

# Water Quality Annual Report



East Gippsland Water  
August 2016

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## TABLE OF CONTENTS

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|           |   |           |
|-----------|---|-----------|
| <b>1</b>  | <b>INTRODUCTION.....</b>  | <b>4</b>  |
| 1.1       | CHARACTERISATION OF THE SYSTEM.....   | 4         |
| <b>2</b>  | <b>WATER TREATMENT AND QUALITY RISK MANAGEMENT SYSTEMS.....</b>             | <b>6</b>  |
| 2.1       | SYSTEM SUMMARY.....   | 6         |
| 2.2       | SOURCE WATER PROTECTION.....  | 9         |
| 2.3       | SYSTEM ISSUES.....  | 9         |
| <b>3</b>  | <b>EMERGENCY INCIDENT AND EVENT MANAGEMENT.....</b>                         | <b>10</b> |
| 3.1       | NOTIFICATION EVENTS UNDER SECTION 22 OR SECTION 18.....                     | 10        |
| <b>4</b>  | <b>QUALITY OF DRINKING WATER FOR 2015/2016.....</b>                         | <b>11</b> |
| 4.1       | REGULATED PARAMETERS - <i>ESCHERICHIA COLI (E. COLI)</i> .....              | 13        |
| 4.2       | REGULATED PARAMETERS - TRIHALOMETHANES.....                                 | 15        |
| 4.3       | REGULATED PARAMETERS - TURBIDITY.....                                       | 17        |
| 4.4       | 2005 REGULATED PARAMETERS - CHLOROACETIC ACID.....                          | 18        |
| 4.5       | 2005 REGULATED PARAMETERS - DICHLOROACETIC ACID.....                        | 19        |
| 4.6       | 2005 REGULATED PARAMETERS - TRICHLOROACETIC ACID.....                       | 20        |
| 4.7       | 2005 REGULATED PARAMETERS - ALUMINIUM (ACID SOLUBLE).....                   | 21        |
| 4.8       | FLUORIDE.....   | 22        |
| 4.9       | OTHER SUBSTANCES - ARSENIC.....   | 24        |
| 4.10      | OTHER SUBSTANCES - BIOCIDES.....  | 25        |
| 4.11      | OTHER SUBSTANCES- BLUE GREEN ALGAE.....                                     | 28        |
| 4.12      | OTHER SUBSTANCES - CADMIUM.....   | 30        |
| 4.13      | OTHER SUBSTANCES - CHROMIUM.....  | 31        |
| 4.14      | OTHER SUBSTANCES - COPPER.....  | 32        |
| 4.15      | OTHER SUBSTANCES - CYANIDE.....   | 33        |
| 4.16      | OTHER SUBSTANCES - FREE CHLORINE.....                                       | 34        |
| 4.17      | OTHER SUBSTANCES - LEAD.....  | 35        |
| 4.18      | OTHER SUBSTANCES - MANGANESE.....   | 36        |
| 4.19      | OTHER SUBSTANCES - RADIOLOGICAL.....  | 37        |
| 4.20      | AESTHETIC CHARACTERISTICS - COLOUR.....                                     | 38        |
| 4.21      | AESTHETIC CHARACTERISTICS - HARDNESS.....                                   | 39        |
| 4.22      | AESTHETIC CHARACTERISTICS - IRON.....                                       | 40        |
| 4.23      | AESTHETIC CHARACTERISTICS - PH.....   | 41        |
| 4.24      | AESTHETIC CHARACTERISTICS - ZINC.....                                       | 42        |
| 4.25      | ANALYSIS OF RESULTS.....  | 43        |
| 4.26      | CONTINUOUS IMPROVEMENT MEASURES.....  | 46        |
| <b>5</b>  | <b>COMPLAINTS RELATING TO WATER QUALITY.....</b>                            | <b>47</b> |
| 5.1       | TASTE AND ODOUR.....  | 47        |
| 5.2       | OTHER.....  | 47        |
| <b>6</b>  | <b>ACTIONS ARISING FROM THE MOST RECENT RISK MANAGEMENT PLAN AUDIT.....</b> | <b>48</b> |
| <b>7</b>  | <b>UNDERTAKINGS UNDER SECTION 16 OF THE REGULATIONS.....</b>                | <b>49</b> |
| <b>8</b>  | <b>REGULATED WATER.....</b>   | <b>49</b> |
| <b>9</b>  | <b>FURTHER INFORMATION.....</b>   | <b>49</b> |
| <b>10</b> | <b>GLOSSARY OF TERMS.....</b>   | <b>50</b> |

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## 1 Introduction

At East Gippsland Water (EGW) our vision is to be a trusted leading and respected water corporation. 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 4.6 billion litres of drinking water. This water was distributed to around 23,150 customer connections across East Gippsland.

The quality of our drinking water consistently performs well against the Safe Drinking Water Regulations 2005/2015 with all drinking water supplied to our customers found to be fully compliant during 2015/2016. Once again this year 100 per cent of our samples were free of *Escherichia coli* (*E. coli*). During this period, the Safe Drinking Water Regulations were updated on 18/07/2015 with a number of changes, including the water quality standards. We complied with the other water quality standards outlined in both the 2005 and 2015 regulations, including turbidity (both), trihalomethanes<sup>1</sup> (both), aluminium (2005) and haloacetic acids (2005).

To maintain this strong performance we continue to improve our supplies through strategic investment in new infrastructure as well as a key focus on maintenance systems for existing infrastructure. We also continue to improve our operational activities to identify and manage risks.

Last financial year we continued to work with stakeholders (such as East Gippsland Catchment Management Authority and private landholders) to influence activities in our catchments. This work led to improvements in source water quality prior to its processing by our plants and delivery to customer taps as drinking water.

### 1.1 Characterisation of the System

We supply a region covering approximately 21,000 square kilometres in the far south east corner of Victoria (Figure 1).

The area 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.

In East Gippsland most of the water delivered to customers is sourced from local river systems, with underground aquifers 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.

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<sup>1</sup> The corporation complied fully with the Act, Regulations and the Charter during the reporting period in the provision of drinking water services with the exception of the frequency of sampling for total trihalomethanes (TTHM). The number of samples collected for TTHMs was less than the required frequency attributable to a misinterpretation of the new 2015 Regulations.



Figure 1: East Gippsland Water's region of operation

## 2 Water Treatment and Quality Risk Management Systems

As described above, we manage nine separate water supply systems. A detailed summary of these systems is provided in Table 2.1.

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

Internal audits of the DWQRMS are undertaken routinely to ensure we continually improves our systems. An external audit was undertaken at the request of the Department of Health & Human Services in April 2016, with a compliant result and no non-conforming issues identified (refer to Section 6 for more details).

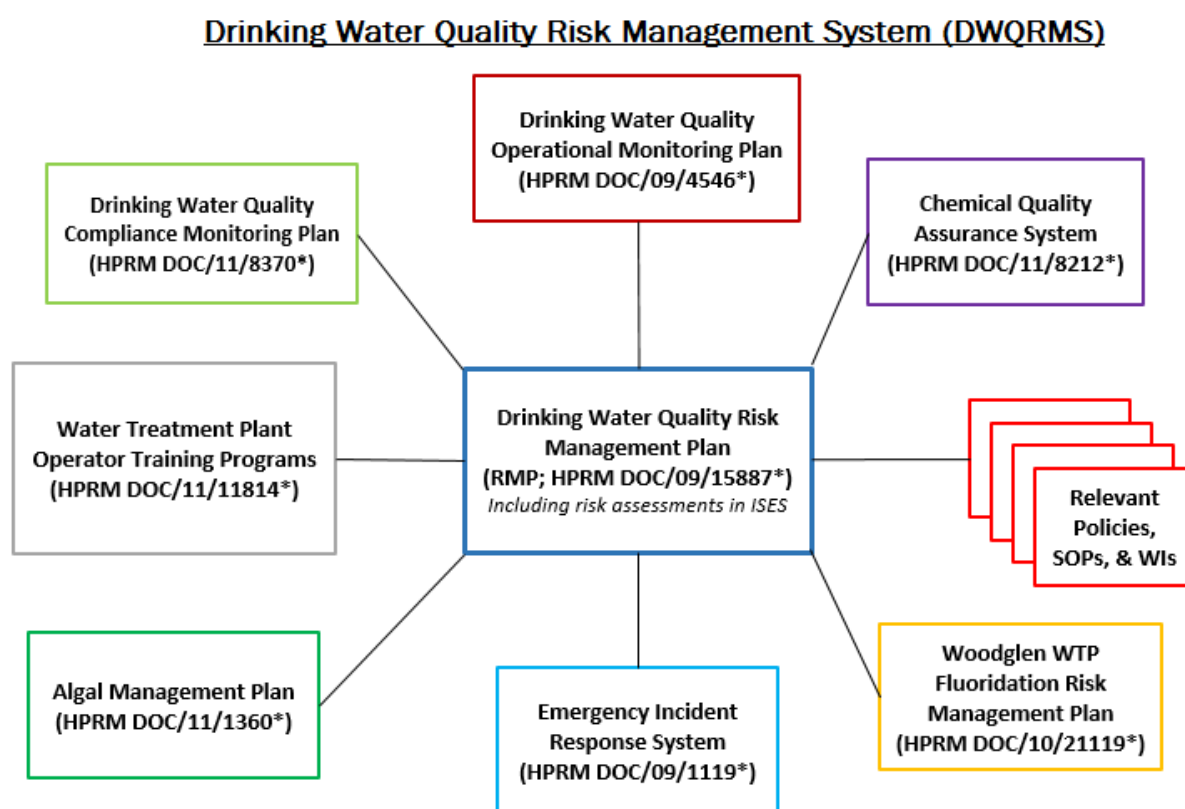


Figure 2: Structure of the Drinking Water Quality Risk Management System

### 2.1 System Summary

A summary of the drinking water supply systems is presented in Table 2.1 below.

No significant changes were made to the water treatment processes in 2015/2016.



