stakeholder controls	Continued engagement with regional and state catchment partners including implementation of Regional Catchment Strategies, sub-strategies and programs.
GMW staff training	Staff training for SDWA awareness was conducted for new key program managers and coordinators.
Best Management Practices	The Best Management Practice Register was kept up to date.
Statutory Planning	2,131 planning and development applications were referred to GMW.
Land Management	All leases and licences were reviewed with legal counsel and internal stakeholders. Site inspections were completed and records of these inspections maintained. 60 Club Lease desktop audits and 3 Caravan Park Commercial Lease audits were undertaken.
Land and On Water Management Plans	<p>Implementation and review of the existing 14 Land and On Water Management plans, including consultation with urban Water Suppliers and other key stakeholders.</p> <p>A Land and On Water Management Plan for Dartmouth Dam was completed and released.</p> <p>GMW partnered with Forest Fire Management Victoria to better manage the Delatite Arm Camping Reserve at Lake Eildon, with education, compliance and enforcement. This has resulted in the reduction of camping, fires and rubbish directly upon the lake-bed.</p> <p>Improvement works initiated include;</p> <ul style="list-style-type: none"> • Replacement of toilet blocks at Waranga Basin and Tullaroop Reservoir • Erosion control works at Lake Buffalo • Effluent system improvements at Lake Eppalock (installation of effluent flow meters, undertake geotechnical testing and land capability assessments, development of an action plan)
Lake Eildon houseboats and on-water services	Ongoing management of on-water fuel and sewage facilities, houseboat inspections undertaken in accordance with schedule and details of inspections documented. GMW with other stakeholders have been involved with the DELWP review of greywater management on houseboats that will inform the renewal of the sunsetting <i>Water (Lake Eildon Recreational Area)(Houseboats) Regulations 2013</i>
Weed Management	<p>All herbicide applications were conducted in accordance with the GMW Herbicide Operating Manual, including notification to urban Water Suppliers when required. The GMW asset management database is used to record notifications to urban Water Suppliers.</p> <p>A large number of channel waterway programs were completed outside the irrigation season when channels were empty, limiting the impact on urban water offtakes.</p>
Environmental Management System (EMS)	<p>GMW passed its three-yearly recertification audit and thereby maintained its ISO14001 EMS accreditation. One minor environmental non-conformance was issued in the audit and will be closed out in the coming months.</p> <p>In June 2021, the Board approved the GMW 2024 Environment Strategy.</p>

Program	2020/21 Activities/Achievements
Incident Response	Refer to Section 3.1 for details on GMW's incident response.
GMW Operations including surveillance, fire management	Various activities undertaken including channel and storage erosion control and prevention works, fencing, and licensing and monitoring of activities on GMW land. GMW activities were conducted in accordance with the approved EMS. Notification to relevant urban Water Supplier were made if water quality was impacted or could potentially be impacted.
Water Resource Management	Water resource management continued to be conducted in accordance with bulk water operating agreements with urban Water Suppliers.

4.2. Advising People about Non-potable Water Supplies

All water supplied by GMW is not suitable for human consumption or related uses without first being properly treated. GMW has a Customer Information Statement to advise customers of the non-potable nature of the water supplied. This statement is provided to all new customers and periodically provided to all GMW customers via customer newsletters. It is also located on the GMW website: www.gmwater.com.au.

Customer invoices, licences and leases include a statement about the non-potable nature of the water supplied by GMW. The public and stakeholders are also made aware via statements included in the BGA status report and signs on non-potable water taps at GMW sites.

4.3. Melbourne Water

The Sugarloaf (North-South) Pipeline was constructed to supply water from the Goulburn River downstream of Lake Eildon to Melbourne Water's Sugarloaf Reservoir (and subsequently to Yarra Valley Water, City West Water, and South East Water) and was completed in February 2010. The pipeline has not been utilised for transfers since November 2010. However, water has been taken for maintenance and routine testing of the system. GMW's agreement with Melbourne Water and bulk entitlements with the three retail water businesses are still in place. GMW has continued to provide the opportunity for Melbourne Water to be involved in GMW's identification and management of risks to water quality within the Goulburn catchment.

