

Water Quality Annual Report 2017/18



East Gippsland Water
October 2018

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1 Introduction

At East Gippsland Water (EGW) our mission is to provide quality water and wastewater services to sustain and enhance our community. This means supplying our customers with water that meets or exceeds all health requirements and ensuring it reaches our customers when they need it.

Last financial year we treated and delivered over 5 billion litres of drinking water. This water was distributed to around 23,761 customer connections across East Gippsland.

The quality of our drinking water consistently performs well against the Safe Drinking Water Regulations 2015 with all drinking water supplied to our customers fully compliant during 2017/18. Once again this year 100 per cent of our samples were free of *Escherichia coli* (*E. coli*).

We continue to improve our supplies through strategic investment in new infrastructure and our focus on maintenance systems for existing infrastructure. We continue to improve our operational activities to identify and manage risks.

1.1 Characterisation of the System

Our service region covers approximately 21,000 square kilometres and extends east from Lindenow and Bairnsdale, through Lakes Entrance to Mallacoota near the New South Wales border, and as far north as Dinner Plain in the High Country of the Victorian Alps (Figure 1).

Most of the water delivered to customers is sourced from local river systems. Underground aquifers are utilised in our Mallacoota and Mitchell systems to supplement supply. Dinner Plain is our only locality where all drinking water is sourced from local aquifers.

Nine separate water supply systems serve the communities of Bairnsdale, Bemm River, Bruthen, Buchan, Cann River, Dinner Plain, Eagle Point, Johnsonville, Lakes Entrance, Lake Tyers Aboriginal Trust, Lake Tyers Beach, Lindenow, Lindenow South, Mallacoota, Marlo, Metung, Newlands Arm, Newmerella, Nicholson, Nowa Nowa, Omeo, Orbost, Paynesville, Raymond Island, Sarsfield, Swan Reach and Swifts Creek.

A summary of our water supply and treatment systems is provided in Section 2.1.



Figure 1: East Gippsland Water's region of operation

2 Water Treatment and Quality Risk Management Systems

A summary of the nine systems is provided in Table 1, below.

To manage water quality risk, a Drinking Water Quality Risk Management System (DWQRMS) supports and identifies key risks ensuring they are managed appropriately. The DWQRMS has been developed in accordance with the Australian Drinking Water Guidelines 2011 (Version 3.5). An overview of its structure is shown in Figure 2.

Internal audits of the DWQRMS are undertaken routinely to ensure we continually improve our systems. An external audit was undertaken at the request of the Department of Health & Human Services in April 2018, with a compliant result and no non-conforming issues identified (see Appendix A for the Certificate of Compliance).

Six opportunities for improvement (OFI) were identified during the external audit. These included recommendations to: upgrade EGW's water quality information management system; standardize water treatment equipment; improve alarm limit change notifications; improve ultra violet (UV) disinfection training; explore secondment opportunities with other water corporations; and routinely assess sampling taps. EGW has reviewed all recommendations and shall be incorporating changes as part of the 2018/19 EGW Corporate Plan.

The next external water quality audit is scheduled to be completed in the 2019/2020 financial year.

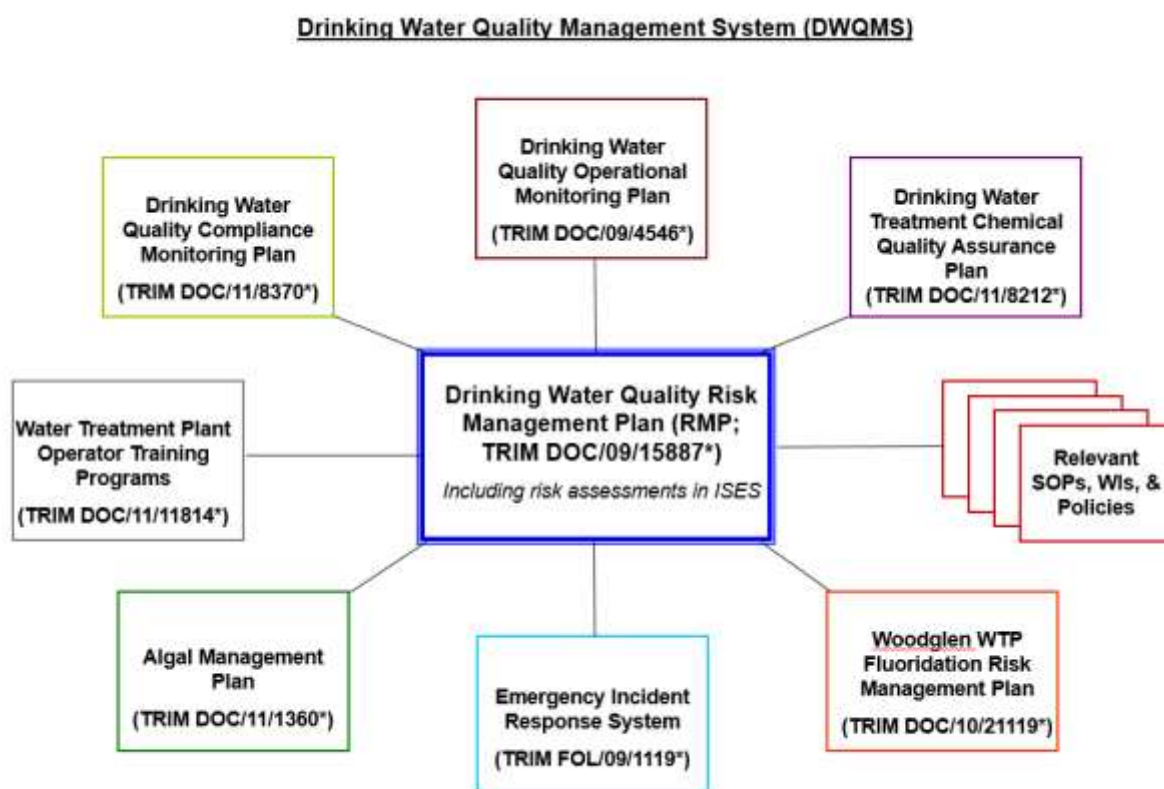


Figure 2: Structure of the Drinking Water Quality Risk Management System

2.1 Water Supply System Summary

Treatment processes vary slightly according to each locality. A description of each treatment process and chemical additives is included in the glossary of terms.

In 2017/18 a clear water storage tank was installed at Cann River water treatment plant facilitating the conversion of the shade cloth covered clear water storage basin into a raw water basin (Table 1).

Table 1: Water Supply and Treatment Systems Summary

Water Sampling Locality	Population Supplied (Connections)	Source Water	Catchment Description	Raw Water Storage	Treatment Plant	Treatment process	Added substances	Comments
Bairnsdale	7,983	Mitchell River Aquifer (5 bores, seasonal supplemental supply)	Primarily forest (> 90%) with some human, forestry and agricultural impacts, some cattle and some septic tanks particularly around the town of Dargo. The non-forested area is around 5-10% of the catchment, but is mostly located near the river banks	Woodglen No. 1 (850ML) & 2 (713ML) storage basins	Woodglen	Coagulation, flocculation, clarification (dissolved air flotation), filtration (granular media filter), disinfection, fluoridation, mechanical dewatering	Caustic soda, poly (LT 25 ¹ & 27 ²), poly aluminium chlorohydrate ³ (PAC 23), chlorine (compressed chlorine gas and sodium hypochlorite); fluoride (fluorosilicic acid) ³ , powder activated carbon ⁴ .	¹ LT 25 used for backwash water clarification ² LT 27 used for centrifuge ³ Fluoride dosing commenced in August 2010 ⁴ Capacity for powder activated carbon addition exists, but is not currently in use
Lindenow	223							
Lindenow South	172							
Sarsfield-Bruthen	591							
Merrangbaur	951							
Sunlakes-Toorloo	3007							
Kalimna	667							
Eagle Point-Paynesville	3,825							
Nicholson-Swan Reach	779							
Metung	1,292							
Nowa Nowa	104							

Water Sampling Locality	Population Supplied (Connections)	Source Water	Catchment Description	Raw Water Storage	Treatment Plant	Treatment process	Added substances	Comments
Buchan	109	Buchan River	80% forest with some minor impacts (forestry, agriculture, cattle and camping)	N/A	Buchan	Coagulation, flocculation, clarification (dissolved air flotation), filtration (granular media filter), disinfection, Geobag dewatering	Caustic soda, poly aluminium chlorohydrate (PAC 23), poly (LT 25 ¹), chlorine (sodium hypochlorite)	¹ LT 25 used for backwash water clarification
Cann River	192	Cann River	Forest, some agricultural land (cattle), minimal septic tanks, roads and logging.	3.4ML basin (shade-cloth covered) ¹	Cann River			
Bemm River	100	Bemm River	90% forest, with some minor forestry, agricultural and human impacts.	N/A	Bemm River			
Swifts Creek	128	Tambo River	Forest, agricultural land (cattle), some septic tanks, roads and logging	4.6ML basin (shade-cloth covered)	Swifts Creek			

Water Sampling Locality	Population Supplied (Connections)	Source Water	Catchment Description	Raw Water Storage	Treatment Plant	Treatment process	Added substances	Comments
Orbost	2014	Brodribb River & Rocky River	90% forest, with some forestry, agricultural and human impacts	6ML basin	Orbost	Coagulation, flocculation, clarification (upflow clarifier), filtration (granular media filter), disinfection, Geobag dewatering (Mallacoota only)	Caustic Soda ¹ , poly aluminium chlorohydrate (PAC 23), poly (LT 20), chlorine (sodium hypochlorite)	
Omeo	257	Butchers Creek	State forest with minimal human impacts (some grazing)	5ML (shade-cloth covered) and 10ML covered basin	Omeo			
Mallacoota	978	Betka River & Aquifer (2 bores)	State forest with minimal human impacts (some forestry)	41ML basin (shade-cloth covered)	Mallacoota			
Dinner Plain	389	Aquifer (2 bores)	Supply is extracted from bores deeper than 70m, with an exclusion zone	700kL tank	Dinner Plain	Ultraviolet (UV) disinfection	Nil	Nil

2.2 Source Water Protection

The Drinking Water Quality Risk Management Plan (RMP), identifies risks to drinking water quality at all steps in the water supply chain, from catchment to consumer, and ensures that appropriate control measures and checks are in place to effectively manage those risks.