Table 2.1 Water sampling locality and treatment summary table

| Water Sampling Locality | Population Supplied (Connections) | Source Water  | Catchment Description   | Raw Water Storage                                 | Treatment Plant | Treatment process   | Added substances  | Comments  |
|-------------------------|-----------------------------------|---|---|---|-----------------|---|---|---|
| Bairnsdale              | 7,736                             | Mitchell River<br>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 <sup>1</sup> & 27 <sup>2</sup> ), fluoride <sup>3</sup> , poly aluminium chlorohydrate <sup>3</sup> (PAC 23), chlorine (compressed chlorine gas and sodium hypochlorite); fluoride (fluorosilicic acid) <sup>3</sup> ; powder activated carbon <sup>4</sup> | <sup>1</sup> LT 25 used for backwash water clarification<br><sup>2</sup> LT 27 used for centrifuge<br><sup>3</sup> Fluoride dosing commenced in August 2010<br><sup>4</sup> Capacity for powder activated carbon addition exists, but is not currently in use |
| Lindenow                | 220                               |   |   |   |                 |   |   |   |
| Lindenow South          | 167                               |   |   |   |                 |   |   |   |
| Sarsfield-Bruthen       | 583                               |   |   |   |                 |   |   |   |
| Merrangbaur             | 913                               |   |   |   |                 |   |   |   |
| Sunlakes-Toorloo        | 2,972                             |   |   |   |                 |   |   |   |
| Kalimna                 | 657                               |   |   |   |                 |   |   |   |
| Eagle Point-Paynesville | 3,704                             |   |   |   |                 |   |   |   |
| Nicholson-Swan Reach    | 733                               |   |   |   |                 |   |   |   |
| Metung                  | 1,234                             |   |   |   |                 |   |   |   |
| Nowa Nowa               | 102                               |   |   |   |                 |   |   |   |
| Buchan                  | 109                               | Buchan River  | 80% forest with some impacts (forestry, agriculture, cattle and camping)  | n/a   | Buchan          | Coagulation, flocculation, clarification (dissolved air   | Caustic soda, poly aluminium chlorohydrate (PAC 23), poly (LT 25 <sup>1</sup> ), chlorine (sodium   | <sup>1</sup> LT 25 used for backwash water clarification  |

| Water Sampling Locality | Population Supplied (Connections) | Source Water                    | Catchment Description  | Raw Water Storage                        | Treatment Plant | Treatment process  | Added substances  | Comments  |
|-------------------------|-----------------------------------|---------------------------------|--|--|-----------------|--|---|---|
| Cann River              | 192                               | Cann River                      | Forest, agricultural land (cattle), some septic tanks, roads and logging | n/a                                      | Cann River      | flotation), filtration (granular media filter), disinfection, Geobag dewatering  | hypochlorite)   |   |
| Bemm River              | 100                               | Bemm River                      | 90% forest, with some forestry, agricultural and human impacts           | n/a                                      | Bemm River      |  |   |   |
| Swifts Creek            | 127                               | Tambo River                     | Forest, agricultural land (cattle), some septic tanks, roads and logging | 4.6ML basin (shade-cloth covered)        | Swifts Creek    | Coagulation, flocculation, dissolved air flotation, filtration, disinfection (Ultraviolet (UV) and chlorine) , Geobag dewatering                   | Caustic soda, poly aluminium chlorohydrate (PAC 23), poly (LT 25 <sup>1</sup> ), chlorine (sodium hypochlorite)           | <sup>1</sup> LT 25 used for backwash water clarification                    |
| Orbost                  | 2,003                             | 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) | Soda ash, Caustic Soda <sup>1</sup> , poly aluminium chlorohydrate (PAC 23), poly (LT 20), chlorine (sodium hypochlorite) | <sup>1</sup> Caustic Soda has replaced soda ash at Orbost WTP in June 2015. |
| Omeo                    | 256                               | Butchers Creek                  | State forest with minimal human impacts (some grazing)                   | 5ML (shade-cloth covered) and 10ML basin | Omeo            |  |   |   |
| Mallacoota              | 961                               | Betka River & Aquifer (2 bores) | State forest with minimal human impacts (some forestry)                  | 41ML basin (shade-cloth covered)         | Mallacoota      |  |   |   |
| Dinner Plain            | 387                               | 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 are in place to effectively manage those risks.

We work in collaboration with a number of external stakeholders, including the Department of Environment, Land, Water and Planning and the East Gippsland Catchment Management Authority, to identify and manage water quality risks at the catchment level. 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 drinking water supply systems operated as designed last financial year and no issues were identified with their capacity to routinely meet the required water quality standards.

In 2015/16, no Section 18 notifications were made to the Department of Health & Human Services (DHHS).

There was one issue that required a Section 22 notification. Details on this issue are provided in Section 3 Emergency Incident and Event Management.



*Figure 3: Water Quality Officer Matthew Turner*

### **3 Emergency Incident and Event Management**

#### **3.1 Notification Events under Section 22 or Section 18**

Under Section 22 of the Safe Drinking Water Act 2003, the Department of Health & Human Services 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 2015/2016, one Section 22 notification was made to the Department of Health & Human Services.

The Section 22 notification occurred in December 2015 in relation to a low level of E.coli detected during routine water quality sampling in the Orbost reticulation system. The initial sample taken from a designated sampling point was found to contain one E.coli organism per 100mL. The DHHS were notified immediately and an investigation conducted. A systematic response program of sampling and flushing was undertaken in the reticulation system. A second water sample was found to contain no E.coli.

The DHHS were satisfied that the initial sample taken was not representative of the water supplied to Orbost and that it met the definition of a false positive sample as per the Safe Drinking Water Regulations 2015.

A water supplier must notify the Department of Health & Human Services 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 2005 and 2015. In 2015/2016, no Section 18 notifications were made to the Department of Health & Human Services.

## 4 Quality of Drinking Water for 2015/2016

The Safe Drinking Water Regulations 2015 commenced on 18 July 2015. The 2015/2016 Water Quality Annual Report includes Regulated Parameter data for the 2005 Regulations (1 July 2015 to 17 July 2015) and the 2015 Regulations (18 July 2015 to 30 June 2016).

### 4.0a Safe Drinking Water Regulations 2005

The Scheduled Drinking Water Standards for the Safe Drinking Water Regulations 2005 included the following parameters (see Table 4.0a):

Table 4.0a Safe Drinking Water Regulations 2015 – Water Quality Standards

| 2005 Schedule 2 Parameter <sup>1</sup> | Relevant sampling frequency per water sampling locality | Water quality standard for each water sampling locality   |
|--|---|---|
| <i>Escherichia coli</i>                | One sample per week                                     | at least 98% of all samples of drinking water collected in any 12 month period contain no <i>Escherichia coli</i> per 100 millilitres of drinking water               |
| Chloroacetic acid                      | One sample per month                                    | 0.15 milligrams per litre of drinking water   |
| Dichloroacetic acid                    | One sample per month                                    | 0.1 milligrams per litre of drinking water  |
| Trichloroacetic                        | One sample per month                                    | 0.1 milligrams per litre of drinking water  |
| Trihalomethanes                        | One sample per month                                    | 0.25 milligrams per litre of drinking water   |
| Aluminium, acid soluble                | One sample per month                                    | 0.2 milligrams per litre of drinking water  |
| Turbidity                              | One sample per week                                     | 95% upper confidence limit of the mean of samples of drinking water collected in any 12 month period must be less than or equal to 5.0 Nephelometric Turbidity Units. |

<sup>1</sup> Bromate and Formaldehyde are Schedule 2 Parameters in the 2005 Regulations. They are derived from treatment with ozone. East Gippsland Water does not treat any drinking water with ozone, hence they are not reported.

#### 4.0b Safe Drinking Water Regulations 2015

Upon the introduction of the Safe Drinking Water Regulations 2015, the Drinking Water Quality Standards changed (see Table 4.0b).

Table 4.0b 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<br>0 <i>Escherichia coli</i> detected in 100mL |
| 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 <sup>th</sup> percentile of results for samples in any 12 month period must be $\leq 5.0$ NTU              | Results to be expressed to two decimal places              |

#### 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.

##### 2005 Regulations (effective until 17 July 2015)

| Water Sampling Locality  | Sampling Frequency | Result<br>(No. of samples containing <i>E.coli</i> ) | Standard met<br>(% samples with no <i>E.coli</i> ) | Comments<br>(Yes / No) |
|--------------------------|--------------------|--|--|------------------------|
| Bairnsdale               | Weekly             | 0  | 100%   | Yes                    |
| Bemm River               | Weekly             | 0  | 100%   | Yes                    |
| Buchan                   | Weekly             | 0  | 100%   | Yes                    |
| Cann River               | Weekly             | 0  | 100%   | Yes                    |
| Dinner Plain             | Weekly             | 0  | 100%   | Yes                    |
| Eagle Point- Paynesville | Weekly             | 0  | 100%   | Yes                    |
| Kalimna                  | Weekly             | 0  | 100%   | Yes                    |
| Lindenow                 | Weekly             | 0  | 100%   | Yes                    |
| Lindenow South           | Weekly             | 0  | 100%   | Yes                    |
| Mallacoota               | Weekly             | 0  | 100%   | Yes                    |
| Merrangbaur              | Weekly             | 0  | 100%   | Yes                    |
| Metung                   | Weekly             | 0  | 100%   | Yes                    |
| Nicholson-Swan Reach     | Weekly             | 0  | 100%   | Yes                    |
| Nowa Nowa                | Weekly             | 0  | 100%   | Yes                    |
| Omeo                     | Weekly             | 0  | 100%   | Yes                    |
| Orbost                   | Weekly             | 0  | 100%   | Yes                    |
| Sarsfield-Bruthen        | Weekly             | 0  | 100%   | Yes                    |
| Sunlakes-Toorloo         | Weekly             | 0  | 100%   | Yes                    |
| Swifts Creek             | Weekly             | 0  | 100%   | Yes                    |