5. Further Information

This report and further information is available from our website www.gmwater.com.au or by contacting:

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

Free call: 1800 013 357
 Standard call: (03) 5826 3500
 Email: reception@gmwater.com.au

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

Urban Water Supplier Offtakes - GMW as Water Storage Manager ¹			
Water System/ Irrigation Area (IA)	Supply Source	Water Treatment Plant ²	Towns Supplied
Central Highlands Water			
Loddon	Tullaroop Reservoir on Tullaroop creek	MARYBOROUGH	Maryborough and district
Bullarook	Newlyn Reservoir on Birch's Creek	WHITE SWAN	Ballarat and district
Campaspe	Lake Eppalock on Campaspe River	WHITE SWAN	Ballarat and district
Rochester IA	Waranga Western Channel (Colbinabbin)	WHITE SWAN	Ballarat and district
Coliban Water			
Campaspe	Lake Eppalock on Campaspe River	BENDIGO	Bendigo, Axedale, Huntly, Marong, Raywood, Sebastian
Rochester IA	Waranga Western Channel (Colbinabbin)	BENDIGO	Bendigo, Axedale, Huntly, Marong, Raywood, Sebastian
Loddon Valley IA	Boort channel no.3	BOORT	Boort
Loddon	Loddon River (Bridgewater offtake)	BRIDGEWATER	Bridgewater, Inglewood
Loddon Valley IA	Waranga Western Channel via SW Loddon Pipeline ⁴	BRIDGEWATER	Bridgewater, Inglewood
Torrumbarry IA	Gunbower Creek (Cohuna offtake)	COHUNA	Cohuna
Loddon Valley IA	PH channel no.1	N/A – Regulated ³	Dingee
Murray	River Murray (Echuca offtake)	ECHUCA	Echuca
Campaspe	Campaspe River (Goornong offtake)	GOORNONG	Goornong
Torrumbarry IA	Taylors Creek	GUNBOWER	Gunbower
Campaspe	Lake Eppalock on Campaspe River	HEATHCOTE	Heathcote, Tooborac
Rochester IA	Waranga Western Channel (Colbinabbin)	HEATHCOTE	Heathcote, Tooborac
Loddon Valley IA	Waranga Western Channel via SW Loddon Pipeline ⁴	KORONG VALE	Korong Vale, Wedderburn
Loddon Valley IA	East Loddon Pipeline	N/A – Regulated ³	Jarklin
Loddon	Loddon River (Laanecoorie offtake)	LAANECOORIE	Laanecoorie, Bealiba, Dunolly, Tarnagulla
Torrumbarry IA	Torrumbarry channel no. 1	LEITCHVILLE	Leitchville
Torrumbarry IA	Gunbower Creek (Leitchville offtake)	LEITCHVILLE	Leitchville

Urban Water Supplier Offtakes - GMW as Water Storage Manager¹			
Water System/ Irrigation Area (IA)	Supply Source	Water Treatment Plant²	Towns Supplied
Rochester IA	Waranga Western Channel via Ro channel no. 24 (piped)	LOCKINGTON	Lockington
Loddon Valley IA	PH channel no. 10/1	N/A – Regulated ³	Macorna
Loddon Valley IA	Mitiamo spur off the PH channel no. 1	N/A – Regulated ³	Mitiamo
Loddon Valley IA	Waranga Western Channel (Mysia offtake)	N/A – Regulated ³	Mysia
Loddon Valley IA	PH channel no 5/1	PYRAMID HILL	Pyramid Hill
Rochester IA	Waranga Western Channel (Rochester offtake)	ROCHESTER	Rochester
Campaspe	Campaspe River (Rochester offtake)	ROCHESTER	Rochester
Loddon Valley IA	East Loddon Pipeline	SERPENTINE	Serpentine
Goulburn Valley Water			
Goulburn	Goulburn River (Alexandra offtake)	ALEXANDRA	Alexandra, Eildon, Thornton
Murray	River Murray (Barmah offtake)	BARMAH	Barmah
Goulburn	Lake Eildon on Goulburn River	BONNIE DOON	Bonnie Doon
Goulburn	Goulburn River (Tallarook offtake)	BROADFORD	Broadford, Waterford Park
Murray	River Murray (Cobram offtake)	COBRAM	Cobram, Strathmerton, Yarroweyah
Rochester IA	Waranga Western Channel (Colbinabbin offtake)	COLBINABBIN	Colbinabbin
Rochester IA	Waranga Western Channel (Corop offtake)	N/A - Regulated ³	Corop
Shepparton IA	East Goulburn Main Channel	DOOKIE	Dookie
Central Goulburn IA	CG channel no. 12/9	GIRGARRE	Girgarre
Goulburn	Lake Nagambie/Goulburn Weir (Baxters Road offtake) on Goulburn River	N/A – Regulated ³	Goulburn Weir
Murray Valley IA	MV channel no. 7/3	KATAMATITE	Katamatite
Shepparton IA	SH channel no. 2/24 (piped)	KATANDRA WEST	Katandra West
Goulburn	Lake Nagambie/Goulburn Weir (Kirwans Bridge offtake) on Goulburn River	N/A – Regulated ³	Kirwans Bridge
Central Goulburn IA	CG channel no. 9	KYABRAM	Kyabram, Merrigum
Goulburn	Goulburn River (Molesworth offtake)	N/A – Regulated ³	Molesworth
Goulburn	Goulburn River (Murchison offtake)	MURCHISON	Murchison
Goulburn	Lake Nagambie/Goulburn Weir (Nagambie offtake) on Goulburn River	NAGAMBIE	Nagambie

