

# Goondiwindi REGIONAL COUNCIL



## Drinking Water Quality Management Plan Report 2021/2022

## Table of Contents

|     |  |    |
|-----|--|----|
| 1   | Introduction.....                        | 3  |
| 2   | Actions taken to implement the Plan..... | 4  |
| 3   | Reviews.....                             | 4  |
| 4   | Audits .....                             | 5  |
| 5   | Drinking water incidents .....           | 9  |
| 6   | Customer Complaints.....                 | 9  |
| 7   | Water quality information .....          | 10 |
| 7.1 | Water Quality – Goondiwindi.....         | 10 |
| 7.2 | Water Quality – Inglewood .....          | 11 |
| 7.3 | Water Quality – Talwood.....             | 12 |
| 7.4 | Water Quality– Texas.....                | 13 |
| 7.5 | Water Quality – Yelarbon .....           | 14 |

## List of Figures

|          |  |   |
|----------|--|---|
| Figure 1 | Goondiwindi Regional Council: Location of Water Supply Schemes ..... | 3 |
|----------|--|---|

## List of Tables

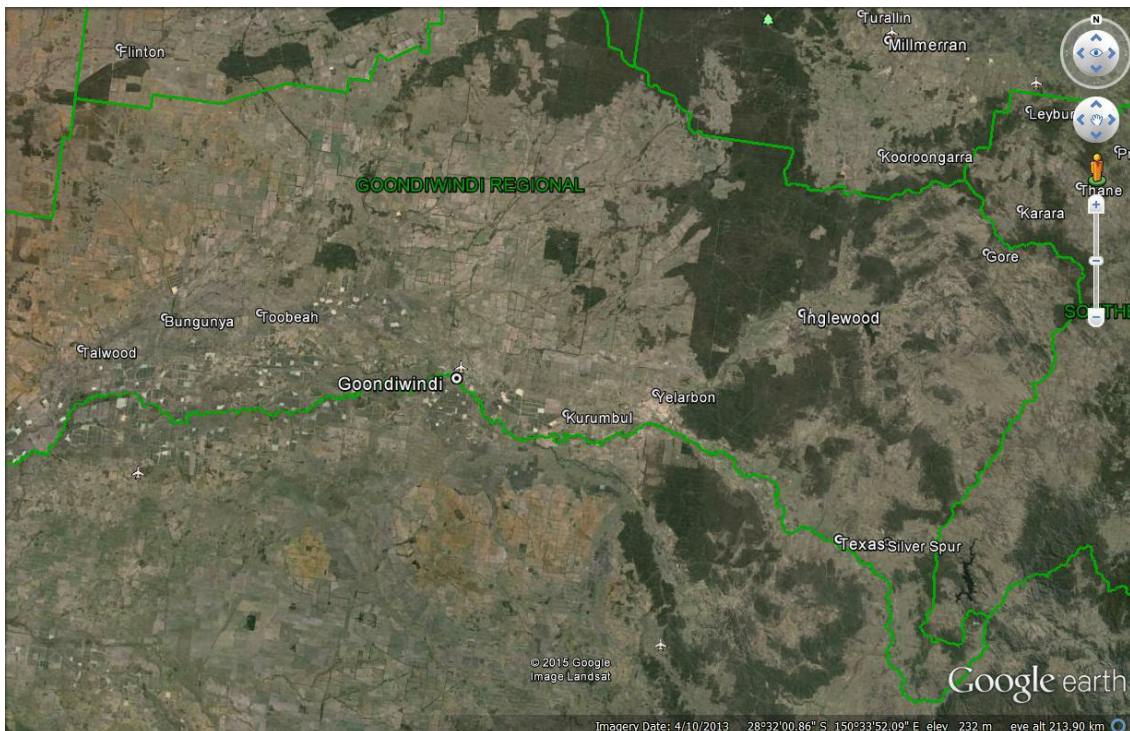
|         |  |    |
|---------|--|----|
| Table 1 | Non-compliant audit findings.....                        | 6  |
| Table 2 | Water Quality Complaints .....                           | 9  |
| Table 3 | Treated and Reticulated Water Quality – Goondiwindi..... | 10 |
| Table 4 | Treated and Reticulated Water Quality – Inglewood .....  | 11 |
| Table 5 | Treated and Reticulated Water Quality – Talwood .....    | 12 |
| Table 6 | Treated and Reticulated Water Quality – Texas.....       | 13 |
| Table 7 | Treated and Reticulated Water Quality – Yelarbon .....   | 14 |

## 1 INTRODUCTION

Goondiwindi Regional Council is a registered water service provider (SPID 484) providing drinking water services to approximately 9,000 customers. Goondiwindi Regional Council services an area of ~ 19,300km<sup>2</sup>, and with an estimated population of 10,630 people (Australian Bureau of Statistics, 2016 census). We supply water to 5 separate drinking water schemes in Goondiwindi, Inglewood, Texas, Yelarbon and Talwood, as shown on the map below.