**2015 Regulations (effective from 18 July 2015)**

| Water Sampling Locality  | No. of investigations conducted (s.22) | No. of confirmed false positives | No. of investigations where standard not met (s.18) |
|--------------------------|--|----------------------------------|---|
| Bairnsdale               | 0                                      | 0                                | 0   |
| Bemm River               | 0                                      | 0                                | 0   |
| Buchan                   | 0                                      | 0                                | 0   |
| Cann River               | 0                                      | 0                                | 0   |
| Dinner Plain             | 0                                      | 0                                | 0   |
| Eagle Point- Paynesville | 0                                      | 0                                | 0   |
| Kalimna                  | 0                                      | 0                                | 0   |
| Lindenow                 | 0                                      | 0                                | 0   |
| Lindenow South           | 0                                      | 0                                | 0   |
| Mallacoota               | 0                                      | 0                                | 0   |
| Merrangbaur              | 0                                      | 0                                | 0   |
| Metung                   | 0                                      | 0                                | 0   |
| Nicholson-Swan Reach     | 0                                      | 0                                | 0   |
| Nowa Nowa                | 0                                      | 0                                | 0   |
| Omeo                     | 0                                      | 0                                | 0   |
| Orbost                   | 1                                      | 1                                | 0   |
| Sarsfield-Bruthen        | 0                                      | 0                                | 0   |
| Sunlakes-Toorloo         | 0                                      | 0                                | 0   |
| Swifts Creek             | 0                                      | 0                                | 0   |

**4.1.1 Comments on results**

All water sampling localities were compliant for the *E. coli* water quality standard for the 2015/2016 reporting period.



## 4.2 Regulated Parameters - 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.

### 2005 Regulations (effective until 17 July 2015)

| Water Sampling Locality   | Sampling Frequency | No. of Samples   | No. of Samples above the standard | Max. mg/L        | Met the Standard (yes/no) |
|---------------------------|--------------------|------------------|-----------------------------------|------------------|---------------------------|
| Bairnsdale                | Monthly            | 1                | 0                                 | 0.022            | Yes                       |
| Bemm River                | Monthly            | 1                | 0                                 | 0.011            | Yes                       |
| Buchan                    | Monthly            | 1                | 0                                 | 0.052            | Yes                       |
| Cann River                | Monthly            | 1                | 0                                 | 0.022            | Yes                       |
| Dinner Plain <sup>1</sup> | N/A <sup>1</sup>   | N/A <sup>1</sup> | N/A <sup>1</sup>                  | N/A <sup>1</sup> | N/A <sup>1</sup>          |
| Eagle Point- Paynesville  | Monthly            | 1                | 0                                 | 0.026            | Yes                       |
| Kalimna                   | Monthly            | 1                | 0                                 | 0.037            | Yes                       |
| Lindenow                  | Monthly            | 1                | 0                                 | 0.016            | Yes                       |
| Lindenow South            | Monthly            | 1                | 0                                 | 0.023            | Yes                       |
| Mallacoota                | Monthly            | 1                | 0                                 | 0.050            | Yes                       |
| Merrangbaur               | Monthly            | 1                | 0                                 | 0.037            | Yes                       |
| Metung                    | Monthly            | 1                | 0                                 | 0.036            | Yes                       |
| Nicholson-Swan Reach      | Monthly            | 1                | 0                                 | 0.027            | Yes                       |
| Nowa Nowa                 | Monthly            | 1                | 0                                 | 0.048            | Yes                       |
| Omeo                      | Monthly            | 1                | 0                                 | 0.020            | Yes                       |
| Orbost                    | Monthly            | 1                | 0                                 | 0.018            | Yes                       |
| Sarsfield-Bruthen         | Monthly            | 1                | 0                                 | 0.027            | Yes                       |
| Sunlakes-Toorloo          | Monthly            | 1                | 0                                 | 0.041            | Yes                       |
| Swifts Creek              | Monthly            | 1                | 0                                 | 0.025            | Yes                       |

<sup>1</sup> 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.

**2015 Regulations (effective from 18 July 2015)**

| Water Sampling Locality   | Sampling Frequency | No. of Samples <sup>1</sup> | No. of Samples above the standard | Max. mg/L        | Met the Standard (yes / no) |
|---------------------------|--------------------|-----------------------------|-----------------------------------|------------------|-----------------------------|
| Bairnsdale                | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.05             | Yes                         |
| Bemm River                | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.02             | Yes                         |
| Buchan                    | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.06             | Yes                         |
| Cann River                | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.03             | Yes                         |
| Dinner Plain <sup>2</sup> | N/A <sup>2</sup>   | N/A <sup>2</sup>            | N/A <sup>2</sup>                  | N/A <sup>2</sup> | N/A <sup>2</sup>            |
| Eagle Point- Paynesville  | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.07             | Yes                         |
| Kalimna                   | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.08             | Yes                         |
| Lindenow                  | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.03             | Yes                         |
| Lindenow South            | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.03             | Yes                         |
| Mallacoota                | Monthly            | 11                          | 0                                 | 0.09             | Yes                         |
| Merrangbaur               | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.03             | Yes                         |
| Metung                    | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.07             | Yes                         |
| Nicholson-Swan Reach      | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.06             | Yes                         |
| Nowa Nowa                 | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.10             | Yes                         |
| Omeo                      | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.04             | Yes                         |
| Orbost                    | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.06             | Yes                         |
| Sarsfield-Bruthen         | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.05             | Yes                         |
| Sunlakes-Toorloo          | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.09             | Yes                         |
| Swifts Creek              | Monthly            | 6 <sup>3</sup>              | 0                                 | 0.05             | Yes                         |

<sup>1</sup> July sample included in the 2005 Regulations table.

<sup>2</sup> 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.

<sup>3</sup> EGW complied fully with the Act, Regulations and the Charter during the reporting period in the provision of drinking water services with the exception of the frequency of sampling for total trihalomethanes (TTHM). The number of samples collected for TTHMs was less than the required frequency attributable to a misinterpretation of the new 2015 Regulations.

**4.2.1 Comments on results**

All water sampling localities were compliant for the Trihalomethane water quality standard for the 2015/2016 reporting period. However, the number of samples collected for Total Trihalomethanes was less than the required frequency. This was attributable to a misinterpretation of the new 2015 Regulations. Once aware of the misinterpretation, immediate actions were taken including notification to DHHS and update of the Drinking Water Quality Compliance Monitoring Plan.

### 4.3 Regulated Parameters - Turbidity

Turbidity measures the presence of fine suspended material present in the water and 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 monthly in each of the water sampling localities. The data is presented for the full 12 months using the criteria from the 2015 Regulations, as there are not enough tests in July 2015 to meet the criteria from the 2005 Regulations (Calculation of 95<sup>th</sup> Percentile is reliant on a 12 month data sample).

| Water Sampling Locality | Sampling Frequency <sup>1</sup> | No. of Samples | Max NTU | 95 <sup>th</sup> Percentile | Met the standard (yes/no) |
|-------------------------|---------------------------------|----------------|---------|-----------------------------|---------------------------|
| Bairnsdale              | Weekly                          | 73             | 0.2     | 0.1                         | Yes                       |
| Bemm River              | Weekly                          | 52             | 1.4     | 1.2                         | Yes                       |
| Buchan                  | Weekly                          | 52             | 0.9     | 0.3                         | Yes                       |
| Cann River              | Weekly                          | 52             | 1.8     | 0.9                         | Yes                       |
| Dinner Plain            | Weekly                          | 52             | 0.5     | 0.1                         | Yes                       |
| Eagle Point-Paynesville | Weekly                          | 55             | 0.2     | 0.1                         | Yes                       |
| Kalimna                 | Weekly                          | 52             | 0.2     | 0.1                         | Yes                       |
| Lindenow                | Weekly                          | 53             | 1.5     | 0.3                         | Yes                       |
| Lindenow South          | Weekly                          | 53             | 0.5     | 0.4                         | Yes                       |
| Mallacoota              | Weekly                          | 52             | 0.8     | 0.6                         | Yes                       |
| Merrangbaur             | Weekly                          | 52             | 0.4     | 0.1                         | Yes                       |
| Metung                  | Weekly                          | 53             | 0.1     | 0.1                         | Yes                       |
| Nicholson-Swan Reach    | Weekly                          | 53             | 0.2     | 0.1                         | Yes                       |
| Nowa Nowa               | Weekly                          | 52             | 1.0     | 0.2                         | Yes                       |
| Omeo                    | Weekly                          | 52             | 0.1     | 0.1                         | Yes                       |
| Orbost                  | Weekly                          | 52             | 0.3     | 0.2                         | Yes                       |
| Sarsfield-Bruthen       | Weekly                          | 52             | 0.3     | 0.1                         | Yes                       |
| Sunlakes-Toorloo        | Weekly                          | 57             | 0.1     | 0.1                         | Yes                       |
| Swifts Creek            | Weekly                          | 52             | 0.3     | 0.1                         | Yes                       |

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

#### 4.3.1 Comments on results

All routine samples taken in water sampling localities were compliant for the turbidity water quality standard for the 2015/2016 reporting period.

#### 4.4 2005 Regulated Parameters - Chloroacetic acid

Chloroacetic acid is a compound that may be produced when chlorine disinfectant reacts with organic material that may be 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.

Compliance is measured as: Chloroacetic acid must not exceed 0.150 milligrams per litre.

**(Effective until 17 July 2015)**

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

<sup>1</sup> 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.

##### 4.4.1 Comments on results

All water sampling localities were compliant for the Chloroacetic acid water quality standard for the July 2015 reporting period.

#### 4.5 2005 Regulated Parameters - Dichloroacetic acid

Dichloroacetic acid is a compound 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.

Compliance is measured as: Dichloroacetic acid must not exceed 0.100 milligrams per litre.