Urban Water Supplier Offtakes - GMW as Water Storage Manager¹			
Water System/ Irrigation Area (IA)	Supply Source	Water Treatment Plant²	Towns Supplied
Murray Valley IA	Broken Creek	NATHALIA	Nathalia
Murray Valley IA	MV channel no. 6/6	NUMURKAH	Numurkah, Wunghnu
Murray Valley IA	MV channel no. 9/9/6	PICOLA	Picola
Central Goulburn IA	Waranga Basin	RUSHWORTH	Rushworth
Goulburn	Goulburn River (Seymour offtake)	SEYMOUR	Seymour, Avenel, Tallarook, Trawool
Goulburn	Goulburn River (Shepparton offtake)	SHEPPARTON	Shepparton, Congupna, Tallygaroopna, Toolamba, Mooroopna
Central Goulburn IA	CG channel no. 1/12/9	STANHOPE	Stanhope
Central Goulburn IA	CG channel no. 3/5A	TATURA	Tatura
Central Goulburn IA	CG channel no. 2/5/6	TATURA	Tatura
Central Goulburn IA	CG channel no. 28/9	TONGALA	Tongala
Grampians Wimmera Mallee Water (GWMWater)			
Murray	River Murray (Nyah offtake)	N/A – Regulated ³	Berriwillock, Chillingollah, Chinkapook, Waitchie
Murray	River Murray - Piangil Pump Station	MANANGATANG	Manangatang
Loddon Valley IA	Channel no. 4/1 (Normanville Pipeline)	QUAMBATOOK	Quambatook
Murray	River Murray – Pental Island	N/A – Regulated ³	Culgoa, Lalbert, Nullawil, Ultima
Murray	River Murray (Wemen offtake)	OUYEN, UNDERBOOL	Ouyen, Underbool
Murray	River Murray (Wemen offtake)	N/A – Regulated ³	Nandaly, Patchewollock, Speed, Tempy, Walpeup
Lower Murray Water			
Murray	River Murray (Mildura offtake)	MILDURA & MILDURA WEST	Mildura, Mildura West, Irymple, Merbein
Murray	River Murray (Mildura West offtake)	MILDURA & MILDURA WEST	Mildura, Mildura West, Irymple, Merbein
Loddon	Loddon River (Kerang alt. offtake)	KERANG	Kerang
Murray	River Murray (Koondrook offtake)	KERANG	Kerang
Torrumbarry IA	Torrumbarry channel no. 14/2	KERANG	Kerang
Murray	River Murray (Koondrook offtake)	KOONDROOK	Koondrook
Murray	River Murray (Murrabit offtake)	MURRABIT	Murrabit
Torrumbarry IA	Torrumbarry channel no. 2/11/4	MURRABIT	Murrabit
Torrumbarry IA	Kangaroo Lake (Mystic Park)	N/A – Regulated ³	Mystic Park