The townships of Bungunya and Toobeah have non-potable water schemes. As this water is non-potable, the Act provisions do not apply to these communities, and the water quality for these schemes is not discussed in this report.

Figure 1 Goondiwindi Regional Council: Location of Water Supply Schemes



As required under the *Water Supply (Safety and Reliability) Act 2008* (the Act), Goondiwindi Regional Council developed a drinking water quality management plan (DWQMP) that met the requirements of the Act.

This report is a regulatory requirement that details how Council has implemented the DWQMP and provides details of the verification monitoring undertaken in our drinking water schemes.

The structure of this report follows the requirements of s142 of the Act.

## 2 ACTIONS TAKEN TO IMPLEMENT THE PLAN

The Goondiwindi Regional Council DWQMP describes how we operate the drinking water services for each of the 5 drinking water schemes, and details the operational steps that we take to ensure that our customers receive safe drinking water.

During 2021-2022 Goondiwindi Regional Council operated the schemes as described, implementing the operational monitoring program, taking actions to ensure water quality targets are met, and undertaking verification monitoring for all schemes (detailed in Section 7).

Council operators ensured the treatment processes operated as described as in the DWQMP.

*Further, we continued to progress items that had been identified in the Risk Management Improvement Program (RMIP) to ensure that we continually improved our processes, and the water quality to our customers. This includes working on actions that were identified in a 2019 Risk Assessment review that is yet to be approved by the Regulator.*

Notable improvements that have been undertaken include:

- 1) Goondiwindi
  - a. Reservoir cleaning
  - b. Procedures being developed
  - c. Online raw and settled water analysers installed
  - d. Fluoride dosing ceased
  
- 2) Talwood
  - a. Reservoir cleaning
  - b. Procedures being developed
  
- 3) Inglewood
  - a. Reservoir cleaning
  - b. Procedures being developed
  
- 4) Texas
  - a. Reservoir cleaning
  - b. Procedures being developed
  
- 5) Yelarbon
  - a. Reservoir cleaning
  - b. Procedures being developed

## 3 REVIEWS

Council has submitted a review of the DWQMP to capture the changes to water sources and the treatment processes. The review included an update on the risk assessment, water quality data, CCPs, operational and verification monitoring and the improvement plan.

The reviewed plan was submitted on 17 December 2021 for approval by the regulator. The review was approved with conditions on 11 January 2022.

## 4 AUDITS

A DWQMP audit was undertaken during the 2021/22 financial year. Virdis Consultants were engaged and completed the audit in July 2021.

| Compliance Codes            | Number of findings |  |
|-----------------------------|--------------------|--|
| <b>Compliant</b>            | 9                  | <ul style="list-style-type: none"> <li>• Full compliance was awarded for 9 audit areas</li> <li>• Minor non-compliance was awarded in relation to the implementation of operational procedures and the adequacy of operational monitoring programs in relation to critical limits.</li> <li>• Major non-compliance was awarded in relation to the implementation of the operational and verification monitoring programs.</li> <li>• the objectives of the audit were fulfilled without any issues.</li> </ul> |
| <b>Minor Non-Compliance</b> | 4                  |  |
| <b>Major Non-Compliance</b> | 1                  |  |
| <b>No requirement</b>       | 1                  |  |