In accordance with Catchment and Water Protection Policy we recognise the critical importance of sustainable catchment management for the protection of water quality and quantity. We work in collaboration with a number of external stakeholders, including the Department of Environment, Land, Water and Planning, the East Gippsland and North East Catchment Management Authorities to identify and manage water quality risks at the catchment level. Our catchments' health risks are addressed in comprehensive waterway strategies developed by the above authorities with the support of EGW with the primary goal of continual improvement to river and catchment health. The works conducted as part of the waterway strategies reduce source water quality risks, through initiatives such as livestock exclusion from rivers, riparian zone revegetation and river bank stabilisation for erosion control.

This integrated management approach to source water protection is ensured through the following legislation:

- Water Act 1989
- Planning and Environment Act 1987
- Catchment and Land Protection Act 1994
- Land Act 1958
- Environment Protection Act 1970 (including relevant State Environment Protection Policies - SEPPs)

2.3 System Issues

Our water supply and treatment systems operated as designed during 2017/18 and no issues were identified with their capacity to routinely meet the required water quality standards.

Fluoridation at the Woodglen Water Treatment Plant was temporarily suspended between February and June 2018 attributable to maintenance of a number of critical components and the requirement for a dosing system overhaul. The Department of Health and Human Services (DHHS) was informed of this. Due to the criticality of this system, the entire dosing system was replaced/upgraded and recommissioned. The project for replacement was longer than anticipated due to significant care being placed on the quality of work.

In April 2018, optimal UV disinfection was compromised during servicing on Dinner Plain's UV disinfection system. With zero *E.coli* detected within the system and the addition of chlorine to support disinfection the incident was not determined a health risk to customers. The issue was quickly rectified.

Two samples exceeded the Australian Drinking Water Guideline limit for Acid Soluble Aluminium. Orbost's entry point had one reading of 0.33 mg/L whilst Omeo's entry point had one reading of 0.47 mg/L (Table 23). Both were attributable to water treatment plant performance which has since been rectified. These exceedances were not reported at the time to DHHS due to Acid Soluble Aluminium being an aesthetic parameter rather than a health concern. No water quality complaints were received as a result of these exceedances.

In 2017/18, no Section 18 notifications were made to DHHS. All water quality standards were met in the 2017/18 reporting period, as outlined in the sections below in this document.

There were three issues that required Section 22 notifications. Details on these issues are provided in Section 3 Emergency Incident and Event Management below.

3 Emergency Incident and Event Management

3.1 Section 22 Notifications

Under Section 22 of the Safe Drinking Water Act 2003, DHHS must be notified of circumstances where drinking water supplied to the public does not comply, or is not likely to comply, with any relevant water quality standard, or where drinking water is supplied that may pose a risk to human health or cause widespread public complaint. In 2017/18, three Section 22 notifications were made to DHHS.

Two Section 22 notifications were made in February 2018 in response to low chlorine levels entering the reticulation system at Bemm River. In both instances the risk to health was determined as minimal due to the limited volume affected and the absence of *E.coli* in the system. The causes of these incidents were separate mechanical issues that have since been rectified.

The third Section 22 notification was made to DHHS in May 2018 in response to low chlorine levels entering the main supply pipeline at Cann River. Similar to Bemm River's incidents, low disinfected water entered the main supply pipeline as a result of mechanical failure, which was quickly rectified. Procedures for the management of spares and internal communications for notification of equipment in fault are also being reviewed. The risk to health was determined as minimal due to the limited volume affected and the absence of *E.coli* in the system. No customers were impacted.

3.2 Section 18 Notifications

A water supplier must notify DHHS under Section 18 of the Act when drinking water supplied to the public does not comply with any relevant water quality standard set out in Schedule 2 of the Safe Drinking Water Regulations 2015. In 2017/18, no Section 18 notifications were made to DHHS.

4 Quality of Drinking Water for 2017/18

The 2017/18 Water Quality Annual Report includes Regulated Parameter data for the Safe Drinking Water Regulations 2015. All results irrespective of sample location type for drinking water supply have been included.

Table 2: Safe Drinking Water Regulations 2015 – Water Quality Schedule 2 Standards

Schedule 2 Parameter	Relevant sampling frequency per water sampling locality	Water quality standard for each water sampling locality	Presentation of results
<i>Escherichia coli</i>	One sample per week	No <i>Escherichia coli</i> per 100 millilitres of drinking water, with the exception of any false positive sample	Reported as 0 <i>Escherichia coli</i> detected in 100mL
Total Trihalomethanes	One sample per month	Less than or equal to 0.25 milligrams per litre of drinking water	Results to be expressed to two decimal places
Turbidity	One sample per week	The 95 th percentile of results for samples in any 12 month period must be less than or equal to 5.0 NTU	Results to be expressed to one decimal place.

4.1 Regulated Parameters - *Escherichia coli* (*E. coli*)

E. coli is a microorganism that may cause illness in susceptible individuals. *E. coli* is associated with recent contamination of water supplies with faecal material and is therefore considered to be an important indicator of the safety of the water supply. Samples are taken at least weekly in each of the water sampling localities.

There must be 0 *E.coli*/100 ml within drinking water.

Table 3: *E.coli* sampling frequency and results 2017/18

Water Sampling Locality	Sampling Frequency	Total No. Samples	Maximum Detected (orgs/100ml)	Number of detections and investigations conducted (s.22)	Number of samples where standard was not met.	Comments Complying (Yes / No)
Bairnsdale	Weekly	124	0	0	0	Yes
Bemm River	Weekly	104	0	0	0	Yes
Buchan	Weekly	104	0	0	0	Yes
Cann River	Weekly	104	0	0	0	Yes
Dinner Plain	Weekly	104	0	0	0	Yes
Eagle Point-Paynesville	Weekly	106	0	0	0	Yes
Kalimna	Weekly	104	0	0	0	Yes
Lindenow	Weekly	104	0	0	0	Yes
Lindenow South	Weekly	104	0	0	0	Yes
Mallacoota	Weekly	104	0	0	0	Yes
Merrangbaur	Weekly	104	0	0	0	Yes
Metung	Weekly	104	0	0	0	Yes
Nicholson-Swan Reach	Weekly	104	0	0	0	Yes
Nowa Nowa	Weekly	104	0	0	0	Yes
Omeo	Weekly	104	0	0	0	Yes
Orbost	Weekly	104	0	0	0	Yes
Sarsfield-Bruthen	Weekly	104	0	0	0	Yes
Sunlakes-Toorloo	Weekly	109 ¹	0	0	0	Yes
Swifts Creek	Weekly	104	0	0	0	Yes

Note: Additional samples are recorded due to increases in population size (both fixed and seasonal) and the number of sampling days per calendar year.

4.1.1 Comments on results

All water sampling localities were compliant for the *E. coli* water quality standard for the 2017/18 reporting period (Table 3).

4.2 Regulated Parameters - Total Trihalomethanes

Trihalomethanes are compounds that may be produced when chlorine disinfectant reacts with organic material present in the water. These compounds may impact public health if they are present in drinking water in high concentrations over a long period of time. Samples are taken monthly in each of the water sampling localities.

There must be less than or equal to 0.25 mg/L of Total Trihalomethanes within drinking water.

Table 4: Total Trihalomethanes sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	Total No. of Samples ¹	No. of Samples above the standard	Max. mg/L	Met the Standard (yes / no)
Bairnsdale	Monthly	12	0	0.04	Yes
Bemm River	Monthly	12	0	0.03	Yes
Buchan	Monthly	12	0	0.12	Yes
Cann River	Monthly	12	0	0.06	Yes
Dinner Plain ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹
Eagle Point- Paynesville	Monthly	14 ²	0	0.06	Yes
Kalimna	Monthly	12	0	0.06	Yes
Lindenow	Monthly	12	0	0.03	Yes
Lindenow South	Monthly	12	0	0.03	Yes
Mallacoota	Monthly	12	0	0.10	Yes
Merrangbaur	Monthly	12	0	0.06	Yes
Metung	Monthly	12	0	0.05	Yes
Nicholson-Swan Reach	Monthly	12	0	0.06	Yes
Nowa Nowa	Monthly	12	0	0.08	Yes
Omeo	Monthly	12	0	0.05	Yes
Orbost	Monthly	12	0	0.09	Yes
Sarsfield-Bruthen	Monthly	12	0	0.04	Yes
Sunlakes-Toorloo	Monthly	12	0	0.07	Yes
Swifts Creek	Monthly	12	0	0.05	Yes

¹ N/A- Not Applicable; Dinner Plain water sampling locality is not sampled for chlorine-based disinfection by-products as ultra-violet disinfection is employed in place of chlorine.

² More samples were taken at Eagle Point locality to account for Raymond Island.

4.2.1 Comments on results

All water sampling localities were compliant for the Total Trihalomethanes water quality standard for the 2017/18 reporting period (Table 4).