Urban Water Supplier Offtakes - GMW as Water Storage Manager¹			
Water System/ Irrigation Area (IA)	Supply Source	Water Treatment Plant²	Towns Supplied
Murray	River Murray (Piangil town offtake)	PIANGIL	Piangil
Murray	River Murray (Red Cliffs offtake)	RED CLIFFS	Red Cliffs
Murray	River Murray (Robinvale offtake)	ROBINVALE	Robinvale
Murray	River Murray (Swan Hill offtake)	SWAN HILL	Lake Boga, Nyah, Nyah West, Swan Hill, Woorinen South
Melbourne Water			
Goulburn	Goulburn River (via Sugarloaf Pipeline at Killingworth)	MELBOURNE - various	Melbourne metropolitan region
North East Water			
Murray	Lake Hume on the River Murray	BELLBRIDGE	Bellbridge
Murray	Mitta Mitta River (Dartmouth offtake)	DARTMOUTH	Dartmouth
Murray	Mitta Mitta River (Eskdale offtake)	ESKDALE	Eskdale
King	King River (Moyhu offtake)	MOYHU	Moyhu
King	King River (Oxley offtake)	OXLEY	Oxley
Murray	Lake Hume on the Mitta Mitta River arm	TALLANGATTA	Tallangatta
Ovens	River Murray (Wahgunyah offtake)	WAHGUNYAH	Wahgunyah, Rutherglen
Ovens	Ovens River (confluence with King River)	WANGARATTA	Wangaratta, Glenrowan
King	Shallow groundwater bore adjacent King River	WHITFIELD	Whitfield
Murray	Wodonga Creek (an anabranch of the River Murray)	WODONGA	Wodonga, Bandiana, Baranduda, Bonegilla, Kiewa, Tangambalanga Barnawartha, Chiltern, Springhurst
Murray	Lake Mulwala/Yarrowonga Weir on the River Murray	YARRAWONGA	Yarrowonga, Bundalong, Devenish, St. James, Tungamah, Goorambat

¹ All water supplied by GMW is raw i.e. not treated

² Urban Water supplier's water treatment plant

³ Regulated water as defined under the SDWA i.e. water supplied by urban Water Suppliers that is not intended for drinking but could be mistaken as drinking water

⁴ South West Loddon Pipeline is managed by GMMWater

Appendix 2 – Safe Drinking Water Policy

Safe Drinking Water Operational Policy



Approved: 08 April 2021 Review due: April 2024

1. Objective

To ensure that Goulburn-Murray Water (GMW) meets its obligations as a water storage manager (WSM) under the Safe Drinking Water Act 2003 and Safe Drinking Water Regulations 2015 (SDWA).

2. Scope

This Policy applies to all. The SDWA Risk Management Plan (RMP) assigns responsibility for specific activities to address risk to water quality across GMW's area of operation. This involves multiple GMW units.

3. Policy

To address threats to safe drinking water and meet its legal obligations as a WSM GMW must:

- Prepare a risk management plan in relation to its supply of water to a Water Supplier (WS).
- Implement the plan and comply with requirements set out in the plan,
- Keep the plan under continuous review with a view to updating and improving it,
- Change any aspect of the plan that is found to need revision.

GMW must also provide a SDWA annual report to Department of Health (DH) by 31 October each year. The requirements of the report are specified in a guidance note issued by DH.

A major aspect of compliance with SDWA is effective communication with Water Suppliers (WS). GMW must notify a WS of any incident or circumstance that poses a risk of poor quality water being taken for treatment and distribution. Communication on other water quality issues occurs formally every six months either via a combined DH and WS meeting or individual WS meetings convened by GMW. These meetings foster relationships between the organisations that assist in the provision of safe drinking water.

To further ensure compliance with the SDWA, awareness training is delivered to GMW operations staff every two years. These staff perform tasks that can affect water quality in GMW storages and irrigation channels, so by raising their awareness of GMW's obligations risks to drinking water quality can be minimized.

The SDWA includes key programs that manage risks to water quality; these must also be continually reviewed to ensure their effectiveness.

DH can require an audit of GMW's SDWA Risk Management Plan. To date audits have been required every two years.

#A3789792

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Excellence



Honesty



Accountability



Courage



Caring

Safe Drinking Water Operational Policy



Approved: 08 April 2021 Review due: April 2024

4. Responsibilities

Responsibility	Who
Approval	Managing Director
Endorsement	General Manager Water Delivery Services
Ownership and implementation	Water Delivery Services

5. Definitions

DH

DH means the Department of Health; this organisation regulates compliance with the SDWA.

GMW

GMW means Goulburn-Murray Water.

RMP

RMP means Risk Management Plan required under the SDWA to address threats to water quality.

SDWA

SDWA means Safe Drinking Water Act 2003 and Safe Drinking Water Regulations 2015.

WS

Under the SDWA, WS means water supplier, defined as an authority that supplies drinking water or regulated water to the public.

WSM

Under the SDWA, WSM means water storage manager, defined as an authority that supplies (raw) water to a water supplier.