Table 1 Non-compliant audit findings

| Auditable item   | Checklist   | Recommendation   | Opportunity for Improvement   |
|--|---|--|---|
| <b>Data Accuracy - verification data generated</b>   | Verification data included in the DWQMP (annual) Reports as per the DWQMP   | N/A  | OFI-GRC-2021-001 - Ensure annual reports are submitted by the due date.   |
| <b>Response</b>  | We are aware of the requirement and work to meet this every year.   |  |   |
| <b>Compliance with the Plan – implementation of preventive measures described in the plan</b>      | Preventive measures identified<br><br>Preventive measures implemented   | N/A  | OFI-GRC-2021-002 - At the next review, include a comprehensive assessment of the network risks and identify and establish preventive measures for hygienic work practices for working on mains.   |
| <b>Response</b>  | The risk assessment has been reviewed and updated. A consultant has been engaged to assist with the development of a comprehensive group of procedures.   |  |   |
| <b>Compliance with the Plan – implementation of operational and maintenance procedures</b>         | Procedures – currency<br><br>Procedures - implementation  | REC-GRC-2021-001 – Review the risk assessment and scheme operations to identify the operational procedures required to implement the DWQMP and the associated preventive measures. Develop and implement the procedures, prioritising on risk. Ensure all staff are trained in the procedures. | N/A   |
| <b>Response</b>  | A consultant has been engaged to assist with the development of a comprehensive group of procedures.  |  |   |
| <b>Compliance with the Plan – implementation of process for managing incidents and emergencies</b> | Process documented<br><br>Response actions documented   | N/A  | OFI-GRC-2021-003 Undertake regular training in the incident management procedures and consider including findings from incidents that have occurred elsewhere in the water industry to increase awareness of incident prevention and management |
| <b>Response</b>  | Relevant staff are aware of their responsibilities to report upwards. Key staff for reporting and managing incidents are fully aware of the requirements. |  |   |

Goondiwindi Regional Council Drinking Water Quality Management Plan Report 2021-2022

| Auditable item  | Checklist   | Recommendation   | Opportunity for Improvement  |
|---|---|--|--|
| <p><b>Compliance with the Plan – implementation of operational and verification monitoring plan</b></p> | <p>Operational monitoring plan implementation, including CCPs</p> <p>Verification monitoring plan implementation</p>  | <p>REC-GRC-2021-002 Review all SCADA alarms and ensure that they are consistent with the CCP procedures</p> <p>REC-GRC-2021-003 Review permissions to ensure that critical limits are protected and establish a process to document and proposed changes to SCADA limits.</p> <p>REC-GRC-2021-004 Establish a process to record the actions taken in response to critical limit exceedances</p> <p>REC-GRC-2021-005 Undertake awareness training on the implementation of CCPs, ensuring all staff are aware of the risks associated with a critical limit exceedance, the process for action, internal reporting, and record keeping.</p> <p>REC-GRC-2021-006 Check all online probes to identify issues and implement any actions necessary to ensure online monitoring results are reliable.</p> <p>REC-GRC-2021-007 Review requirements for cyber security and ensure the SCADA system requires individual logins and passwords that are protected.</p> <p>REC-GRC-2021-008 Review verification monitoring processes to ensure that the sampling is undertaken in accordance with the DWQMP. Ensure any non-compliance with the water quality criteria, including failure to take a sample is reported to the regulator, in accordance with Section 102 of the Water Supply (Safety and Reliability) Act 2008.</p> | <p>N/A</p>   |
| <p><b>Response</b></p>  | <p>Rec 002 – all alarms have been reviewed. Rec 003 – permissions have been reviewed Rec 004 – we are considering whether this is necessary given our operators are aware of the requirement to report upwards. Rec 005 Staff are trained on CCPs through toolbox talks. These are not documented. Rec 006 online instruments are regularly cross checked and calibrated as required and serviced externally annually. Rec 007 Cyber security has been reviewed. Rec008 The recommendation is over and above the requirements of the Act and our reporting requirements as stated in our notice. We currently comply with the Act and conditions of the plan as required.</p> |  |  |
| <p><b>Compliance with the Plan – implementation of risk management improvement program</b></p>          | <p>Improvement program implementation</p> <p>Monitoring progress</p> <p>Continual improvement</p>   | <p>N/A</p>   | <p>OFI-GRC-2021-004 Establish an editable Risk Management Improvement Plan that is regularly reviewed and kept up to date and includes improvements from a range of sources including audit recommendations.</p> |