4.3 Regulated Parameters - Turbidity

Turbidity measures the presence of fine suspended material present in the water and at elevated levels may result in a 'cloudy' appearance of water. Turbidity is an indirect indicator for the general quality of water and may represent fine particles such as clays, minerals or microscopic organisms. Samples are taken weekly in each of the water sampling localities (Table 5).

The 95th percentile of turbidity results for samples in any 12 month period must be less than or equal to 5.0 NTU within drinking water.

Table 5: Turbidity sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency ¹	No. of Samples	Max NTU	95 th Percentile	Met the standard (yes/no)
Bairnsdale	Weekly	124	0.2	0.1	Yes
Bemm River	Weekly	104	1.1	0.7	Yes
Buchan	Weekly	104	0.4	0.1	Yes
Cann River	Weekly	104	10.0 ²	0.9	Yes
Dinner Plain	Weekly	104	1.1	0.1	Yes
Eagle Point-Paynesville	Weekly	106	0.2	0.1	Yes
Kalimna	Weekly	104	0.5	0.1	Yes
Lindenow	Weekly	104	0.6	0.3	Yes
Lindenow South	Weekly	104	0.1	0.1	Yes
Mallacoota	Weekly	104	0.5	0.5	Yes
Merrangbaur	Weekly	104	0.2	0.2	Yes
Metung	Weekly	104	0.2	0.1	Yes
Nicholson-Swan Reach	Weekly	104	0.8	0.2	Yes
Nowa Nowa	Weekly	104	0.6	0.2	Yes
Omeo	Weekly	104	0.5	0.1	Yes
Orbost	Weekly	104	1.6	0.2	Yes
Sarsfield-Bruthen	Weekly	104	3.7	0.1	Yes
Sunlakes-Toorloo	Weekly	109 ¹	0.1	0.1	Yes
Swifts Creek	Weekly	104	0.2	0.1	Yes

Note: Additional samples are recorded due to increases in population size (both fixed and seasonal) and the number of sampling days per calendar year.

¹This accounts for 57 samples taken from reticulation and 52 taken from water at the entry point to the locality.

²One sample in Cann River's reticulation system returned a turbidity result of 10 NTU. No *E.coli* was associated with the exceedance and the system was flushed. It was determined that no customers were at risk from this high level turbidity event.

4.3.1 Comments on results

Whilst one high level turbidity result was observed at Cann River, it did not result in 95th percentile of turbidity results exceeding 5.0 NTU at Cann River. Consequently all routine samples taken in

water sampling localities were compliant for the turbidity water quality standard for the 2017/18 reporting period (Table 5).

4.4 Fluoride

Fluoride is added to the water sampling localities of the Mitchell system to promote oral health under direction of DHHS. Fluoride samples are taken monthly in each of the fluoridated water sampling localities, effectively resulting in a weekly sample being taken at different locations in the fluoridated Mitchell system.

Compliance is measured as: annual average fluoride level must not exceed 1 milligram per litre and all individual samples must be less than 1.5 milligrams per litre.

Meeting Obligation is measured as: annual average fluoride level between 0.6 – 1.0 milligrams per litre in fluoridated systems.

Table 6: Fluoride sampling program 2017/18

Water Sampling Locality	Sampling Frequency	Total No. of Samples ⁴	Operating Target (mg/L)	Max. (mg/L)	Average (mg/L)	Number of samples where standard (>1.5mg/L) was not met.
Bairnsdale ²	Monthly	163	0.9	0.88	0.5	0
Bemm River	Biannually	2	N/A ¹	0.05	0.05	0
Buchan	Biannually	2	N/A ¹	0.06	0.05	0
Cann River	Biannually	2	N/A ¹	0.06	0.05	0
Dinner Plain	Biannually	2	N/A ¹	0.05	0.05	0
Eagle Point-Paynesville ²	Monthly	14	0.9	0.88	0.5	0
Kalimna ²	Monthly	14	0.9	0.86	0.51	0
Lindenow ²	Monthly	14	0.9	0.84	0.49	0
Lindenow South ²	Monthly	14	0.9	0.82	0.51	0
Mallacoota	Biannually	2	N/A ¹	0.07	0.06	0
Merrangbaur ²	Monthly	14	0.9	0.86	0.51	0
Metung ²	Monthly	14	0.9	0.86	0.49	0
Nicholson-Swan Reach ²	Monthly	14	0.9	0.87	0.5	0
Nowa Nowa ²	Monthly	14	0.9	0.86	0.52	0
Omeo	Biannually	2	N/A ¹	0.05	0.05	0
Orbost	Biannually	2	N/A ¹	0.05	0.05	0
Sarsfield-Bruthen ²	Monthly	14	0.9	0.86	0.54	0
Sunlakes-Toorloo ²	Monthly	14	0.9	0.86	0.51	0
Swifts Creek	Biannually	2	N/A ¹	0.11	0.09	0

¹ N/A – Not Applicable as these systems are not fluoridated.

² Indicates fluoridated water sampling localities.

³ Bairnsdale water sampling locality has two entry point locations, each sampled biannually.

⁴ Values over 12 reflect sampling of reticulation that took place monthly and samples of the entry water that took place biannually.

4.4.1 Comments on results

All water sampling localities were compliant for fluoride for the 2017/18 reporting period (Table 6). East Gippsland Water has been 100% compliant for this standard at each fluoridated sampling locality since fluoridation began in 2010.

The annual average fluoride levels reported above are below the obligation levels for fluoridated localities. These lower than usual annual average fluoride levels are a result of the fluoridation system not operating between February and June 2018. During periods when the fluoride dosing system was operational, the expected “compliance” and “meeting obligation” requirements were met.

Low levels of fluoride detected in non-fluoridated water sampling localities is due to the natural occurrence of fluoride in source waters.

4.5 Other Substances - Arsenic

Arsenic is a naturally occurring element, which can be introduced into water in the catchment through the presence of naturally occurring minerals and ores. Short and long-term exposure to

arsenic may result in potential health impacts. Samples are taken biannually in each applicable water sampling locality.

Compliance is measured as: less than or equal to 0.01 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 7: Arsenic sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Biannually	4 ¹	0	< 0.001	Yes
Bemm River	Biannually	2	0	< 0.001	Yes
Buchan	Biannually	2	0	< 0.001	Yes
Cann River	Biannually	2	0	< 0.001	Yes
Dinner Plain	Biannually	2	0	< 0.001	Yes
Eagle Point-Paynesville	Biannually	2	0	< 0.001	Yes
Kalimna	Biannually	2	0	< 0.001	Yes
Lindenow	Biannually	2	0	< 0.001	Yes
Lindenow South	Biannually	2	0	< 0.001	Yes
Mallacoota	Biannually	2	0	< 0.001	Yes
Merrangbaur	Biannually	2	0	< 0.001	Yes
Metung	Biannually	2	0	< 0.001	Yes
Nicholson-Swan Reach	Biannually	2	0	< 0.001	Yes
Nowa Nowa	Biannually	2	0	< 0.001	Yes
Omeo	Biannually	2	0	< 0.001	Yes
Orbost	Biannually	2	0	< 0.001	Yes
Sarsfield-Bruthen	Biannually	2	0	< 0.001	Yes
Sunlakes-Toorloo	Biannually	2	0	< 0.001	Yes
Swifts Creek	Biannually	2	0	< 0.001	Yes

¹ Water sampling locality has two entry point locations, each sampled biannually.

4.5.1 Comments on results

All water sampling localities were compliant for Arsenic for the 2017/18 reporting period (Table 7).

4.6 Other Substances - Biocides

All surface raw water sources are analysed annually for biocides (i.e. herbicides and pesticides). A representative suite of these biocides is examined based on land management activities in the water supply catchments. Sampling occurs during the months of heaviest rainfall, namely July or September. The targeted biocides, alongside their associated limits of detection, are presented in the table below. Compliance is measured as recorded values being below the Australian Drinking Water Guidelines 2011 health-based guideline value, or if not specified in the Guidelines, the absence of the compound above the laboratory's limits of detection.

East Gippsland Water maintains close liaison with local stakeholders (e.g. catchment management authorities) regarding biocide application in water supply catchments, to ensure minimal risk to the drinking water supply. This informs the frequency of biocide sampling and testing.

In the 2017/2018 period, raw surface water samples were analysed from Cann River, Orbost, Woodglen storages (1 and 2), Mallacoota, Omeo and Swifts Creek.

Table 8: Biocide sampling program and results 2017/18

Water Sampling Locality	Class	Compound	Units	Max Result	Complying (Yes / No)
July 2017 Orbost September 2017 Bairnsdale (Woodglen Storage 1+2), Mallacoota, Swifts Creek and Omeo November 2017 Omeo	N/A	Glyphosate	mg/L	<.03	Yes
	Organo-Chlorine Biocides	BHC (Alpha Isomer)	mg/L	<0.00005	Yes
		BHC (Beta Isomer)	mg/L	<0.00005	Yes
		BHC (Delta Isomer)	mg/L	<0.00005	Yes
		cis-Chlordane	mg/L	<0.00001	Yes
		trans-Chlordane	mg/L	<0.00001	Yes
		4,4'-DDD	mg/L	<0.00006	Yes
		4,4'-DDE	mg/L	<0.00006	Yes
		4,4'-DDT	mg/L	<0.00006	Yes
		Endosulfan I	mg/L	<0.00005	Yes
		Endosulfan II	mg/L	<0.00005	Yes
		Endosulphan Sulphate	mg/L	<0.00005	Yes
		Endrin	mg/L	<0.00010	Yes
		Endrin Aldehyde	mg/L	<0.0010	Yes
		Heptachlor	mg/L	<0.00005	Yes
	Heptachlor Epoxide	mg/L	<0.00005	Yes	
	Organo-Phosphorus Biocides	Lindane (BHC Gamma Isomer)	mg/L	<0.00005	Yes
		Methoxychlor	mg/L	<0.0002	Yes
		Dichlorvos	mg/L	<0.00001	Yes
		Monocrotophos	mg/L	<0.001	Yes
Prophos		mg/L	<0.001	Yes	
Tetraethyldithiopyrphos		mg/L	<0.001	Yes	
Phorate	mg/L	<0.001	Yes		
Demeton-S	mg/L	<0.001	Yes		