6. Document history

Doc #	Date approved	Approved by	Approval #
A3622239v1	23 October 2013	Board	A2235506
A2944234v1	31 May 2016	Board	A3237100
A2944234v2	1 March 2018	Managing Director	A2959188
A2944234v3		Managing Director	
A3789792	8 April 2021	Managing Director	A4029842

7. Associated documents

Document name	#
Procedure – Safe Drinking Water	A3789793
Procedure – Promoting awareness of non-potable water supplied by Goulburn-Murray Water	A3244832

#A3789792

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Appendix 3 – 2020 Audit Certificate

Risk Management Plan Audit Certificate
Safe Drinking Water Regulations 2015

Certificate Number: REC-20-207

Audit period: 3 November 2017 to 20 August 2020

To:
Lydia Drake
Catchment Health Coordinator
Goulburn Murray Water
PO Box 165
Tatura VIC 3616

Australian Business Number (ABN): 46 761 336 846

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

Goulburn Murray Water *has* complied with the obligations imposed by section 8(1) of the *Safe Drinking Water Act 2003* during the audit period.

20 August 2020



Appendix 4 – Glossary of Terms

Term	Description
Blue-green algae (BGA)	Types of bacteria (cyanobacteria) found in water systems. Can cause taste, odour and water quality problems with some species capable of producing toxins harmful to humans and animals.
Catchment	Area of land over which water flows and is collected into a common water body (river, stream, dam etc.).
Catchment management Authority (CMA)	State government agency responsible for the integrated planning and coordination of land, water and biodiversity management in each catchment and land protection region.
Central Highlands Water (CHW)	Urban Water Supplier in central Victoria that services 9,000km ² including Ballarat, Maryborough, Daylesford and surrounding areas.
Coliban Water (CW)	Urban Water supplier in north-central Victoria that services 16,500km ² from Cohuna and Echuca in the north to Kyneton and Trentham in the south.
Department of Environment, Land, Water and Planning (DELWP)	Victorian Government Department responsible for matters including environment, land, water and planning.
Department of Health (DH)	Victorian Government Department responsible for matters related to the state's health and wellbeing as well as other aspects of social policy.
Drinking water	Water intended for human consumption or for purposes connected with human consumption. Also referred to as potable water.
Environmental Management System (EMS)	Set of processes and practices to manage an organization's impact on the environment.
Goulburn Valley Water (GVW)	Urban Water Supplier in north-central Victoria that services 20,000km ² including Cobram, Shepparton, Seymour and Alexandra.
Goulburn-Murray Water (GMW)	Statutory Authority of the Victorian Government operating over 68,000 km ² in northern Victoria that provides water storage and supply services, operating Australia's largest irrigation delivery network.
Grampians Wimmera Mallee Water (GMMWater)	Urban Water Supplier in western Victoria that services 60,000km ² from Manangatang and Warracknabeal to Serviceton and Westmere.
Irrigation area (IA)	A geographic area with defined boundaries where water is distributed using pipes and channels, primarily for the purpose of irrigation of land for agriculture.
Lower Murray Water (LMW)	Urban Water Supplier in north-west Victoria that services 14,600 km ² along the Murray River from Kerang to the South Australian border.
North East Water (NEW)	Urban Water supplier in north-east Victoria that services 20,000km ² bound by Corryong, Yarrowonga, Benalla and Dartmouth.
Safe Drinking Water Act (2003)	The legislations that regulates drinking water quality. It places obligations on water suppliers and water storage managers to provide safe, high-quality drinking water.
Raw water	Water found in the environment that has not been treated or filtered.
Regulated water	As defined under the SDWA i.e. water supplied by urban Water Suppliers that is not intended for drinking but could be mistaken as drinking water.
Risk Management Plan (RMP)	Document prepared by water agencies under the SDWA that contains a description of the water supply system, identifies and assesses risks to the quality of water and outlines steps to manage those risks.
River basin	Comprised of the catchment for one or more major rivers and their tributaries
Town offtake	Location on a water body where water is supplied to, or obtained by, an urban Water Supplier.
Treated water	Water that has undergone processing to serve a specific end use, such as to become drinking or potable water.
urban Water Supplier	Water agency as defined as a Water Supplier under the SDWA that supplies drinking water or Regulated water to the public.
Water Act 1989 (Victoria)	The legislation that governs the way surface water and groundwater entitlements are issued and allocated in Victoria. It defines water entitlements, establishes the mechanisms for managing Victoria's water resources and relates to the governance and operation of rural and urban water corporations.
Water Storage Manager (WSM)	Water corporation as defined under the SDWA that supplies raw water to a urban water supplier by releasing water to water supplier or permitting water supplier to take water from the water storage (directly or from any point downstream)