Goondiwindi Regional Council Drinking Water Quality Management Plan Report 2021-2022

| Auditable item   | Checklist  | Recommendation  | Opportunity for Improvement   |
|--|--|---|---|
| <b>Response</b>  | This is established – it is in the same excel spreadsheet as the risk assessment and is tracked through the regular reviews.   |   |   |
| <b>Compliance with the Approval Conditions – adhering to provisions and conditions</b> | Review undertaken  | REC-GRC-2021-009 Progress the review and amendment of the DWQMP by the due date.  | N/A   |
| <b>Response</b>  | The DWQMP was provided to the regulator who requested information on processes not yet fully constructed. The amendment to the DWQMP was made when council had sufficient information to answer the information request.   |   |   |
| <b>Relevance of the Plan – service description and infrastructure details</b>          | All relevant schemes included<br><br>Schematic or flow diagram currency  | N/A   | OFI-GRC-2021-005 Review and update process flow diagrams to accurately reflect system components.                     |
| <b>Response</b>  | Schematics were updated as a part of the most recent review  |   |   |
| <b>Relevance of the Plan – operational and verification monitoring</b>                 | Operational monitoring relevant<br><br>Verification monitoring relevant<br><br>CCP limits relevant for risk management   | REC-GRC-2021-010 Review and update critical limits to reflect the performance required to achieve adequate pathogen removal, for example filtered water turbidity limits should be adequate for protozoan removal | OFI-GRC-2021-006 Incorporate Health Based Targets and Good Practice Guide recommendations in the process assessments. |
| <b>Response</b>  | Council has been working for a number of years to either improve filter performance to achieve better treated water quality outcomes and has undertaken both HBT and GPG assessments. Over a number of iterations of the DWQMP, Council has identified the need for UV disinfection upgrades, and is in the process of treatment upgrades. This has deliberately been staged with the actual regulatory requirements as the cost of treatment is also a consideration. |   |   |



## 5 DRINKING WATER INCIDENTS

Section 102 of the Act refers to the reporting requirements when a provider is aware that their water quality exceeds the water quality criteria. The water quality criteria refer to the health guideline values in the current version of the Australian Drinking Water Guidelines, plus any other requirement from Queensland Department of Health or the Department of Regional Development Manufacturing and Water as stated in their regulations.

There have been no incidents reported to the Regulator in the 20/21 Financial year.

## 6 CUSTOMER COMPLAINTS

In 2020/2021 there were 9 complaints related to the quality of water in our drinking water supplies. These are included in the table below.

*Table 2 Water Quality Complaints*

| Scheme                               | Inglewood                     | Goondiwindi   | Texas  |
|--------------------------------------|-------------------------------|---|--|
| <b>Number and type of complaints</b> | 3 – Discoloured /turbid water | 2 Discoloured water<br>1 Turbid water                     | 1 Discoloured water                            |
| <b>Action taken</b>                  | Attended site and flushed     | Discoloured and turbid water – attended site and flushed. | Discoloured water – attended site and flushed. |

## 7 WATER QUALITY INFORMATION

Goondiwindi Regional Council undertakes water quality monitoring to ensure that the water quality that we provide to our customers is safe. The following pages provide detail of the treated/reticulated water quality for 2020/2021 for the range of parameters tested. These results are extracted from SWIM Local, and statistics calculated from the extracted data for the appropriate time range. Averages including results under limit of detection (LOD) are calculated using 0.5 x LOD and only given if result is over LOD.