Water Sampling Locality	Class	Compound	Units	Max Result	Complying (Yes / No)
		Diazinon	mg/L	<0.001	Yes
		Methyl Parathion	mg/L	<0.001	Yes
		Ronnel	mg/L	<0.001	Yes
		Malathion	mg/L	<0.001	Yes
		Fenthion	mg/L	<0.001	Yes
		Chloropyrifos	mg/L	<0.001	Yes
		Trichlorinate	mg/L	<0.001	Yes
		Tetrachlovinphos	mg/L	<0.001	Yes
		Tukuthion	mg/L	<0.001	Yes
		Fensulfothion	mg/L	<0.001	Yes
		EPN	mg/L	<0.001	Yes
		Coumaphos	mg/L	<0.001	Yes
		Phenoxy acid biocides	2,4,5-T	µg/L	<0.01
	2,4,5-TP		µg/L	<0.01	Yes
	2,4,6-T		µg/L	< 0.1	Yes
	2,4-D		µg/L	<0.01	Yes
	2,4-DB		µg/L	<0.01	Yes
	2,4-DP		µg/L	<0.01	Yes
	2,6-D		µg/L	0.1	Yes
	4 Chlorophenoxy Acetic Acid		µg/L	<0.01	Yes
	Clopyralid		µg/L	<0.05	Yes
	Dicamba		µg/L	<0.01	Yes
	Fluroxypyr		µg/L	<0.05	Yes
	MCPA		µg/L	<0.01	Yes
	MCPB		µg/L	<0.01	Yes
	Mecoprop		µg/L	<0.01	Yes
	Picloram	µg/L	<0.05	Yes	
Triclopyr	µg/L	<0.01	Yes		

4.6.1 Comments on results

All of the above results were below the health-based guideline values in the Australian Drinking Water Guidelines, or if not specified in the Guidelines, were below the lower limits of detection, and were deemed to be compliant in 2017/18 (Table 8).

4.7 Other Substances- Blue green algae

Blue green algae (or cyanobacteria) are microscopic organisms that may thrive in warm, nutrient rich waters. They may impact water quality by releasing taste and odour compounds. In some extreme circumstances, these organisms may release concentrations of toxins. Samples are taken seasonally in each of the relevant water sampling localities. In addition to routine monitoring samples, additional samples may be taken to monitor the progression of algal growth during the summer/autumn seasons.

DHHS must be notified under Section 22 of the *Safe Drinking Water Act 2003* when samples representing the quality of drinking water supplied to customers indicate any of the following:

- total microcystins are detected at greater than or equal to 1.3 micrograms per litre
- *Microcystis aeruginosa* is present at greater than or equal to 6,500 cells per millilitre
- total combined biovolume of known toxic cyanobacterial species is greater than or equal to 0.6 cubic millimetres per litre
- total combined biovolume of all cyanobacterial species is greater than or equal to 10 cubic millimetres per litre.

Table 9 below summarises our monitoring program for blue green algae in 2017/18 in both raw water and clear water supplies.

Table 9: Blue green algae sampling program and results

Water Sampling Locality	No. of Samples (Raw Water)	No. of Samples (Clear Water)
Bairnsdale	54 ¹	N/A
Eagle Point- Paynesville		N/A
Kalimna		N/A
Lindenow		4
Lindenow South		N/A
Merrangbaur		4
Metung		N/A
Nicholson-Swan Reach		N/A
Nowa Nowa		N/A
Sarsfield-Bruthen		N/A
Sunlakes-Toorloo		N/A
Bemm River	N/A ²	29 ³
Buchan	N/A ²	N/A
Cann River	4	N/A
Dinner Plain	N/A ²	N/A
Mallacoota	4	4
Omeo	31 ⁴	N/A
Orbost	27 ⁵	12
Swifts Creek	5	N/A

¹ The same raw water storages (Woodglen 1 & 2) service all 11 localities

² N/A – Not Applicable; this may be due to the absence of the specified storage within this locality, or due to the low risk from algal growth due to the presence of a fully sealed storage tank

³ Bemm River clear water storage was sampled at an increased interval for blue green algae in response to elevated levels of non-toxic algae being present throughout 2017/2018 and an increase in taste and odour complaints from the community.

⁴ Omeo 10ML raw water storage was sampled at an increased interval to determine the success of the Hexa-Cover installation in reducing algal blooms in the raw water basin.

⁵ Orbost raw water storage was sampled at an increased interval for blue green algae in response to elevated levels of non-toxic algae being present throughout 2017/18.

4.7.1 *Comments on results*

No samples exceeded the reporting thresholds for Section 22 of the *Safe Drinking Water Act (2003)* in 2017/18. Due to the significant upgrades undertaken by EGW in the past 10 years, there are no uncovered clear water storages supplying customers (uncovered clear water storages are prone to algae blooms).

Any blue green algae biovolumes greater than 0.200 millimetres cubed per litre were reported in accordance with the Department of Environment, Land, Water and Planning *Blue Green Algae Circular 2016-17*.

4.8 Other Substances - Cadmium

Cadmium may be introduced into drinking water supplies through corrosion of pipes and fittings. Exposure to high concentrations of cadmium may result in potential health implications. Samples are taken quarterly in each of the water sampling localities.

Compliance is measured as: less than or equal to 0.002 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 10: Cadmium sampling program and results 2017/18

Water Sampling Locality	Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Quarterly	4	0	< 0.0002	Yes
Bemm River	Quarterly	4	0	< 0.0002	Yes
Buchan	Quarterly	4	0	< 0.0002	Yes
Cann River	Quarterly	4	0	< 0.0002	Yes
Dinner Plain	Quarterly	4	0	< 0.0002	Yes
Eagle Point- Paynesville	Quarterly	6 ¹	0	< 0.0002	Yes
Kalimna	Quarterly	4	0	< 0.0002	Yes
Lindenow	Quarterly	4	0	< 0.0002	Yes
Lindenow South	Quarterly	4	0	< 0.0002	Yes
Mallacoota	Quarterly	5 ²	0	< 0.0002	Yes
Merrangbaur	Quarterly	4	0	< 0.0002	Yes
Metung	Quarterly	4	0	< 0.0002	Yes
Nicholson-Swan Reach	Quarterly	4	0	< 0.0002	Yes
Nowa Nowa	Quarterly	4	0	< 0.0002	Yes
Omeo	Quarterly	4	0	< 0.0002	Yes
Orbost	Quarterly	4	0	< 0.0002	Yes
Sarsfield-Bruthen	Quarterly	4	0	< 0.0002	Yes
Sunlakes-Toorloo	Quarterly	4	0	< 0.0002	Yes
Swifts Creek	Quarterly	4	0	< 0.0002	Yes

¹ The six samples in Eagle Point – Paynesville include two samples taken on Raymond Island.

² An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency into addressing metals within the raw water supply.

4.8.1 Comments on results

All water sampling localities were compliant for Cadmium for the 2017/18 reporting period (Table 10).

4.9 Other Substances - Chromium

Chromium may occur naturally in the environment or be introduced through human activity. Samples are taken quarterly in each of the water sampling localities.

Compliance is measured as: less than or equal to 0.05 milligrams per litre of Cr(VI) (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 11: Chromium sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Quarterly	4	0	< 0.001	Yes
Bemm River	Quarterly	4	0	< 0.001	Yes
Buchan	Quarterly	4	0	< 0.001	Yes
Cann River	Quarterly	4	0	< 0.001	Yes
Dinner Plain	Quarterly	4	0	< 0.001	Yes
Eagle Point- Paynesville	Quarterly	6 ¹	0	< 0.001	Yes
Kalimna	Quarterly	4	0	< 0.001	Yes
Lindenow	Quarterly	4	0	< 0.001	Yes
Lindenow South	Quarterly	4	0	< 0.001	Yes
Mallacoota	Quarterly	5 ²	0	< 0.001	Yes
Merrangbaur	Quarterly	4	0	< 0.001	Yes
Metung	Quarterly	4	0	< 0.001	Yes
Nicholson-Swan Reach	Quarterly	4	0	< 0.001	Yes
Nowa Nowa	Quarterly	4	0	< 0.001	Yes
Omeo	Quarterly	4	0	< 0.001	Yes
Orbost	Quarterly	4	0	< 0.001	Yes
Sarsfield-Bruthen	Quarterly	4	0	< 0.001	Yes
Sunlakes-Toorloo	Quarterly	4	0	< 0.001	Yes
Swifts Creek	Quarterly	4	0	< 0.001	Yes

¹ The six samples in Eagle Point – Paynesville include two samples taken on Raymond Island

² An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency into addressing metals within the raw water supply.

4.9.1 Comments on results

All water sampling localities were compliant for Chromium for the 2017/18 reporting period (Table 11).

4.10 Other Substances - Copper

Copper may occur naturally in the environment or be introduced into water through contact with corroding copper pipes and fittings. Samples are taken quarterly in each applicable water sampling locality.

Compliance is measured as: less than 2 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011) and less than or equal to 1 milligram per litre (aesthetic guideline value under the Australian Drinking Water Guidelines 2011).