(Effective until 17 July 2015)

| Water Sampling Locality  | Sampling Frequency | No. of Samples   | No. of Non-Complying Samples | Maximum (mg/L)   | Complying (Yes / No) |
|--------------------------|--------------------|------------------|------------------------------|------------------|----------------------|
| Bairnsdale               | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Bemm River               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Buchan                   | Monthly            | 1                | 0                            | 0.012            | Yes                  |
| Cann River               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Dinner Plain             | N/A <sup>1</sup>   | N/A <sup>1</sup> | N/A <sup>1</sup>             | N/A <sup>1</sup> | N/A <sup>1</sup>     |
| Eagle Point- Paynesville | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Kalimna                  | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Lindenow                 | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Lindenow South           | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Mallacoota               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Merrangbaur              | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Metung                   | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Nicholson-Swan Reach     | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Nowa Nowa                | Monthly            | 1                | 0                            | 0.010            | Yes                  |
| Omeo                     | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Orbost                   | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Sarsfield-Bruthen        | Monthly            | 1                | 0                            | 0.008            | Yes                  |
| Sunlakes-Toorloo         | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Swifts Creek             | Monthly            | 1                | 0                            | 0.006            | Yes                  |

<sup>1</sup> 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.

##### 4.5.1 Comments on results

All water sampling localities were compliant for the Dichloroacetic acid water quality standard for the July 2015 reporting period.

#### 4.6 2005 Regulated Parameters - Trichloroacetic acid

Trichloroacetic acid is a compound that may be produced when chlorine disinfectant reacts with organic material that may be 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.

Compliance is measured as: Trichloroacetic acid must not exceed 0.100 milligrams per litre.

(Effective until 17 July 2015)

| Water Sampling Locality  | Sampling Frequency | No. of Samples   | No. of Non-Complying Samples | Maximum (mg/L)   | Complying (Yes / No) |
|--------------------------|--------------------|------------------|------------------------------|------------------|----------------------|
| Bairnsdale               | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Bemm River               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Buchan                   | Monthly            | 1                | 0                            | 0.015            | Yes                  |
| Cann River               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Dinner Plain             | N/A <sup>1</sup>   | N/A <sup>1</sup> | N/A <sup>1</sup>             | N/A <sup>1</sup> | N/A <sup>1</sup>     |
| Eagle Point- Paynesville | Monthly            | 1                | 0                            | 0.008            | Yes                  |
| Kalimna                  | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Lindenow                 | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Lindenow South           | Monthly            | 1                | 0                            | 0.006            | Yes                  |
| Mallacoota               | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Merrangbaur              | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Metung                   | Monthly            | 1                | 0                            | 0.008            | Yes                  |
| Nicholson-Swan Reach     | Monthly            | 1                | 0                            | 0.006            | Yes                  |
| Nowa Nowa                | Monthly            | 1                | 0                            | 0.009            | Yes                  |
| Omeo                     | Monthly            | 1                | 0                            | 0.008            | Yes                  |
| Orbost                   | Monthly            | 1                | 0                            | < 0.005          | Yes                  |
| Sarsfield-Bruthen        | Monthly            | 1                | 0                            | 0.007            | Yes                  |
| Sunlakes-Toorloo         | Monthly            | 1                | 0                            | 0.008            | Yes                  |
| Swifts Creek             | Monthly            | 1                | 0                            | 0.006            | Yes                  |

<sup>1</sup> 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.

##### 4.6.1 Comments on results

All water sampling localities were compliant for the Trichloroacetic acid water quality standard for the July 2015 reporting period.



#### 4.7 2005 Regulated Parameters - Aluminium (acid soluble)

Aluminium-based compounds are used to assist the water treatment process to ensure high quality, safe drinking water is produced. Acid-soluble aluminium may be present in trace amounts following the water treatment process. Long-term exposure to high concentrations of this compound may impact public health. Samples are taken monthly in each of the water sampling localities.

Compliance is measured as: Aluminium (acid soluble) must not exceed 0.20 milligrams per litre.

**(Effective until 17 July 2015)**

| Water Sampling Locality  | Minimum Sampling Frequency | No. of Samples   | No. of Non-Complying Samples | Maximum (mg/L)   | Complying (Yes / No) |
|--------------------------|----------------------------|------------------|------------------------------|------------------|----------------------|
| Bairnsdale               | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Bemm River               | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Buchan                   | Monthly                    | 1                | 0                            | 0.10             | Yes                  |
| Cann River               | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Dinner Plain             | N/A <sup>1</sup>           | N/A <sup>1</sup> | N/A <sup>1</sup>             | N/A <sup>1</sup> | N/A <sup>1</sup>     |
| Eagle Point- Paynesville | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Kalimna                  | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Lindenow                 | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Lindenow South           | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Mallacoota               | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Merrangbaur              | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Metung                   | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Nicholson-Swan Reach     | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Nowa Nowa                | Monthly                    | 1                | 0                            | 0.02             | Yes                  |
| Omeo                     | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Orbost                   | Monthly                    | 1                | 0                            | 0.03             | Yes                  |
| Sarsfield-Bruthen        | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Sunlakes-Toorloo         | Monthly                    | 1                | 0                            | 0.01             | Yes                  |
| Swifts Creek             | Monthly                    | 1                | 0                            | 0.06             | Yes                  |

<sup>1</sup> N/A- Not Applicable; Dinner Plain water sampling locality is exempt from aluminium testing requirements as aluminium-based compounds are not used for treatment within this locality.

##### 4.7.1 Comments on results

All water sampling localities were compliant for the acid soluble aluminium water quality standard for the July 2015 reporting period.

## 4.8 Fluoride

Fluoride is added to the water sampling localities of the Mitchell system to promote oral health under direction of the Department of Health & Human Services. Fluoride samples are taken monthly in each of the fluoridated water sampling localities, such that a weekly sample is 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 greater than 0.6 milligrams per litre in fluoridated systems.

| Water Sampling Locality              | Sampling Frequency | Operating Target (mg/L) | No. of Samples | No. of non-complying results | Min. (mg/L) | Max. (mg/L) | Complying (Yes/No) | Meeting Obligation (Yes/No) |
|--------------------------------------|--------------------|-------------------------|----------------|------------------------------|-------------|-------------|--------------------|-----------------------------|
| Bairnsdale <sup>2</sup>              | Monthly            | 0.9                     | 12             | 0                            | 0.56        | 0.86        | Yes                | Yes                         |
| Bemm River                           | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Buchan                               | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Cann River                           | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Dinner Plain                         | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Eagle Point-Paynesville <sup>2</sup> | Monthly            | 0.9                     | 12             | 0                            | 0.71        | 0.86        | Yes                | Yes                         |
| Kalimna <sup>2</sup>                 | Monthly            | 0.9                     | 12             | 0                            | 0.78        | 0.86        | Yes                | Yes                         |
| Lindenow <sup>2</sup>                | Monthly            | 0.9                     | 12             | 0                            | 0.68        | 0.86        | Yes                | Yes                         |
| Lindenow South <sup>2</sup>          | Monthly            | 0.9                     | 12             | 0                            | 0.72        | 0.86        | Yes                | Yes                         |
| Mallacoota                           | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Merrangbaur <sup>2</sup>             | Monthly            | 0.9                     | 12             | 0                            | 0.77        | 0.85        | Yes                | Yes                         |
| Metung <sup>2</sup>                  | Monthly            | 0.9                     | 12             | 0                            | 0.73        | 0.86        | Yes                | Yes                         |
| Nicholson-Swan Reach <sup>2</sup>    | Monthly            | 0.9                     | 12             | 0                            | 0.78        | 0.88        | Yes                | Yes                         |
| Nowa Nowa <sup>2</sup>               | Monthly            | 0.9                     | 12             | 0                            | 0.78        | 0.86        | Yes                | Yes                         |
| Omeo                                 | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Orbost                               | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | < 0.05      | < 0.05      | Yes                | N/A <sup>1</sup>            |
| Sarsfield-Bruthen <sup>2</sup>       | Monthly            | 0.9                     | 12             | 0                            | 0.64        | 0.87        | Yes                | Yes                         |
| Sunlakes-Toorloo <sup>2</sup>        | Monthly            | 0.9                     | 12             | 0                            | 0.78        | 0.86        | Yes                | Yes                         |
| Swifts Creek                         | Biannually         | N/A <sup>1</sup>        | 2              | 0                            | 0.06        | 0.08        | Yes                | N/A <sup>1</sup>            |

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

<sup>2</sup> Indicates fluoridated water sampling localities.

#### *4.8.1 Comments on results*

All water sampling localities were compliant for fluoride for the 2015/2016 reporting period. East Gippsland Water has been 100% compliant for this standard at each fluoridated sampling locality since fluoridation began in 2010.

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

#### 4.9 Other Substances - Arsenic

Arsenic is a naturally occurring element which can be introduced into water through 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples | No. of Non-Complying Samples | Maximum (mg/L) | Complying (Yes / No) |
|--------------------------|--------------------|----------------|------------------------------|----------------|----------------------|
| Bairnsdale               | Biannually         | 4 <sup>1</sup> | 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         | 4 <sup>1</sup> | 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         | 3 <sup>2</sup> | 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         | 7 <sup>3</sup> | 0                            | 0.001          | Yes                  |

<sup>1</sup> Water sampling locality has two entry point locations, each sampled biannually.

<sup>2</sup> Nowa Nowa had previously reported on two sampling point locations, however following a risk assessment in September 2015, it was determined only one was required.

<sup>3</sup> Due to geotechnical drilling investigations at the Stockman mine in the Upper Tambo River Catchment, five samples were made periodically during 2015/16 at the Tambo River Offtake in Swifts Creek to establish a source water baseline. These are additional to the scheduled samples.

#### 4.9.1 Comments on results

All water sampling localities were compliant for arsenic for the 2015/2016 reporting period.

#### 4.10 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 stake holders (e.g. Catchment Management Authority, Vic Forests) regarding biocide application in water supply catchments, to ensure minimal risk to the drinking water supply.