### 7.1 Water Quality – Goondiwindi

Table 3 Treated and Reticulated Water Quality – Goondiwindi

| Parameter                   | E. coli (MPN/100mL) | Turbidity | EC      | pH        | Total Hardness (as CaCO <sub>3</sub> ) | Alkalinity      | Silica         | TDI             | TDS (mg/L)  | Colour (True)    | SAR         | Free Chlorine    | THM          |               |
|-----------------------------|---------------------|-----------|---------|-----------|--|-----------------|----------------|-----------------|-------------|------------------|-------------|------------------|--------------|---------------|
| ADWG Health Guideline Value | 0                   | NA        | NA      | NA        | NA                                     | NA              | NA             | NA              | NA          | NA               | NA          | 5                | 250          |               |
| ADWG Aesthetic Value        | NA                  | 5         | NA      | 6.5-8.5   | 200                                    | NA              | 80             | NA              | 600         | 15               | NA          | 0.6              | NA           |               |
| Minimum                     | -                   | 0.00      | 170.0   | 6.6       | 35.00                                  | 28              | 11.0           | 99              | 99          | <8               | 1.0         | 0.20             | 140          |               |
| Maximum                     | -                   | 0.71      | 320.0   | 7.61      | 84.00                                  | 84              | 147.0          | 221             | 190         | 16.00            | 1.5         | 1.96             | 240          |               |
| Average                     | -                   | 0.15      | 238.1   | 7.16      | 61.07                                  | 57              | 19.8           | 156             | 139         | 10.00            | 1.2         | 1.10             | 183          |               |
| Number of Samples           | 128                 | 128       | 134     | 127       | 134                                    | 134             | 134            | 134             | 134         | 134              | 134         | 128              | 21           |               |
| Parameter                   | Sodium              | Potassium | Calcium | Magnesium | Chloride                               | Fluoride (mg/L) | Nitrate (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Manganese (mg/L) | Zinc (mg/L) | Aluminium (mg/L) | Boron (mg/L) | Copper (mg/L) |
| ADWG Health Guideline Value | NA                  | NA        | NA      | NA        | NA                                     | 1.5             | 50             | NA              | NA          | 0.5              | NA          | NA               | 4            | 2             |
| ADWG Aesthetic Value        | 180                 | NA        | NA      | NA        | 250                                    | NA              | NA             | 250             | 0.3         | 0.1              | 3           | 0.2              | NA           | 1             |
| Minimum                     | 2                   | 2.6       | 7.3     | 4.1       | 25                                     | 0.09            | <0.05          | 5.2             | <0.01       | <0.001           | <0.06       | <0.03            | <0.02        | <0.003        |
| Maximum                     | 221                 | 43.0      | 74.3    | 11.0      | 41                                     | 0.92            | 53.0           | 14.0            | 0.04        | 0.005            | 0.07        | 0.07             | 0.03         | 0.12          |
| Average                     | 23                  | 3.5       | 12.1    | 7.8       | 31                                     | 0.58            | 1.85           | 9.0             | 0.01        | 0.001            | <0.06       | 0.02             | 0.01         | 0.015         |
| Number of Samples           | 134                 | 134       | 134     | 134       | 134                                    | 134             | 134            | 134             | 134         | 134              | 134         | 134              | 134          | 134           |

There have been no *E. coli* detections, and the rolling compliance value is 100%.

## 7.2 Water Quality – Inglewood

Table 4 Treated and Reticulated Water Quality – Inglewood

| Parameter                   | E. coli (MPN/100mL) | Turbidity        | EC             | pH               | Total Hardness (as CaCO <sub>3</sub> ) | Alkalinity      | Silica (mg/L)  | TDI (mg/L)      | TDS (mg/L)  | Colour (True)    | SAR         | Free Chlorine (mg/L) | THMs (µg/L)  |               |
|-----------------------------|---------------------|------------------|----------------|------------------|--|-----------------|----------------|-----------------|-------------|------------------|-------------|----------------------|--------------|---------------|
| ADWG Health Guideline Value | 0                   | NA               | NA             | NA               | NA                                     | NA              | NA             | NA              | NA          | NA               | NA          | 5                    | 250          |               |
| ADWG Aesthetic Value        | NA                  | 5                | NA             | 6.5-8.5          | 200                                    | NA              | 80             | NA              | 600         | 15               | NA          | 0.6                  | NA           |               |
| Minimum                     | -                   | 0.15             | 170.0          | 6.34             | 33.0                                   | 33              | 15             | 1               | 100         | <8               | 1.2         | 0.04                 | 110          |               |
| Maximum                     | -                   | 1.26             | 510.0          | 7.8              | 97.0                                   | 120             | 140            | 342             | 290         | 18.0             | 3.1         | 2.14                 | 190          |               |
| Average                     | -                   | 0.45             | 304.8          | 7.01             | 60.5                                   | 65              | 20             | 193             | 176         | <8               | 2.0         | 0.53                 | 140          |               |
| Number of Samples           | 60                  | 60               | 65             | 65               | 65                                     | 65              | 65             | 65              | 65          | 65               | 65          | 58                   | 14           |               |
| Parameter                   | Sodium (mg/L)       | Potassium (mg/L) | Calcium (mg/L) | Magnesium (mg/L) | Chloride (mg/L)                        | Fluoride (mg/L) | Nitrate (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Manganese (mg/L) | Zinc (mg/L) | Aluminium (mg/L)     | Boron (mg/L) | Copper (mg/L) |
| ADWG Health Guideline Value | NA                  | NA               | NA             | NA               | NA                                     | 1.5             | 50             | NA              | NA          | 0.5              | NA          | NA                   | 4            | 2             |
| ADWG Aesthetic Value        | 180                 | NA               | NA             | NA               | 250                                    | NA              | NA             | 250             | 0.3         | 0.1              | 3           | 0.2                  | NA           | 1             |
| Minimum                     | 18                  | 3.4              | 7.1            | 2.8              | 25                                     | 0.08            | 0.08           | 5.2             | <0.01       | <0.001           | <0.06       | <0.03                | 0.02         | 0.003         |
| Maximum                     | 68                  | 4.9              | 23.0           | 10.0             | 77                                     | 0.17            | 4.4            | 113.0           | 0.05        | 0.35             | <0.06       | 0.1                  | 0.07         | 0.28          |
| Average                     | 36                  | 4.1              | 13.6           | 6.4              | 46                                     | 0.11            | 1.39           | 12.4            | <0.01       | 0.02             | <0.06       | <0.03                | 0.04         | 0.03          |
| Number of Samples           | 65                  | 65               | 65             | 65               | 65                                     | 65              | 65             | 65              | 65          | 65               | 65          | 65                   | 65           | 65            |