Table 12: Copper sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Quarterly	4	0	0.026	Yes
Bemm River	Quarterly	4	0	0.016	Yes
Buchan	Quarterly	4	0	<0.001	Yes
Cann River	Quarterly	4	0	<0.001	Yes
Dinner Plain	Quarterly	4	0	0.16	Yes
Eagle Point- Paynesville	Quarterly	6 ¹	0	0.006	Yes
Kalimna	Quarterly	4	0	0.013	Yes
Lindenow	Quarterly	4	0	0.016	Yes
Lindenow South	Quarterly	4	0	0.008	Yes
Mallacoota	Quarterly	5 ²	0	0.005	Yes
Merrangbaur	Quarterly	4	0	0.01	Yes
Metung	Quarterly	4	0	0.002	Yes
Nicholson-Swan Reach	Quarterly	4	0	0.011	Yes
Nowa Nowa	Quarterly	4	0	0.004	Yes
Omeo	Quarterly	4	0	0.004	Yes
Orbost	Quarterly	4	0	<0.001	Yes
Sarsfield-Bruthen	Quarterly	4	0	0.061	Yes
Sunlakes-Toorloo	Quarterly	4	0	0.007	Yes
Swifts Creek	Quarterly	4	0	0.005	Yes

¹ The six samples in Eagle Point – Paynesville include two samples taken on Raymond Island

² An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency into addressing metals within the raw water supply.

4.10.1 Comments on results

All water sampling localities were compliant for Copper for the 2017/18 reporting period (Table 12).

4.11 Other Substances - Cyanide

Cyanide may occur naturally in the environment or be introduced through human activity. Testing for Cyanide is performed biannually in each applicable water sampling locality.

Compliance is measured as: less than or equal to 0.08 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 13: Cyanide sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Biannually	4 ¹	0	< 0.005	Yes
Bemm River	Biannually	2	0	< 0.005	Yes
Buchan	Biannually	2	0	< 0.005	Yes
Cann River	Biannually	2	0	< 0.005	Yes
Dinner Plain	Biannually	2	0	< 0.005	Yes
Eagle Point- Paynesville	Biannually	2	0	< 0.005	Yes
Kalimna	Biannually	2	0	< 0.005	Yes
Lindenow	Biannually	2	0	< 0.005	Yes
Lindenow South	Biannually	2	0	< 0.005	Yes
Mallacoota	Biannually	2	0	< 0.005	Yes
Merrangbaur	Biannually	2	0	< 0.005	Yes
Metung	Biannually	2	0	< 0.005	Yes
Nicholson-Swan Reach	Biannually	2	0	< 0.005	Yes
Nowa Nowa	Biannually	2	0	< 0.005	Yes
Omeo	Biannually	2	0	< 0.005	Yes
Orbost	Biannually	2	0	< 0.005	Yes
Sarsfield-Bruthen	Biannually	2	0	< 0.005	Yes
Sunlakes-Toorloo	Biannually	2	0	< 0.005	Yes
Swifts Creek	Biannually	2	0	< 0.005	Yes

¹ Water Sampling locality has two entry point locations, each sampled biannually

4.11.1 Comments on results

All water sampling localities were compliant for Cyanide for the 2017/18 reporting period (Table 13).

4.12 Other Substances - Free Chlorine

Chlorine is a disinfection agent that is added to drinking water to kill harmful microorganisms and ensure the water is safe to drink. The Australian Drinking Water Guidelines 2011 state that Chlorine concentrations in the drinking water supply must be less than or equal to 5 milligrams per litre for health purposes.

Table 14: Free Chlorine sampling program and results 2017/18.

Water Sampling Locality	Minimum Sampling Frequency	No. of Samples ¹	Minimum (mg/L)	Maximum (mg/L)	Average (mg/L)
Bairnsdale	Weekly	179	0.47	1.4	0.94
Bemm River	Weekly	104	0.12 ³	1.7	0.73
Buchan	Weekly	104	0.08 ³	0.9	0.65
Cann River	Weekly	104	0.14	2.2	0.93
Dinner Plain	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²
Eagle Point- Paynesville	Weekly	108	0.35	0.85	0.67
Kalimna	Weekly	104	0.55	0.81	0.70
Lindenow	Weekly	106	0.40	1.2	0.82
Lindenow South	Weekly	106	0.14 ³	0.93	0.65
Mallacoota	Weekly	104	0.21	1.5	0.82
Merrangbaur	Weekly	104	0.52	0.81	0.66
Metung	Weekly	105	0.55	0.87	0.70
Nicholson-Swan Reach	Weekly	106	0.55	0.99	0.78
Nowa Nowa	Weekly	104	0.36	1.2	0.58
Omeo	Weekly	104	0.06 ³	0.87	0.63
Orbost	Weekly	104	0.05 ³	1.3	0.88
Sarsfield-Bruthen	Weekly	104	0.35	0.94	0.77
Sunlakes-Toorloo	Weekly	109	0.36	0.9	0.73
Swifts Creek	Weekly	104	0.36	0.91	0.70

¹ Additional samples may be recorded due to population size (both fixed and seasonal) and the number of sampling days per calendar year.

² Dinner Plain is not sampled for free chlorine as ultra-violet disinfection is employed in lieu of chlorine.

³ EGW aims for a free chlorine concentration of ≥ 0.2 mg/L within all reticulation systems. Whilst these free chlorine levels were below 0.2 mg/L, they were not considered a health risk. As outlined in Table 3, no *E.coli* was associated with these low chlorine level events and flushing was conducted to return free chlorine levels to optimum concentrations.

4.12.1 Comments on results

All water sampling localities were compliant for Free Chlorine for the 2017/18 reporting period (Table 14).

4.13 Other Substances - Lead

Lead may occur naturally in water or be introduced through contact with lead pipes and joint fittings. Human exposure to high levels of lead may result in toxic effects. Samples are taken quarterly in each applicable water sampling locality.

Compliance is measured as: less than or equal to 0.01 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 15: Lead sampling program and results 2017/18.

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Quarterly	4	0	< 0.001	Yes
Bemm River	Quarterly	4	0	<0.001	Yes
Buchan	Quarterly	4	0	< 0.001	Yes
Cann River	Quarterly	4	0	< 0.001	Yes
Dinner Plain	Quarterly	4	0	< 0.001	Yes
Eagle Point- Paynesville	Quarterly	6 ¹	0	< 0.001	Yes
Kalimna	Quarterly	4	0	< 0.001	Yes
Lindenow	Quarterly	4	0	< 0.001	Yes
Lindenow South	Quarterly	4	0	< 0.001	Yes
Mallacoota	Quarterly	5 ²	0	< 0.001	Yes
Merrangbaur	Quarterly	4	0	< 0.001	Yes
Metung	Quarterly	4	0	< 0.001	Yes
Nicholson-Swan Reach	Quarterly	4	0	< 0.001	Yes
Nowa Nowa	Quarterly	4	0	< 0.001	Yes
Omeo	Quarterly	4	0	< 0.001	Yes
Orbost	Quarterly	4	0	< 0.001	Yes
Sarsfield-Bruthen	Quarterly	4	0	<0.001	Yes
Sunlakes-Toorloo	Quarterly	4	0	< 0.001	Yes
Swifts Creek	Quarterly	4	0	<0.001	Yes

¹ The six samples in Eagle Point – Paynesville include two samples taken on Raymond Island

²An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency into addressing metals within the raw water supply.

4.13.1 Comments on results

All water sampling localities were compliant for Lead for the 2017/18 reporting period (Table 15).

4.14 Other Substances - Manganese

Manganese may occur naturally in the environment, or may be introduced through industrial activity. Manganese may cause aesthetic issues (such as taste or staining of laundry and appliances) as well as health issues at high concentrations. Compliance is measured as: less than or equal to 0.1 milligrams per litre (aesthetic value) and less than or equal to 0.5 milligrams per litre (health-based guideline value under the Australian Drinking Water Guidelines 2011).

Table 16: Manganese sampling program and results 2017/18.

Water Sampling Locality	Sampling Frequency	No. of Samples ¹	Minimum (mg/L)	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Monthly	28 ²	<0.001	<0.001	Yes
Bemm River	Quarterly	8	<0.001	<0.001	Yes
Buchan	Quarterly	8	<0.001	<0.001	Yes
Cann River	Quarterly	8	<0.001	0.001	Yes
Dinner Plain	Quarterly	4	<0.001	0.001	Yes
Eagle Point- Paynesville	Quarterly	6	<0.001	<0.001	Yes
Kalimna	Quarterly	4	<0.001	<0.001	Yes
Lindenow	Quarterly	4	<0.001	<0.001	Yes
Lindenow South	Quarterly	4	<0.001	<0.001	Yes
Mallacoota	Monthly	25 ²	<0.001	0.002	Yes
Merrangbaur	Quarterly	4	<0.001	<0.001	Yes
Metung	Quarterly	4	<0.001	<0.001	Yes
Nicholson-Swan Reach	Quarterly	4	<0.001	<0.001	Yes
Nowa Nowa	Quarterly	4	<0.001	<0.001	Yes
Omeo	Quarterly	8	<0.001	<0.001	Yes
Orbost	Quarterly	8	<0.001	0.001	Yes
Sarsfield-Bruthen	Quarterly	4	<0.001	0.002	Yes
Sunlakes-Toorloo	Quarterly	4	<0.001	<0.001	Yes
Swifts Creek	Quarterly	8	<0.001	<0.001	Yes

¹ Number of samples per locality are determined by risk assessment based upon historical data and source water (river or bore water) and the sampling programme is set according to the risk rating.

⁴An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency of removing metals from the raw water supply.

4.14.1 Comments on results

All water sampling localities were compliant for Manganese for the 2017/18 reporting period (both aesthetic and health values) (Table 16).