In July 2015, surface raw water samples were analysed from Bemm River, Buchan, Cann River and Orbost. In September 2015, surface raw water samples were analysed from the Woodglen storages (1 and 2), Mallacoota, Omeo and Swifts Creek.

| Water Sampling Locality   | Sampling Frequency | Class                    | Compound   | Units | Result   | Complying (Yes / No) |
|---|--------------------|--------------------------|------------|-------|----------|----------------------|
| <i>July 2015</i><br>Bemm River,<br>Buchan,<br>Cann River<br>& Orbost  | Annually           | n/a                      | Glyphosate | mg/L  | <0.03    | Yes                  |
|   |                    | Organo-chlorine Biocides | Aldrin     | mg/L  | <0.00001 | Yes                  |
| 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   |          |                      |
| Dieldrin  | mg/L               |                          | <0.00001   | 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               |                          | <0.0001    | Yes   |          |                      |
| Endrin Aldehyde   | mg/L               |                          | <0.0001    | Yes   |          |                      |
| Hexachlorobenzene   | mg/L               |                          | <0.000002  | Yes   |          |                      |
| Heptachlor  | mg/L               | <0.00005                 | Yes        |       |          |                      |
| <i>September 2015</i><br>Bairnsdale<br>(Woodglen storages 1 & 2),<br>Mallacoota,<br>Omeo<br>& Swifts<br>Creek |                    |                          |            |       |          |                      |

| Water Sampling Locality | Sampling Frequency | Class                      | Compound              | Units   | Result   | Complying (Yes / No) |
|-------------------------|--------------------|----------------------------|-----------------------|---------|----------|----------------------|
|                         |                    |                            | Heptachlor Epoxide    | mg/L    | <0.00005 | Yes                  |
|                         |                    |                            | Lindane (BHC Gamma    | mg/L    | <0.00005 | Yes                  |
|                         |                    |                            | Methoxychlor          | mg/L    | <0.0002  | Yes                  |
|                         |                    |                            | Endrin Ketone         | mg/L    | <0.00005 | Yes                  |
|                         |                    | Organo-phosphorus Biocides | Dichlorvos            | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | Monocrotophos         | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | Propfos               | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | Tetraethylthiopyrphos | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | Phorate               | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | Demeton-S             | mg/L    | <0.001   | Yes                  |
|                         |                    |                            | 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                  |
|                         |                    |                            | Ethyl Parathion       | 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     |                       | µg/L    | <0.01    | Yes                  |
|                         |                    | Clopyralid                 |                       | µg/L    | <0.05    | Yes                  |
| Dicamba                 | µg/L               | <0.01                      |                       | Yes     |          |                      |



| Water Sampling Locality | Sampling Frequency | Class | Compound           | Units | Result | Complying (Yes / No) |
|-------------------------|--------------------|-------|--------------------|-------|--------|----------------------|
|                         |                    |       | Fluroxypyr         | µg/L  | <0.05  | Yes                  |
|                         |                    |       | MCPA               | µg/L  | <0.01  | Yes                  |
|                         |                    |       | MCPB               | µg/L  | <0.01  | Yes                  |
|                         |                    |       | Mecoprop           | µg/L  | <0.01  | Yes                  |
|                         |                    |       | Metsulfuron Methyl | µg/L  | <0.1   | Yes                  |
|                         |                    |       | Picloram           | µg/L  | <0.05  | Yes                  |
|                         |                    |       | Triclopyr          | µg/L  | <0.01  | Yes                  |

#### 4.10.1 *Comments on results*

All 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 therefore were deemed to be compliant in 2015/2016.

#### 4.11 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 that may impact public health. 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.

The Department of Health & Human Services 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 millimetres cubed per litre
- total combined biovolume of all cyanobacterial species is greater than or equal to 10 millimetres cubed per litre.

The table below summarises our monitoring program for blue green algae in 2015/16 in both raw water and clear water supplies.

| Water Sampling Locality  | No. of Samples (Raw Water) | No. of Samples (Clear Water) |
|--------------------------|----------------------------|------------------------------|
| Bairnsdale               | 60 <sup>1</sup>            | 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 <sup>2</sup>             |
| Buchan                   | N/A <sup>2</sup>           | N/A                          |
| Cann River               | N/A <sup>2</sup>           | 13                           |
| Dinner Plain             | N/A <sup>2</sup>           | N/A                          |
| Mallacoota               | 5                          | 4                            |
| Omeo                     | 31                         | N/A                          |
| Orbost                   | 25                         | 13                           |

| Water Sampling Locality | No. of Samples (Raw Water) | No. of Samples (Clear Water) |
|-------------------------|----------------------------|------------------------------|
| Swifts Creek            | 5                          | N/A                          |

<sup>1</sup> the same raw water storages (Woodglen 1 & 2) feed all 11 localities

<sup>2</sup> 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.

#### 4.11.1 Comments on results

No relevant samples exceeded the reporting criteria for Section 22 of the *Safe Drinking Water Act (2003)* in 2015/2016. 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 2015-16*.

## 4.12 Other Substances - Cadmium

Cadmium may be introduced into drinking water supplies through 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).

| 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 <sup>1</sup> | 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 | 4              | 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                  |

<sup>1</sup> The six samples in Eagle Point - Paynesville include two samples taken on Raymond Island.

### 4.12.1 Comments on results

All water sampling localities were compliant for cadmium for the 2015/2016 reporting period.

### 4.13 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).

| 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 <sup>1</sup> | 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          | 4              | 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                  |

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

#### 4.13.1 Comments on results

All water sampling localities were compliant for chromium for the 2015/2016 reporting period.

#### 4.14 Other Substances - Copper

Copper may occur naturally in the environment or be introduced into water through contact with 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples  | No. of Non-Complying Samples | Maximum (mg/L) | Complying (Yes / No) |
|--------------------------|--------------------|-----------------|------------------------------|----------------|----------------------|
| Bairnsdale               | Quarterly          | 4               | 0                            | 0.033          | Yes                  |
| Bemm River               | Quarterly          | 4               | 0                            | 0.012          | Yes                  |
| Buchan                   | Quarterly          | 4               | 0                            | 0.001          | Yes                  |
| Cann River               | Quarterly          | 4               | 0                            | 0.001          | Yes                  |
| Dinner Plain             | Quarterly          | 4               | 0                            | 0.027          | Yes                  |
| Eagle Point- Paynesville | Quarterly          | 6 <sup>1</sup>  | 0                            | 0.041          | Yes                  |
| Kalimna                  | Quarterly          | 4               | 0                            | 0.017          | Yes                  |
| Lindenow                 | Quarterly          | 4               | 0                            | 0.027          | Yes                  |
| Lindenow South           | Quarterly          | 4               | 0                            | 0.009          | Yes                  |
| Mallacoota               | Quarterly          | 4               | 0                            | 0.002          | Yes                  |
| Merrangbaur              | Quarterly          | 4               | 0                            | 0.015          | Yes                  |
| Metung                   | Quarterly          | 4               | 0                            | 0.043          | Yes                  |
| Nicholson-Swan Reach     | Quarterly          | 4               | 0                            | 0.010          | Yes                  |
| Nowa Nowa                | Quarterly          | 4               | 0                            | 0.002          | Yes                  |
| Omeo                     | Quarterly          | 4               | 0                            | 0.003          | Yes                  |
| Orbost                   | Quarterly          | 4               | 0                            | 0.002          | Yes                  |
| Sarsfield-Bruthen        | Quarterly          | 4               | 0                            | 0.073          | Yes                  |
| Sunlakes-Toorloo         | Quarterly          | 4               | 0                            | 0.009          | Yes                  |
| Swifts Creek             | Quarterly          | 11 <sup>2</sup> | 0                            | 0.012          | Yes                  |

<sup>1</sup> The six samples in Eagle Point - Paynesville include two samples taken on Raymond Island.

<sup>2</sup> Due to geotechnical drilling investigations at the Stockman mine in the Upper Tambo River Catchment, five samples were made periodically during 2015/16 at the Tambo River Offtake in Swifts Creek to establish a source water baseline. An additional two samples were taken in the Swifts Creek Raw Water Storage for this reason. These are additional to the scheduled samples.

##### 4.14.1 Comments on results

All water sampling localities were compliant for copper for the 2015/2016 reporting period.

#### 4.15 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples | No. of Non-Complying Samples | Maximum (mg/L) | Complying (Yes / No) |
|--------------------------|--------------------|----------------|------------------------------|----------------|----------------------|
| Bairnsdale               | Biannually         | 4 <sup>1</sup> | 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         | 4 <sup>2</sup> | 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                  |

<sup>1</sup> Water Sampling locality has two entry point locations, each sampled biannually.

<sup>2</sup> Nowa Nowa had previously reported on two sampling point locations, however following a risk assessment in September 2015, it was determined only one was required.

##### 4.15.1 Comments on results

All water sampling localities were compliant for cyanide for the 2015/2016 reporting period.

#### 4.16 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.

| Water Sampling Locality  | Minimum Sampling Frequency | No. of Samples <sup>1</sup> | Minimum (mg/L)   | Maximum (mg/L)   | Average (mg/L)   |
|--------------------------|----------------------------|-----------------------------|------------------|------------------|------------------|
| Bairnsdale               | Weekly                     | 73                          | 0.18             | 0.99             | 0.78             |
| Bemm River               | Weekly                     | 52                          | 0.09             | 2.2              | 0.63             |
| Buchan                   | Weekly                     | 52                          | 0.14             | 0.96             | 0.63             |
| Cann River               | Weekly                     | 52                          | 0.27             | 1.20             | 0.72             |
| Dinner Plain             | N/A <sup>2</sup>           | N/A <sup>2</sup>            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Eagle Point- Paynesville | Weekly                     | 55                          | 0.05             | 0.94             | 0.51             |
| Kalimna                  | Weekly                     | 52                          | 0.47             | 0.88             | 0.64             |
| Lindenow                 | Weekly                     | 53                          | 0.37             | 1.00             | 0.76             |
| Lindenow South           | Weekly                     | 53                          | 0.08             | 0.76             | 0.55             |
| Mallacoota               | Weekly                     | 52                          | 0.23             | 1.00             | 0.66             |
| Merrangbaur              | Weekly                     | 52                          | 0.51             | 0.78             | 0.66             |
| Metung                   | Weekly                     | 53                          | 0.42             | 0.99             | 0.67             |
| Nicholson-Swan Reach     | Weekly                     | 53                          | 0.60             | 0.89             | 0.74             |
| Nowa Nowa                | Weekly                     | 52                          | 0.25             | 0.76             | 0.51             |
| Omeo                     | Weekly                     | 52                          | 0.18             | 0.75             | 0.55             |
| Orbost                   | Weekly                     | 52                          | 0.12             | 0.97             | 0.70             |
| Sarsfield-Bruthen        | Weekly                     | 52                          | 0.28             | 0.94             | 0.67             |
| Sunlakes-Toorloo         | Weekly                     | 57                          | 0.49             | 0.92             | 0.72             |
| Swifts Creek             | Weekly                     | 52                          | 0.40             | 0.90             | 0.70             |

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

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

##### 4.16.1 Comments on results

All water sampling localities were compliant for free chlorine for the 2015/2016 reporting period.