There have been no *E. coli* detections, and the rolling compliance value is 100%.

### 7.3 Water Quality – Talwood

Table 5 Treated and Reticulated Water Quality – Talwood

| Parameter                   | E. coli (MPN/100mL) | Turbidity        | EC             | pH               | Total Hardness (as CaCO <sub>3</sub> ) | Alkalinity      | Silica (mg/L)  | TDI (mg/L)      | TDS (mg/L)  | Colour (True)    | SAR         | Free Chlorine (mg/L) | THMs (µg/L)  |               |
|-----------------------------|---------------------|------------------|----------------|------------------|--|-----------------|----------------|-----------------|-------------|------------------|-------------|----------------------|--------------|---------------|
| ADWG Health Guideline Value | 0                   | NA               | NA             | NA               | NA                                     | NA              | NA             | NA              | NA          | NA               | NA          | 5                    | 250          |               |
| ADWG Aesthetic Value        | NA                  | 5                | NA             | 6.5-8.5          | 200                                    | NA              | 80             | NA              | 600         | 15               | NA          | 0.6                  | NA           |               |
| Minimum                     | -                   | 0.05             | 350            | 7.35             | 3.9                                    | 98              | 16             | 104             | 200         | <8               | 7           | 0.5                  | 170          |               |
| Maximum                     | -                   | 2.23             | 1350           | 8.59             | 25.0                                   | 500             | 28             | 1060            | 790         | 23               | 69          | 2.4                  | 230          |               |
| Average                     | -                   | 0.6              | 843            | 7.97             | 14.4                                   | 302             | 23             | 634             | 504         | <8               | 31          | 1.6                  | 193          |               |
| Number of Samples           | 36                  | 36               | 36             | 36               | 36                                     | 36              | 36             | 36              | 36          | 36               | 36          | 24                   | 4            |               |
| Parameter                   | Sodium (mg/L)       | Potassium (mg/L) | Calcium (mg/L) | Magnesium (mg/L) | Chloride (mg/L)                        | Fluoride (mg/L) | Nitrate (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Manganese (mg/L) | Zinc (mg/L) | Aluminium (mg/L)     | Boron (mg/L) | Copper (mg/L) |
| ADWG Health Guideline Value | NA                  | NA               | NA             | NA               | NA                                     | 1.5             | 50             | NA              | NA          | 0.5              | NA          | NA                   | 4            | 2             |
| ADWG Aesthetic Value        | 180                 | NA               | NA             | NA               | 250                                    | NA              | NA             | 250             | 0.3         | 0.1              | 3           | 0.2                  | NA           | 1             |
| Minimum                     | 70                  | 1.8              | 1.5            | 0.004            | 47                                     | 0.24            | <0.05          | 1.5             | <0.01       | <0.01            | <0.06       | <0.03                | 0.08         | <0.003        |
| Maximum                     | 320                 | 40               | 6.2            | 2.3              | 140                                    | 1.3             | 2.1            | 4.0             | <0.01       | 0.012            | <0.306      | 0.008                | 0.37         | 0.015         |
| Average                     | 195                 | 4.5              | 3.8            | 1.22             | 90                                     | 0.78            | 0.8            | 3.1             | <0.01       | <0.01            | <0.06       | <0.03                | 0.22         | 0.006         |
| Number of Samples           | 36                  | 36               | 36             | 36               | 36                                     | 36              | 36             | 36              | 36          | 36               | 36          | 36                   | 36           | 33            |

There have been no *E. coli* detections, and the rolling compliance value is 100%.