4.15 Other Substances - Radiological

Radiologically active compounds may impact public health. Based on risk assessment, radiological activity samples are taken from bore waters every two years and from surface waters every five years. While there are no specific guidelines for radiological activity, the Australian Drinking Water Guidelines 2011 advise that radionuclides should be identified and determined if gross alpha or beta activities exceed 0.5 Bq/L.

Table 17: Radiological compound results for bore water 2016/17.

Water Sampling Locality	Sampling Frequency	No. of Samples	No. of Non-Complying Samples	Maximum (Bq/L)	Complying (Yes / No)
Bairnsdale-Bore	Biannual	10	0	< 0.1	Yes
Dinner Plain-Bore	Biannual	2	0	< 0.1	Yes
Mallacoota-Bore	Biannual	4	0	< 0.1	Yes

No radiological tests were required to be conducted on bore and raw surface waters in 2017/18. The next tests for both bore and surface water are due to be taken in 2018/19.

4.15.1 Comments on results from 2016/2017

All water sampling localities were compliant for radiological active compounds for the 2016/17 reporting period (Table 17).

4.16 Aesthetic Characteristics - Colour (True)

Colour generally occurs in water as a result of dissolved organic material. Although not a health consideration, elevated colour can be an aesthetic issue.

Compliance is measured as: less than or equal to 15 Hazen Units (HU); (Australian Drinking Water Guidelines 2011 aesthetic value).

Table 18: Colour sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples ¹	Minimum (HU)	Maximum (HU)	Complying (Yes / No)
Bairnsdale	Monthly	36	<2	2	Yes
Bemm River	Monthly	12	<2	2	Yes
Buchan	Monthly	12	<2	2	Yes
Cann River	Monthly	12	<2	4	Yes
Dinner Plain	Monthly	24	<2	2	Yes
Eagle Point- Paynesville	Monthly	14	<2	2	Yes
Kalimna	Monthly	12	<2	2	Yes
Lindenow	Monthly	12	<2	2	Yes
Lindenow South	Monthly	N/A ²	N/A ²	N/A ²	N/A ²
Mallacoota	Monthly	12	<2	2	Yes
Merrangbaur	Monthly	12	<2	2	Yes
Metung	Monthly	12	<2	2	Yes
Nicholson-Swan Reach	Monthly	N/A ²	N/A ²	N/A ²	N/A ²
Nowa Nowa	Monthly	12	<2	4	Yes
Omeo	Monthly	24	<2	2	Yes
Orbost	Monthly	24	<2	2	Yes
Sarsfield-Bruthen	Monthly	12	<2	2	Yes
Sunlakes-Toorloo	Monthly	12	<2	2	Yes
Swifts Creek	Monthly	24	<2	2	Yes

¹ Number of samples per locality are determined by risk assessment based upon historical data and source water (river or bore water) and the sampling programme is set according to the risk rating

² N/A - Not Applicable; Colour is not sampled in the some sampling localities within the Mitchell system based on risk assessment and results from network samples taken downstream of these localities i.e. Lindenow South, Nicholson-Swan Reach

4.16.1 Comments on results

All water sampling localities were compliant for colour for the 2017/18 reporting period (Table 18).

4.17 Aesthetic Characteristics - Hardness

Hardness is caused by the presence of dissolved calcium compounds in water. Hard water may result in scaling issues.

Compliance is measured as: less than or equal to 200 milligrams per litre (Australian Drinking Water Guidelines 2011 aesthetic value) as total hardness (as calcium carbonate).

Table 19: Hardness sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples ¹	Minimum (mg/L)	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Quarterly	12	15	23	Yes
Bemm River	Quarterly	8	2	16	Yes
Buchan	Quarterly	8	13	50	Yes
Cann River	Quarterly	8	19	35	Yes
Dinner Plain	Quarterly	4	32	40	Yes
Eagle Point- Paynesville	Quarterly	8	16	25	Yes
Kalimna	Quarterly	8	16	23	Yes
Lindenow	Quarterly	8	15	23	Yes
Lindenow South	Quarterly	8	16	26	Yes
Mallacoota	Quarterly	8	42	78	Yes
Merrangbaur	Quarterly	8	16	25	Yes
Metung	Quarterly	8	17	29	Yes
Nicholson-Swan Reach	Quarterly	N/A ²	N/A ²	N/A ²	N/A ²
Nowa Nowa	Quarterly	8	18	140	Yes
Omeo	Quarterly	8	12	16	Yes
Orbost	Quarterly	8	17	19	Yes
Sarsfield-Bruthen	Quarterly	8	16	26	Yes
Sunlakes-Toorloo	Quarterly	8	17	25	Yes
Swifts Creek	Quarterly	8	64	100	Yes

¹ Number of samples per locality are determined by risk assessment based upon historical data and source water (river or bore water) and the sampling programme is set according to the risk rating

² N/A - Not Applicable; Hardness is not sampled in the some sampling localities within the Mitchell system based on risk assessment and results from network samples taken downstream of these localities i.e. Nicholson-Swan Reach

4.17.1 Comments on results

All water sampling localities were compliant for hardness for the 2017/18 reporting period (Table 19).

4.18 Aesthetic Characteristics - Iron

Iron may occur naturally in the environment, or may be introduced through industrial activity, as well as through customer service piping. High levels of iron in the water can impart taste and may stain laundry or fittings. There is no health-based guideline for iron in drinking water. Compliance is measured as: less than or equal to 0.3 milligrams per litre (Australian Drinking Water Guidelines 2011 aesthetic value).

Table 20: Iron sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples ¹	Minimum (mg/L)	Maximum (mg/L)	Complying (Yes / No)
Bairnsdale	Monthly ²	28 ²	<0.01	0.01	100%
Bemm River	Quarterly	8	0.02	0.05	100%
Buchan	Quarterly	8	<0.01	<0.01	100%
Cann River	Quarterly	8	<0.01	0.02	100%
Dinner Plain	Quarterly	4	<0.01	0.01	100%
Eagle Point- Paynesville	Quarterly	6 ³	<0.01	<0.01	100%
Kalimna	Quarterly	4	<0.01	<0.01	100%
Lindenow	Quarterly	4	<0.01	<0.01	100%
Lindenow South	Quarterly	4	<0.01	<0.01	100%
Mallacoota	Monthly	25 ⁴	<0.01	0.02	100%
Merrangbaur	Quarterly	4	<0.01	<0.01	100%
Metung	Quarterly	4	<0.01	<0.01	100%
Nicholson-Swan Reach	Quarterly	4	<0.01	0.01	100%
Nowa Nowa	Quarterly	4	<0.01	<0.01	100%
Omeo	Quarterly	8	<0.01	0.04	100%
Orbost	Quarterly	8	<0.01	0.01	100%
Sarsfield-Bruthen	Quarterly	4	<0.01	0.06	100%
Sunlakes-Toorloo	Quarterly	4	<0.01	<0.01	100%
Swifts Creek	Quarterly	8	<0.01	0.12	100%

¹ Number of samples per locality are determined by risk assessment based upon historical data and source water (river or bore water) and the sampling programme is set according to the risk rating.

²Bairnsdale entry water points are sampled monthly whilst reticulation sample points are sampled quarterly.

³Raymond Island reticulation point is sampled every 6 months.

⁴An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency of removing metals from the raw water supply.

4.18.1 Comments on results

All water sampling localities were compliant for iron for the 2017/18 reporting period (Table 20).

4.19 Aesthetic Characteristics - pH

pH is the measure of the acidity (pH <7.0) or alkalinity (pH >7.0) of the water. Extreme pH values may cause corrosion or scaling in certain circumstances. High pH may also reduce the effectiveness of chlorine disinfection. The Australian Drinking Water Guidelines 2011 state that the pH of drinking water should be between pH 6.5 and 8.5 (aesthetic guideline limit). However, as cement mortar-lined pipes and newly constructed concrete water storages may raise pH, values up to pH 9.2 may be tolerated, provided no deterioration in microbiological quality of the water supply is observed.

Table 21: pH Sampling program and results 2017/18

Water Sampling Locality	Minimum Sampling Frequency	No. of Samples ¹	Minimum (mg/L)	Maximum (mg/L)	Average (mg/L)
Bairnsdale	Weekly	180	7.00	8.00	7.43
Bemm River	Weekly	104	7.20	7.70	7.51
Buchan	Weekly	104	7.80	9.20	8.28
Cann River	Weekly	104	7.20	9.20	8.18
Dinner Plain	Weekly	107	6.60	7.30	6.92
Eagle Point- Paynesville	Weekly	108	7.20	8.70	7.60
Kalimna	Weekly	104	7.20	7.90	7.50
Lindenow	Weekly	106	7.30	8.10	7.57
Lindenow South	Weekly	104	7.40	8.30	7.79
Mallacoota	Weekly	104	7.30	8.70	7.83
Merrangbaur	Weekly	104	7.30	8.10	7.64
Metung	Weekly	104	7.30	9.10	8.32
Nicholson-Swan Reach	Weekly	104	7.10	9.00	7.53
Nowa Nowa	Weekly	104	7.50	9.20	8.22
Omeo	Weekly	104	7.40	8.80	7.94
Orbost	Weekly	104	7.30	9.00	7.99
Sarsfield-Bruthen	Weekly	104	7.00	8.20	7.45
Sunlakes-Toorloo	Weekly	109	7.20	8.80	7.66
Swifts Creek	Weekly	104	7.30	8.00	7.72

¹ Number of samples per locality are determined by risk assessment based upon historical data and source water (river or bore water) and the sampling programme is set according to the risk rating.

4.19.1 Comments on results

Based on the average values over the year, pH values for all water sampling localities are within the upper guideline range for pH (i.e. pH < 9.2). Elevated individual pH values have been observed in a number of water sampling localities. This is largely due to the presence of cement-lined distribution pipes. However, these higher pH values have not impacted water quality, as evidenced by compliant microbiological (Table 3.1) and aesthetic quality (Section 5) during 2017/18.