#### 4.17 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples  | No. of Non-Complying Samples | Maximum (mg/L) | No. of Non-Complying Samples |
|--------------------------|--------------------|-----------------|------------------------------|----------------|------------------------------|
| 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 <sup>1</sup>  | 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          | 4               | 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          | 11 <sup>2</sup> | 0                            | < 0.001        | Yes                          |

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

<sup>2</sup> Due to geotechnical drilling investigations at the Stockman mine in the Upper Tambo River Catchment, five samples were made periodically during 2015/16 at the Tambo River Offtake in Swifts Creek to establish a source water baseline. An additional two samples were taken in the Swifts Creek Raw Water Storage for this reason. These are additional to the scheduled samples.

##### 4.17.1 Comments on results

All water sampling localities were compliant for lead for the 2015/2016 reporting period.

#### 4.18 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; Australian Drinking Water Guidelines [2011]).

| Water Sampling Locality  | Sampling Frequency | No. of Samples   | Minimum (mg/L) | Maximum (mg/L) | % Complying |
|--------------------------|--------------------|------------------|----------------|----------------|-------------|
| Bairnsdale               | Monthly            | 12               | 0.001          | 0.001          | 100%        |
| Bemm River               | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.005          | 100%        |
| Buchan                   | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Cann River               | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Dinner Plain             | Monthly            | 7 <sup>2</sup>   | 0.001          | 0.001          | 100%        |
| Eagle Point- Paynesville | Monthly            | 9 <sup>1,3</sup> | 0.001          | 0.001          | 100%        |
| Kalimna                  | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Lindenow                 | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Lindenow South           | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Mallacoota               | Monthly            | 12               | 0.001          | 0.002          | 100%        |
| Merrangbaur              | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Metung                   | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Nicholson-Swan Reach     | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Nowa Nowa                | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Ormeo                    | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Orbost                   | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Sarsfield-Bruthen        | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Sunlakes-Toorloo         | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |
| Swifts Creek             | Monthly            | 7 <sup>1</sup>   | 0.001          | 0.001          | 100%        |

<sup>1</sup> Following a risk review of the sampling programme in 2015 and based on low historical data, it was determined to reduce the sampling frequency in Nov-15 to quarterly instead of monthly.

<sup>2</sup> Dinner Plain - Following a risk review of the sampling programme in 2015 and based on low historical data, it was determined to change the sampling from Monthly in the Entry Water to Quarterly in the Reticulation System. This was also to align with other metal sampling – iron, copper, lead, zinc, cadmium and chromium.

<sup>3</sup> Paynesville includes two samples taken on Raymond Island.

##### 4.18.1 Comments on results

All water sampling localities were compliant for manganese for the 2015/2016 reporting period (both aesthetic and health values).

#### 4.19 Other Substances - Radiological

Radiologically active compounds may impact public health. 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.

No radiological tests were required to be conducted in 2015/16. The next tests are due to be taken in 2016/17 (2-yearly) and 2018/19 (5-yearly).

##### 4.19.1 *Comments on results from 2015/2016*

There were no results obtained for the 2015/2016 reporting period.

## 4.20 Aesthetic Characteristics - Colour

Colour generally occurs in water as a result of dissolved organic material. Although not directly related to health impacts, 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).

| Water Sampling Locality <sup>1</sup> | Sampling Frequency | No. of Samples   | Minimum (HU)     | Maximum (HU)     | % Complying      |
|--------------------------------------|--------------------|------------------|------------------|------------------|------------------|
| Bairnsdale                           | Monthly            | 12               | 2                | 2                | 100%             |
| Bemm River                           | Monthly            | 12               | 2                | 2                | 100%             |
| Buchan                               | Monthly            | 12               | 2                | 2                | 100%             |
| Cann River                           | Monthly            | 12               | 2                | 2                | 100%             |
| Dinner Plain                         | Monthly            | 12               | 2                | 2                | 100%             |
| Eagle Point- Paynesville             | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Kalimna                              | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Lindenow                             | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Lindenow South                       | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Mallacoota                           | Monthly            | 12               | 2                | 2                | 100%             |
| Merrangbaur                          | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Metung                               | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Nicholson-Swan Reach                 | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Nowa Nowa                            | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Omeo                                 | Monthly            | 12               | 2                | 2                | 100%             |
| Orbost                               | Monthly            | 12               | 2                | 2                | 100%             |
| Sarsfield-Bruthen                    | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Sunlakes-Toorloo                     | Monthly            | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> | N/A <sup>2</sup> |
| Swifts Creek                         | Monthly            | 12               | 2                | 2                | 100%             |

<sup>1</sup> Following a risk review of the sampling programme in 2015, it was determined that entry samples were representative of the reticulation system for colour testing.

<sup>2</sup>. N/A - Not Applicable; Bairnsdale samples represent the entry point for the Mitchell system; accordingly, colour is not routinely sampled in the other Mitchell system water sampling localities i.e. Eagle Point-Paynesville, Kalimna, Lindenow, Lindenow South, Merrangbaur, Metung, Nicholson-Swan Reach, Nowa Nowa, Sarsfield-Bruthen, Sunlakes-Toorloo.

### 4.20.1 Comments on results

All water sampling localities were compliant for colour for the 2015/2016 reporting period.

## 4.21 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples   | Minimum (mg/L)   | Maximum (mg/L)   | % Complying      |
|--------------------------|--------------------|------------------|------------------|------------------|------------------|
| Bairnsdale               | Quarterly          | 4                | 24               | 28               | 100%             |
| Bemm River               | Quarterly          | 4                | 13               | 16               | 100%             |
| Buchan                   | Quarterly          | 4                | 24               | 38               | 100%             |
| Cann River               | Quarterly          | 4                | 18               | 22               | 100%             |
| Dinner Plain             | Quarterly          | 4                | 42               | 47               | 100%             |
| Eagle Point- Paynesville | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Kalimna                  | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Lindenow                 | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Lindenow South           | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Mallacoota               | Quarterly          | 7 <sup>2</sup>   | 27               | 67               | 100%             |
| Merrangbaur              | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Metung                   | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Nicholson-Swan Reach     | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | n/a <sup>2</sup> |
| Nowa Nowa                | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | n/a <sup>2</sup> |
| Omeo                     | Quarterly          | 4                | 11               | 15               | 100%             |
| Orbost                   | Quarterly          | 4                | 17               | 20               | 100%             |
| Sarsfield-Bruthen        | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Sunlakes-Toorloo         | Quarterly          | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup> | 100%             |
| Swifts Creek             | Quarterly          | 4                | 44               | 79               | 100%             |

<sup>1</sup> N/A - Not Applicable; Bairnsdale samples represent the entry point for the Mitchell system; accordingly, hardness is not routinely sampled in the other Mitchell system water sampling localities i.e. Eagle Point-Paynesville, Kalimna, Lindenow, Lindenow South, Merrangbaur, Metung, Nicholson-Swan Reach, Nowa Nowa, Sarsfield-Bruthen, Sunlakes-Toorloo.

<sup>2</sup> Following a risk review of the sampling programme in 2015, it was determined that monthly sampling at Mallacoota could be changed to quarterly based on consistently low historical data results.

### 4.21.1 Comments on results

All water sampling localities were compliant for hardness for the 2015/2016 reporting period.

## 4.22 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples   | Minimum (mg/L) | Maximum (mg/L) | % Complying |
|--------------------------|--------------------|------------------|----------------|----------------|-------------|
| Bairnsdale               | Monthly            | 12               | 0.01           | 0.01           | 100%        |
| Bemm River               | Monthly            | 7 <sup>1</sup>   | 0.03           | 0.09           | 100%        |
| Buchan                   | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.03           | 100%        |
| Cann River               | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.03           | 100%        |
| Dinner Plain             | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Eagle Point- Paynesville | Monthly            | 9 <sup>1,2</sup> | 0.01           | 0.02           | 100%        |
| Kalimna                  | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Lindenow                 | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.02           | 100%        |
| Lindenow South           | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Mallacoota               | Monthly            | 12               | 0.01           | 0.04           | 100%        |
| Merrangbaur              | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.04           | 100%        |
| Metung                   | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Nicholson-Swan Reach     | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Nowa Nowa                | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Omeo                     | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Orbost                   | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.02           | 100%        |
| Sarsfield-Bruthen        | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.02           | 100%        |
| Sunlakes-Toorloo         | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |
| Swifts Creek             | Monthly            | 7 <sup>1</sup>   | 0.01           | 0.01           | 100%        |

<sup>1</sup> Following a risk review of the sampling programme in 2015 and based on low historical data, it was determined to reduce the sampling frequency in Nov-15 to quarterly instead of monthly.

<sup>2</sup> Paynesville includes two samples taken on Raymond Island.

### 4.22.1 Comments on results

All water sampling localities were compliant for iron for the 2015/2016 reporting period.