4.20 Aesthetic Characteristics - Zinc

Zinc may occur naturally in the environment, or may be introduced through industrial activity, as well as through corrosion of customer service piping. High levels of zinc in the water can impart taste and appearance issues with drinking water.

Compliance is measured as: less than or equal to 3 milligrams per litre (Australian Drinking Water Guidelines 2011 aesthetic value).

Table 22: Zinc sampling program and results 2017/18

Water Sampling Locality	Sampling Frequency	No. of Samples	Minimum (mg/L)	Maximum (mg/L)	% Complying
Bairnsdale	Quarterly	4	<0.001	0.004	100%
Bemm River	Quarterly	4	0.007	0.013	100%
Buchan	Quarterly	4	<0.001	0.001	100%
Cann River	Quarterly	4	<0.001	0.002	100%
Dinner Plain	Quarterly	4	0.003	0.019	100%
Eagle Point-Paynesville	Quarterly	4	<0.001	0.002	100%
Kalimna	Quarterly	4	<0.001	0.007	100%
Lindenow	Quarterly	4	<0.001	0.005	100%
Lindenow South	Quarterly	4	<0.001	0.005	100%
Mallacoota	Quarterly	5 ¹	0.001	0.002	100%
Merrangbaur	Quarterly	4	0.002	0.003	100%
Metung	Quarterly	4	0.001	0.002	100%
Nicholson-Swan Reach	Quarterly	4	<0.001	0.005	100%
Nowa Nowa	Quarterly	4	<0.001	0.003	100%
Omeo	Quarterly	4	0.001	0.004	100%
Orbost	Quarterly	4	<0.001	0.002	100%
Sarsfield-Bruthen	Quarterly	4	0.002	0.016	100%
Sunlakes-Toorloo	Quarterly	4	<0.001	0.002	100%
Swifts Creek	Quarterly	4	0.001	0.002	100%

¹An extra sample was taken in the Mallacoota reticulation system as part of an investigation into the treatment plant's efficiency into addressing metals within the raw water supply.

4.20.1 Comments on results

All water sampling localities were compliant for Zinc for the 2017/18 reporting period.

4.21 Aesthetic Characteristics – Acid Soluble Aluminium

As outlined in Table 1, EGW applies Poly Aluminium Chlorohydrate to multiple water treatment plants as a coagulant. This can result in the presence of acid soluble aluminium within drinking water. Should acid soluble aluminium exceed a concentration of 0.2 mg/L, a white gelatinous precipitate can form within the distribution network causing “milky coloured” water (depending on the pH of the water).

Table 23: Acid Soluble Aluminium sampling program and results 2017-2018

Water Sampling Locality	Entry Water Sampling Frequency	Reticulation Sampling Frequency	No. of Samples	Minimum (mg/L)	Maximum (mg/L)	% Samples Complying
Bairnsdale	Weekly	Quarterly	68 ¹	<.01	0.05	100%
Bemm River	Monthly	Quarterly	17	<.01	0.03	100%
Buchan	Monthly	Quarterly	16	<.01	0.04	100%
Cann River	Monthly	Quarterly	17	<.01	0.13	100%
Dinner Plain	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²
Eagle Point-Paynesville	N/A	Quarterly	6	<.01	0.04	100%
Kalimna	N/A	Quarterly	4	<.01	0.04	100%
Lindenow	N/A	Quarterly	4	<.01	0.03	100%
Lindenow South	Quarterly	Quarterly	8	<.01	0.04	100%
Mallacoota	Weekly	Quarterly	56	<.01	0.01	100%
Merrangbaur	N/A	Quarterly	4	<.01	0.04	100%
Metung	N/A	Quarterly	4	<.01	0.04	100%
Nicholson-Swan Reach	N/A	Quarterly	4	<.01	0.04	100%
Nowa Nowa	N/A	Quarterly	4	<.01	0.04	100%
Omeo	Weekly	Quarterly	56	<.01	0.47	>99%
Orbost	Weekly	Quarterly	56	<.01	0.33	>99%
Sarsfield-Bruthen	N/A	Quarterly	4	<.01	0.04	100%
Sunlakes-Toorloo	N/A	Quarterly	4	<.01	0.03	100%
Swifts Creek	Weekly	Quarterly	56	<.01	0.01	100%

¹There are two entry water points associated with Bairnsdale. One is sampled weekly, the other monthly. As a result there are 68 samples.

²Aluminium Chlorohydrate is not added to the treatment process at Dinner Plain. Therefore acid soluble aluminium is not a risk within Dinner Plain’s reticulation system.

4.21.1 Comments on results

The majority of sampling localities were compliant for Acid Soluble Aluminium for the 2017/18 reporting period, with the exception of Orbost and Omeo. Orbost entry water had one reading of 0.33 mg/L whilst Omeo entry water had one reading of 0.47 mg/L. Both were attributable to water treatment plant performance issues which have since been rectified. Neither were associated with customer complaints of milky coloured water.

4.22 Analysis of Results

Comparing the performance in all water sampling localities demonstrates our high standard of compliance over the long term. All sampling localities were fully compliant with the parameters described in Schedule 2 of the Safe Drinking Water Regulations 2015. EGW has been 100% compliant against all regulated parameters over the past three years.

EGW samples for additional parameters in raw water, entry points and throughout the reticulation system. As outlined in Table 24, all entry point and reticulation samples have been 100% compliant against the health guideline values in the Australian Drinking Water Guidelines 2011. Parameters not listed in the ADWG are also analysed (Table 25).

Table 24: Reticulation and entry point monitoring and results 2015-2018.

Parameter	Unit	Health Guideline Value (ADWG 2011)	Aesthetic Guideline Value (ADWG 2011)	Performance against guideline values 2015/16	Performance against guideline values 2016/17	Performance against guideline values 2017/18
Acid Soluble Aluminium	(mg/L)	-	0.2	100%	>99% ⁴	>99% ⁵
Arsenic	(mg/L)	0.01	-	N/A ²	100%	100%
Barium	(mg/L)	2	-	N/A ²	100%	100%
Cadmium	(mg/L)	0.002	-	100%	100%	100%
Chlorine (as free chlorine)	(mg/L)	5	0.6	100%	100%	100%
Chlorite	(mg/L)	0.8	-	100%	100%	100%
Chromium	(mg/L)	0.05	-	100%	100%	100%
Colour (True)	HU	-	15	100%	100%	100%
Copper	(mg/L)	2	1	100%	100%	100%
Cyanide	(mg/L)	0.08	-	N/A ²	100%	100%
E.coli	(orgs/100mL)	0	-	100%	100%	100%
Fluoride	(mg/L)	1.5	-	100%	100%	100%
Dichloroacetic Acid	(mg/L)	0.1	-	100%	100%	100%
Trichloroacetic Acid	(mg/L)	0.1	-	100%	100%	100%
Hardness (as CaCO ₃)	(mg/L)	-	200	100%	100%	100%
Iodide	(mg/L)	0.5	-	N/A ²	100%	100%

Parameter	Unit	Health Guideline Value (ADWG 2011)	Aesthetic Guideline Value (ADWG 2011)	Performance against guideline values 2015/16	Performance against guideline values 2016/17	Performance against guideline values 2017/18
Iron	(mg/L)	-	0.3	100%	100%	100%
Lead	(mg/L)	0.01	-	100%	100%	100%
Manganese	(mg/L)	0.5	0.1	100%	100%	100%
pH (Field)	-	-	6.5-9.2	>99% ³	>99% ³	100%
Silver	(mg/L)	0.1	-	N/A ¹	100%	100%
Total Trihalomethanes	(mg/L)	0.25	-	100%	100%	100%
Turbidity	NTU	-	5	100%	100%	100%
Zinc (mg/L)	(mg/L)	3	-	100%	100%	100%

¹ N/A - Not Applicable; Sampling for these parameters is conducted on a biennial basis according to a risk based assessment of each sampling locality conducted in 2012.

² N/A - Not Applicable; Sampling for these parameters was previously conducted on a biennial basis according to a risk based assessment of each sampling locality conducted in 2015. The frequency of sampling has since changed.

³ Based on the average values over the past three years, pH values for all water sampling localities are within the upper aesthetic guideline range for pH (i.e. pH < 9.2). Elevated individual pH values have been observed in a number of water sampling localities within the reticulation system. This is largely due to the presence of cement-lined distribution pipes. However, these higher pH values have not impacted water quality, as evidenced by compliant microbiological (Table 3.1) and aesthetic quality (Section 5) during 2017/18.

⁴ One sample in the Orbost entry water revealed a reading of 0.28 mg/L Acid Soluble Aluminium. This was a result of water treatment plant performance and was operationally rectified.

⁵ Two samples were found in exceedance of the ADWG Acid Soluble Aluminium limit. Orbost entry water had one reading of 0.33 mg/L whilst Omeo entry water had one reading of 0.47 mg/L. Both were attributable to water treatment plant performance which has since been rectified.

Table 25: Reticulation and entry point - other parameter monitoring results 2015-2018

Parameter	Unit	2015/16 Maximum	2016/17 Maximum	2017/18 Maximum
Calcium as Ca	mg/L	8.4	30	24
Chlorate	mg/L	0.05	0.38	0.38
Coliforms	Colilert	1	200	200
Electrical Conductivity	(uS/cm @ 25C)	340	440	540
Monochloroacetic Acid	mg/L	0.005	0.005	0.005
Bromoacetic Acid	mg/L	0.005	0.005	0.005
Bromochloroacetic Acid	mg/L	0.011	0.005	0.01
Bromodichloroacetic Acid	mg/L	0.008	0.005	0.012
Dibromoacetic Acid	mg/L	0.010	0.011	0.013
Magnesium	mg/L	7.4	11	19
Total Aluminium	mg/L	0.13	0.28	0.48

4.23 Continuous Improvement Measures

Last financial year, the following water quality improvements were made to our systems:

- Installing three new treated water storage tanks - at Cann River, Bemm River and Omeo.
- Upgrading Woodglen's Fluoridation system.
- Trialling an innovative cover over Omeo's 10ML raw water storage, comprising thousands of interlocking hexagonal blocks (Hexa-Cover) - designed to reduce evaporation and improve water quality in the storage by cutting the potential for algal and airborne contamination.
- Inspecting lined and covered water storages - using a small, remotely operated underwater vehicle to assess their integrity against any risks of external contamination.
- Carrying out upgrades to all shade cloth covers over clear water storages to enhance their integrity.
- Installing backup generators at water treatment plants to safeguard their ongoing operation in the event of a power outage.
- Conducting water quality risk management upgrades to water treatment plants to ensure the continuation of effective treatment practices.
- Carrying out design work for future water tank installations and basin augmentations.
- Undertaking further improvements to wash water treatment processes at water treatment plants to ensure high quality water is retained.
- On-going management of water quality risks associated with stock access to rivers and streams in drinking water catchments, weed spraying and willows.
- High-pressure cleaning (air scouring) of water mains across the water distribution network.

5 Complaints Relating to Water Quality

Our Customer Charter outlines our commitments, responsibilities and standards of service to be provided to our customers.

The Charter also sets out the obligations to customers as outlined by the Essential Services Commission's Customer Service Code for metropolitan retail and regional water businesses. This includes specific standards and conditions of service that apply to all water businesses in Victoria.

Further information relating to East Gippsland Water's Customer Charter can be found on our website www.egwater.vic.gov.au.

EGW defines a water quality complaint as "A customer contacts EGW and informs EGW they are unhappy with the water being supplied, or, informs EGW of an issue that has affected the quality of the water being supplied, or, expresses opposition to EGW's use of water treatment chemicals".

The number of customer complaints relating to water quality increased in 2016/17 when compared to the previous year (Table 26). This is attributable in large part to a change in how complaints are defined, which was introduced by EGW during 2016/17 and followed an ESC audit of our processes. There was a reduction in complaints in 2017/18 compared to 2016/17 (Table 26).

Water quality complaint explanations can be found in sections 5.1 – 5.5.

Table 26: Summary of all customer water quality complaints 2014-2018.

Type of Complaints	Number of Complaints			Comparison between years
	2015/16	2016/17	2017/18	
Alleged Illness	0	2	2	No significant change.
Discoloured Water	0	23	20	No significant change.
Taste and Odour	5	29	17	Decrease of 12 complaints from previous reporting period.
Air in Water (White Water)	0	13	18	No significant change.
Other	3	1	3	No significant change.
Total	8	68	60	No significant change.

Table 27: Summary of all customer water quality complaints per locality 2017/18.

Water Sampling Locality	Type of Complaint					Total
	Alleged Illness	Discoloured Water	Taste and Odour	White Water	Other	
Bairnsdale	1	8	2	10	0	21
Bemm River	0	0	1	0	0	1
Buchan	0	0	0	0	0	0
Cann River	0	0	0	0	1	1
Dinner Plain	0	0	0	0	0	0
Eagle Point- Painesville	0	1	3	3	0	7
Kalimna	0	0	1	1	0	2
Lindenow	0	0	0	0	0	0
Lindenow South	0	0	0	0	1	1
Mallacoota	0	0	1	0	0	1
Merrangbaur	0	0	1	0	0	1
Metung	0	0	2	1	0	3
Nicholson-Swan Reach	0	0	0	1	0	1
Nowa Nowa	0	0	0	0	0	0
Omeo	0	0	0	0	0	0
Orbost	0	7	4	1	0	12
Sunlakes-Toorloo	1	3	2	1	0	7
Sarsfield-Bruthen	0	1	0	0	0	1
Swifts Creek	0	0	0	0	0	0
Unknown (Anonymous)	0	0	0	0	1	1
Total	2	20	17	18	3	60

5.1 Alleged Health Complaints

Two complaints were recorded in the EGW customer database, alleging health issues had resulted from drinking water (Table 27). These were unconfirmed by a health practitioner. EGW was fully compliant in all localities for all health based guidelines (Australian Drinking Water Guidelines 2011).

5.2 Discoloured Water

Twenty complaints of discoloured drinking water were recorded in 2017/18 (Table 27). These were mostly due to works being undertaken on water mains. All were managed through flushing the reticulation system.

5.3 Taste and Odour

Seventeen taste and odour complaints were recorded in 2017/18 (Table 27). The majority of other complaints related to drinking water tasting and smelling of chlorine. EGW manages these complaints by sampling for chlorine residual or flushing the system where required. Sampling confirmed 100% compliance with health based guidelines.

5.4 Air in Water (White Water)

Air in water can cause drinking water to appear cloudy in colour as a result of the formation of tiny bubbles. Eighteen complaints related to air in water were recorded in 2017/18 (Table 27). EGW managed this issue by flushing the reticulation system.

5.5 Other

The three “other” complaints related to concerns with the application of chemicals to treat drinking water (Table 25). As outlined within this report, drinking water quality sampling confirmed 100% compliance with health based guidelines.

6 Regulated Water

Regulated Water is “water that is not intended for drinking but could reasonably be mistaken for drinking water”. EGW has no declared Regulated Water supplies as defined in Section 6 (2) of the *Safe Drinking Water Act 2003*.

We have a number of customers who are supplied non-potable water by agreement. We remind those customers that their water is non-potable on their quarterly invoice.

7 Undertakings, aesthetic standard variations and exemptions

East Gippsland Water has no undertakings, aesthetic standard variations or exemptions relating to the provision of Safe Drinking Water.

8 Further Information

This Water Quality Annual Report is prepared in accordance with Section 26 of the *Safe Drinking Water Act 2003*.

For further information regarding water quality information, please refer to the East Gippsland Water website (www.egwater.vic.gov.au), or contact East Gippsland Water on 1300 720 700.

9 Glossary of terms

Coagulation/ Flocculation Treatment process where chemicals are added to raw water to bind suspended solids, generally expressed as turbidity. Once bound, the chemical and turbidity form “floc” which is either settled out in the clarification process or floated off during the dissolved air flotation process.

Chlorine Gas Chemical added for disinfection of water.

CWS Clear water storage

DWQRMS Drinking Water Quality Risk Management System

Dissolved Air Flotation Treatment process utilising air dissolved in water to float suspended particles to the surface of a treatment plant clarifier cell. The float is periodically removed and clear water is drained from the bottom of the cell.

Disinfection Treatment process where chlorine or ultraviolet light is introduced to the flow of clear water prior to customer consumption to kill any pathogenic organisms (make it safe to drink) that may be present in the clear water following the sedimentation/dissolved air flotation and granular media filtration processes.

Fluoridation The addition of Fluoride to the water supply system for the benefit of dental hygiene.

Fluorosilicic Acid Chemical used for fluoridation of water.

Geobag Dewatering Treatment process utilising large material bags to separate water from solids. The solids are restricted from passing through the fine material while water is able to seep through.

Granular Media Filtration Treatment process which utilises anthracite, sands and gravels to filter out suspended particles following the sedimentation/dissolved air flotation processes. Suspended particles are trapped within the media and clear water passes through prior to being disinfected. The particles build up in the media and are periodically washed out in a reverse flow process.

HU Hazen units

kL Kilolitres (1,000 litres)

L/s Litres per second

mg/L Milligrams per litre

Mechanical Dewatering Treatment process where solids and water are separated through a high speed centrifugal separation process. High speed revolutions force separation between the solid and liquid, solids are captured for processing and water is returned back to the treatment process.

ML Megalitre (1,000,000 litres)

N/A Not applicable

NTU Nephelometric turbidity units

Poly Aluminium Chlorohydrate (PAC 23) Coagulant chemical used during coagulation process to remove suspended solids from raw water.

Polymer (LT20, 25, 27) Chemical used as a flocculation aid to increase settlement rate of suspended solids in the coagulation process.

Powder Activated Carbon Product used for reduction/removal of taste and odour compounds and algae toxins in water.

RMP Risk management plan

SOP Standard operating procedure

Soda Ash Chemical used for pH correction to aid the coagulation/flocculation process.

Sodium Hydroxide (Caustic Soda) Chemical used for pH correction to aid the coagulation/flocculation process.

Sodium Hypochlorite Chemical added for disinfection of water.

Sedimentation/Clarification Treatment process where flocculated particles in the raw water are settled into the bottom of a clarifier and periodically removed. Clear water is taken from the top of the clarifier prior to filtration and disinfection.

WTP Water treatment plant

10 Appendix A-Risk Management Plan Certificate of Compliance



Regulation 10

Schedule 1 - Risk Management Plan Audit Certificate

Safe Drinking Water Regulations 2015

Certificate Number: 140

Audit Period: 15th May 2016 to 4th May 2018

To: Mr Bruce Hammond
Managing Director
East Gippsland Water
133 Macleod Street
P.O.Box 52
Bairnsdale
Victoria 3875

Australian Business Number (ABN): 40096764586

I, Thomas Teunissen, after conducting a risk management plan audit of the water supplied by East Gippsland Water, am of the opinion that:

East Gippsland Water has complied with the obligations imposed by Section 7(1) of the *Safe Drinking Water Act 2003* during the audit period.

Signature of approved auditor:

Thomas Teunissen

Date: 4th May 2018

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