### 4.23 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. pH samples are taken weekly in each water sampling locality. The Australian Drinking Water Guidelines (2011) state that the pH of drinking water should lie between pH  $\geq 6.5$  and  $\leq 8.5$  (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.

| Water Sampling Locality  | Minimum Sampling Frequency <sup>1</sup> | No. of Samples  | Minimum (mg/L) | Maximum (mg/L) | Average (mg/L) |
|--------------------------|---|-----------------|----------------|----------------|----------------|
| Bairnsdale               | Weekly                                  | 72              | 7.1            | 7.7            | 7.4            |
| Bemm River               | Weekly                                  | 52              | 7.2            | 7.8            | 7.5            |
| Buchan                   | Weekly                                  | 52              | 8.0            | 9.2            | 8.5            |
| Cann River               | Weekly                                  | 52              | 7.6            | 9.0            | 8.4            |
| Dinner Plain             | Weekly                                  | 52              | 6.7            | 7.2            | 6.9            |
| Eagle Point- Paynesville | Weekly                                  | 55 <sup>2</sup> | 7.1            | 8.9            | 7.6            |
| Kalimna                  | Weekly                                  | 52              | 7.2            | 7.7            | 7.4            |
| Lindenow                 | Weekly                                  | 53              | 7.2            | 8.2            | 7.6            |
| Lindenow South           | Weekly                                  | 53              | 7.6            | 8.2            | 7.8            |
| Mallacoota               | Weekly                                  | 52              | 7.6            | 8.6            | 8.0            |
| Merrangbaur              | Weekly                                  | 52              | 7.2            | 7.9            | 7.6            |
| Metung                   | Weekly                                  | 53              | 7.5            | 9.2            | 8.4            |
| Nicholson-Swan Reach     | Weekly                                  | 53              | 7.0            | 8.6            | 7.6            |
| Nowa Nowa                | Weekly                                  | 52              | 7.6            | 9.3            | 8.5            |
| Omeo                     | Weekly                                  | 52              | 7.2            | 8.9            | 8.2            |
| Orbost                   | Weekly                                  | 52              | 7.3            | 9.2            | 8.4            |
| Sarsfield-Bruthen        | Weekly                                  | 52              | 7.2            | 8.0            | 7.4            |
| Sunlakes-Toorloo         | Weekly                                  | 57              | 7.1            | 8.6            | 7.7            |
| Swifts Creek             | Weekly                                  | 52              | 7.4            | 8.8            | 7.9            |

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

<sup>2</sup> Eagle Point - Paynesville includes two samples taken on Raymond Island.

#### 4.23.1 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 Buchan, Orbost, Nowa Nowa and Metung 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 2015/2016.

#### 4.24 Aesthetic Characteristics - Zinc

Zinc may occur naturally in the environment, or may be introduced through industrial activity, as well as through 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).

| Water Sampling Locality  | Sampling Frequency | No. of Samples | Minimum (mg/L) | Maximum (mg/L) | % Complying |
|--------------------------|--------------------|----------------|----------------|----------------|-------------|
| Bairnsdale               | Quarterly          | 4              | 0.002          | 0.003          | 100%        |
| Bemm River               | Quarterly          | 4              | 0.005          | 0.018          | 100%        |
| Buchan                   | Quarterly          | 4              | 0.001          | 0.001          | 100%        |
| Cann River               | Quarterly          | 4              | 0.002          | 0.003          | 100%        |
| Dinner Plain             | Quarterly          | 4              | 0.004          | 0.012          | 100%        |
| Eagle Point- Paynesville | Quarterly          | 4              | 0.001          | 0.005          | 100%        |
| Kalimna                  | Quarterly          | 4              | 0.002          | 0.006          | 100%        |
| Lindenow                 | Quarterly          | 4              | 0.001          | 0.005          | 100%        |
| Lindenow South           | Quarterly          | 4              | 0.002          | 0.008          | 100%        |
| Mallacoota               | Quarterly          | 4              | 0.001          | 0.005          | 100%        |
| Merrangbaur              | Quarterly          | 4              | 0.003          | 0.008          | 100%        |
| Metung                   | Quarterly          | 4              | 0.002          | 0.006          | 100%        |
| Nicholson-Swan Reach     | Quarterly          | 4              | 0.001          | 0.005          | 100%        |
| Nowa Nowa                | Quarterly          | 4              | 0.001          | 0.005          | 100%        |
| Omeo                     | Quarterly          | 4              | 0.001          | 0.004          | 100%        |
| Orbost                   | Quarterly          | 4              | 0.001          | 0.003          | 100%        |
| Sarsfield-Bruthen        | Quarterly          | 4              | 0.002          | 0.023          | 100%        |
| Sunlakes-Toorloo         | Quarterly          | 4              | 0.002          | 0.003          | 100%        |
| Swifts Creek             | Quarterly          | 4              | 0.002          | 0.09           | 100%        |

##### 4.24.1 Comments on results

All water sampling localities were compliant for zinc for the 2015/2016 reporting period.



### 4.25 Analysis of Results

Comparing the percentage compliance in all water sampling localities (refer to Figure 4) demonstrates our high standard of compliance over the past three years. All sampling localities were fully compliant with the parameters described in Schedule 2 of the Safe Drinking Water Regulations 2005/2015. As a result of the revocation of the Safe Drinking Water Regulations 2005 in 18/07/2015, chloroacetic acid, dichloroacetic acid, trichloroacetic acid and acid soluble aluminium are no longer Schedule 2 parameters. We have been 100% compliant for all regulated parameters over the past three years.

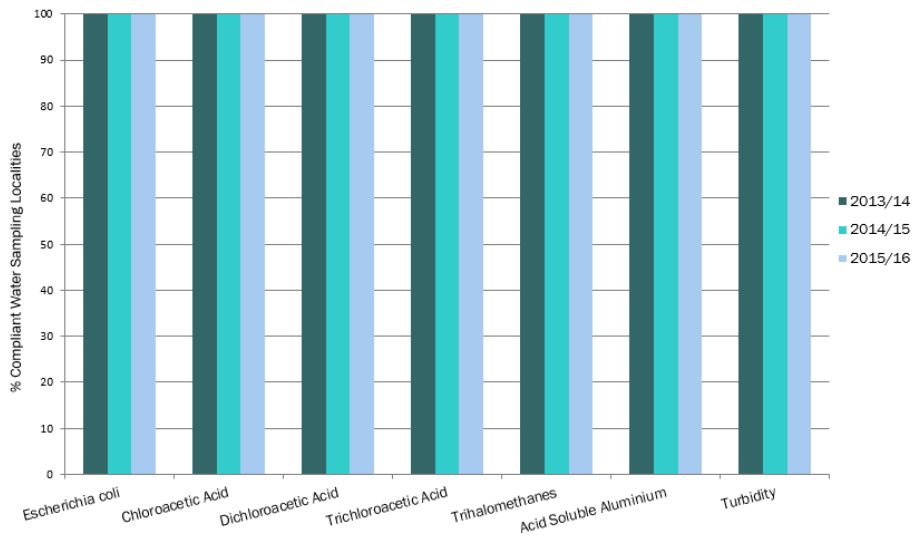


Figure 4: Percentage of water sampling localities compliant with Schedule 2 parameters  
 (NB: Chloroacetic acid, dichloroacetic acid, trichloroacetic acid and acid soluble aluminium were only Schedule 2 parameters to 18/07/2015, due to a change to the Safe Drinking Water Regulations)

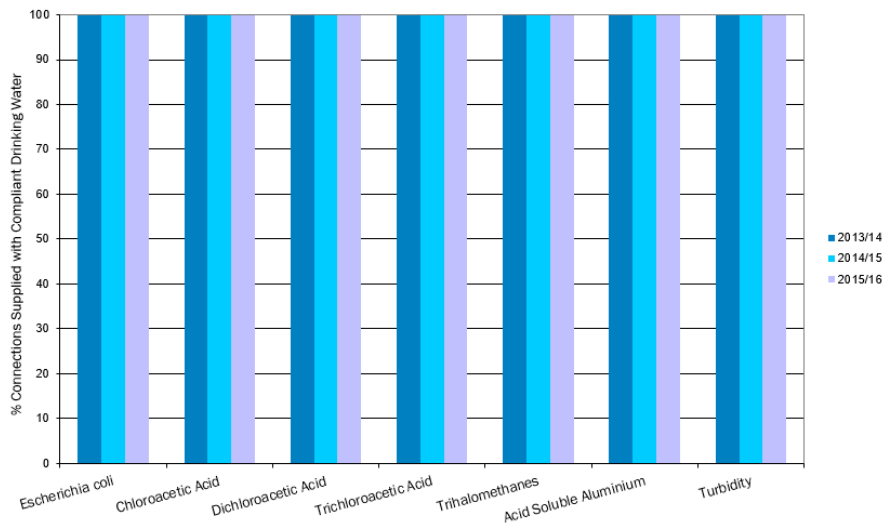


Figure 5: Percentage of connections supplied with compliant drinking water in all localities  
 (NB: Chloroacetic acid, dichloroacetic acid, trichloroacetic acid and acid soluble aluminium were only Schedule 2 parameters to 18/07/2015, due to a change to the Safe Drinking Water Regulations)

All other drinking water quality parameters outlined in our water sampling program (not including the Schedule 2 parameters outlined in the Safe Drinking Water Regulations 2005/2015) are compliant with the Australian Drinking Water Guidelines 2011 (ADWG 2011) health based guidelines.

| Parameter                   | Unit                | Health Guideline Value (ADWG 2011) | Aesthetic Guideline Value (ADWG 2011) | Performance against guideline values 2013-2014 | Performance against guideline values 2014-2015 | Performance against guideline values 2015-2016 |
|-----------------------------|---------------------|------------------------------------|---------------------------------------|--|--|--|
| Aluminium (Acid Soluble)    | (mg/L)              | 0.2 <sup>4</sup>                   | 0.2                                   | - <sup>4</sup>                                 | - <sup>4</sup>                                 | 100%   |
| Antimony                    | (mg/L)              | 0.003                              | -                                     | N/A <sup>1</sup>                               | 100%   | N/A <sup>1</sup>                               |
| Arsenic                     | (mg/L)              | 0.01                               | -                                     | 100%   | 100%   | N/A <sup>2</sup>                               |
| Barium                      | (mg/L)              | 2.0                                | -                                     | 100%   | 100%   | N/A <sup>2</sup>                               |
| Beryllium                   | (mg/L)              | 0.06                               | -                                     | N/A <sup>1</sup>                               | 100%   | N/A <sup>1</sup>                               |
| Boron                       | (mg/L)              | 4                                  | -                                     | N/A <sup>1</sup>                               | 100%   | N/A <sup>1</sup>                               |
| Cadmium                     | (mg/L)              | 0.002                              | -                                     | 100%   | 100%   | 100%   |
| Calcium as Ca               | -                   | -                                  | -                                     | -  | -  | -  |
| Chlorate                    | -                   | -                                  | -                                     | -  | -  | -  |
| 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%   |
| Cobalt                      | (mg/L)              | -                                  | -                                     | -  | -  | -  |
| Coliforms                   | -                   | -                                  | -                                     | -  | -  | -  |
| Colour (True)               | HU                  | -                                  | 15                                    | 100%   | 100%   | 100%   |
| Copper                      | (mg/L)              | 2                                  | 1                                     | 100%   | 100%   | 100%   |
| Cyanide                     | (mg/L)              | 0.08                               | -                                     | 100%   | 100%   | N/A <sup>2</sup>                               |
| Electrical Conductivity     | ( $\mu$ S/cm @ 25C) | -                                  | -                                     | -  | -  | -  |
| Fluoride                    | (mg/L)              | 1.5                                | -                                     | 100%   | 100%   | 100%   |
| Monochloroacetic Acid       | -                   | -                                  | -                                     | -  | -  | -  |
| Bromoacetic Acid            | -                   | -                                  | -                                     | -  | -  | -  |
| Bromochloroacetic Acid      | -                   | -                                  | -                                     | -  | -  | -  |
| Bromodichloroacetic Acid    | -                   | -                                  | -                                     | -  | -  | -  |
| Dibromoacetic Acid          | -                   | -                                  | -                                     | -  | -  | -  |
| Dichloroacetic Acid         | (mg/L)              | 0.1                                | -                                     | 100%   | 100%   | 100%   |
| Trichloroacetic Acid        | (mg/L)              | 0.1                                | -                                     | 100%   | 100%   | 100%   |

|                                  |        |       |         |                   |                   |                   |
|----------------------------------|--------|-------|---------|-------------------|-------------------|-------------------|
| Hardness (as CaCO <sub>3</sub> ) | (mg/L) | -     | 200     | 100%              | 100%              | 100%              |
| Iodide                           | (mg/L) | 0.5   | -       | 100%              | 100%              | N/A <sup>2</sup>  |
| Iron                             | (mg/L) | -     | 0.3     | 100%              | 100%              | 100%              |
| Lead                             | (mg/L) | 0.01  | -       | 100%              | 100%              | 100%              |
| Magnesium                        | -      | -     | -       | -                 | -                 | -                 |
| Manganese                        | (mg/L) | 0.5   | 0.1     | 100%              | 100%              | 100%              |
| Mercury                          | (mg/L) | 0.001 | -       | N/A <sup>1</sup>  | 100%              | N/A <sup>1</sup>  |
| Molybdenum                       | (mg/L) | 0.05  | -       | N/A <sup>1</sup>  | 100%              | N/A <sup>1</sup>  |
| Nickel                           | (mg/L) | 0.02  | -       | N/A <sup>1</sup>  | 100%              | N/A <sup>1</sup>  |
| pH (Field)                       | -      | -     | 6.5-9.2 | >99% <sup>3</sup> | >99% <sup>3</sup> | >99% <sup>3</sup> |
| Selenium                         | (mg/L) | 0.01  | -       | N/A <sup>1</sup>  | 100%              | N/A <sup>1</sup>  |
| Silica                           | (mg/L) | -     | 80      | 100%              | 100%              | N/A <sup>2</sup>  |
| Silver                           | (mg/L) | 0.1   | -       | N/A <sup>1</sup>  | 100%              | N/A <sup>1</sup>  |
| Strontium                        | -      | -     | -       | -                 | -                 | -                 |
| Thallium (mg/L)                  | -      | -     | -       | -                 | -                 | -                 |
| Tin                              | -      | -     | -       | -                 | -                 | -                 |
| Titanium                         | -      | -     | -       | -                 | -                 | -                 |
| Total Aluminium                  | -      | -     | -       | -                 | -                 | -                 |
| Total Plate Count                | -      | -     | -       | -                 | -                 | -                 |
| Vanadium                         | -      | -     | -       | -                 | -                 | -                 |
| Water Temperature                | -      | -     | -       | -                 | -                 | -                 |
| Zinc (mg/L)                      | (mg/L) | 3     | -       | 100%              | 100%              | 100%              |

<sup>1</sup> 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 prior to 2012.

<sup>2</sup> 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 2015.

<sup>3</sup> 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 Buchan, Orbost, Nowa Nowa and Metung 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 2015/2016.

<sup>4</sup> Aluminium (acid soluble) was a Schedule 2 regulated parameter under the Safe Drinking Water Regulations 2005. As of 2015 it is no longer a regulated parameter and has only an aesthetic limit under the ADWG.

#### 4.26 Continuous Improvement Measures

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

- Continuation of high-pressure air scouring of water mains across our water sampling localities as part of our ongoing programmed maintenance systems. This maintenance activity aims to improve water quality by reducing the risk of turbidity spikes created during routine and non-routine pipeline works.
- Continuation of the Aquifer Storage and Recovery research initiative at Woodglen. Aims at improving water supply reliability to allow for selective raw water harvesting during periods where river water quality conditions are poor.
- Design work for future tank installations and basin augmentations. These tanks will replace shade-cloth covered clear water storages and result in reduced risk of recontamination and increased water quality overall.
- Improvements to washwater treatment processes at water treatment plants to ensure high quality water is retained.
- Testing of new methods to remove taste, odour and algae prior to treatment plant to improve raw water quality, resulting in reduced treatment costs and further control over source water quality.

## 5 Complaints Relating to Water Quality

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

This 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](http://www.egwater.vic.gov.au).

Customer complaints relating to water quality were again low in 2015/2016, which is likely due to (1) the ongoing optimisation of chlorine addition to the treated water supply and (2) air scouring and other proactive maintenance activities.

*Table 6.1 Summary of customer water quality complaints in 2015/2016*

| Complaint         | Number of complaints | Number per 100 connections* | Comparison with previous year |
|-------------------|----------------------|-----------------------------|-------------------------------|
| Discoloured Water | 0                    | 0.000                       | 0.009                         |
| Taste and Odour   | 5                    | 0.022                       | 0.013                         |
| Air in water      | 0                    | 0.000                       | 0.000                         |
| Other             | 3                    | 0.013                       | 0.000                         |

\*Calculations based on 23,156 water supply connections.

### 5.1 Taste and Odour

Five taste and odour complaints were received in 2015/2016, compared to three complaints in this category in 2014/2015. These complaints were unconfirmed, where the three were described each as chlorine, soapy and salty.

### 5.2 Other

Three complaints were received that were categorised as "Other" in 2015/2016, compared to two complaints in 2014/2015. The first related to an historical issue (08/02/2010) regarding manganese in the Mallacoota reticulation system. The second related to laundry that had white stains, however this was determined to be unrelated to our treatment process. The last issue involved a customer complaint regarding fluoridation of the drinking water at Lakes Entrance. None of these complaints were regarded as related to our treatment processes and no corrective actions were undertaken.

## 6 Actions arising from the most recent Risk Management Plan Audit

Our DWQRMS was audited in April-May 2016 by an independent external auditor. The Drinking Water Quality Risk Management Plan (RMP), which is the central component of East Gippsland Water's DWQRMS, outlines a preventive, systematic and comprehensive approach to drinking water quality assurance. The 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 are in place to effectively manage the risks. The RMP also describes supporting plans and policies that are essential to the ongoing provision of safe, high quality drinking water to our consumers. The audit activity concluded that East Gippsland Water's RMP was compliant with the requirements of the Safe Drinking Water Act 2003.

There were no non-conformances identified during the audit. Some opportunities for improvement were noted (these are outlined in Table 7.1).

*Table 7.1 Summary of the opportunities for improvement identified during the 2016 audit*

| Opportunities for Improvement  |
|--|
| Continued research that involves integration with global best practice.  |
| International support networking; development of links with water suppliers from other countries that utilise new technologies or systems. This network could possibly be taken further with joint research projects or sharing of outcomes. |

## **7 Undertakings under Section 16 of the Regulations**

Section 16 of the 2015 Regulations (which refers to Section 30 of the *Safe Drinking Water Act 2003*) allows for the Secretary of the Department of Health & Human Services to accept a written undertaking from a water supplier that certain actions will be performed in the event that they are, or are likely to be, in contravention of the *Safe Drinking Water Act 2003* or its associated regulations.

During the 2015/2016 period, we did not require any undertakings.

## **8 Regulated Water**

We have 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.

## **9 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](http://www.egwater.vic.gov.au)), or contact East Gippsland Water on 1300 720 700.

## 10 Glossary of terms

|        |   |
|--------|---|
| CWS    | Clear water storage                           |
| DWQRMS | Drinking Water Quality Risk Management System |
| HU     | Hazen units                                   |
| ISES   | Integrated standards enforcement system       |
| kL     | Kilolitres (1,000 litres)                     |
| L/s    | Litres per second                             |
| mg/L   | Milligrams per litre                          |
| ML     | Megalitre (1,000,000 litres)                  |
| N/A    | Not applicable                                |
| NTU    | Nephelometric turbidity units                 |
| PAC    | Polyaluminium chlorohydrate                   |
| RMP    | Risk management plan                          |
| SOP    | Standard operating procedure                  |
| WTP    | Water treatment plant                         |