## 7.4 Water Quality– Texas

Table 6 Treated and Reticulated Water Quality – Texas

| Parameter                   | E. coli (MPN/100mL) | Turbidity        | EC             | pH               | Total Hardness (as CaCO <sub>3</sub> ) | Alkalinity      | Silica (mg/L)  | TDI (mg/L)      | TDS (mg/L)  | Colour (True)    | SAR         | Free Chlorine (mg/L) | THMs (µg/L)  |               |
|-----------------------------|---------------------|------------------|----------------|------------------|--|-----------------|----------------|-----------------|-------------|------------------|-------------|----------------------|--------------|---------------|
| ADWG Health Guideline Value | 0                   | NA               | NA             | NA               | NA                                     | NA              | NA             | NA              | NA          | NA               | NA          | 5                    | 250          |               |
| ADWG Aesthetic Value        | NA                  | 5                | NA             | 6.5-8.5          | 200                                    | NA              | 80             | NA              | 600         | 15               | NA          | 0.6                  | NA           |               |
| Minimum                     | -                   | 0.02             | 180            | 6.63             | 38.0                                   | 32              | 13             | 108             | 110         | <8               | 1.2         | 0.07                 | 130          |               |
| Maximum                     | -                   | 1.02             | 1200           | 8.05             | 246.0                                  | 330             | 22             | 834             | 650         | 12               | 4.3         | 1.82                 | 280          |               |
| Average                     | -                   | 0.35             | 725            | 7.44             | 156.3                                  | 204             | 17             | 521             | 410         | <8               | 3.1         | 1.02                 | 219          |               |
| Number of Samples           | 57                  | 56               | 62             | 62               | 62                                     | 62              | 62             | 62              | 62          | 62               | 62          | 44                   | 16           |               |
| Parameter                   | Sodium (mg/L)       | Potassium (mg/L) | Calcium (mg/L) | Magnesium (mg/L) | Chloride (mg/L)                        | Fluoride (mg/L) | Nitrate (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Manganese (mg/L) | Zinc (mg/L) | Aluminium (mg/L)     | Boron (mg/L) | Copper (mg/L) |
| ADWG Health Guideline Value | NA                  | NA               | NA             | NA               | NA                                     | 1.5             | 50             | NA              | NA          | 0.5              | NA          | NA                   | 4            | 2             |
| ADWG Aesthetic Value        | 180                 | NA               | NA             | NA               | 250                                    | NA              | NA             | 250             | 0.3         | 0.1              | 3           | 0.2                  | NA           | 1             |
| Minimum                     | 17                  | 2.4              | 7.9            | 4.2              | 26                                     | 0.39            | 0.86           | 25.1            | <0.01       | 0.03             | 0.03        | <0.03                | 0.06         | 0.05          |
| Maximum                     | 150                 | 10.0             | 57             | 25.0             | 160                                    | 62              | 62             | 62              | 62          | 62               | 62          | 62                   | 62           | 62            |
| Average                     | 96                  | 3.6              | 63             | 16.1             | 95                                     | 0.17            | <0.05          | 9.4             | <0.01       | <0.001           | <0.06       | <0.03                | <0.02        | <0.003        |
| Number of Samples           | 62                  | 62               | 62             | 62               | 62                                     | 0.56            | 3.3            | 34.0            | 0.05        | 0.17             | 0.1         | 0.13                 | 0.1          | 0.27          |

There have been no *E. coli* detections, and the rolling compliance value is 100%.

Chemical data is included for sample site Texas 3 as it reflects the treated water quality when used. However, microbial results are excluded from this site as this is pre disinfection.

## 7.5 Water Quality – Yelarbon

Table 7 Treated and Reticulated Water Quality – Yelarbon

| Parameter                   | E. coli (MPN/100mL) | Turbidity        | EC             | pH               | Total Hardness (as CaCO <sub>3</sub> ) | Alkalinity      | Silica (mg/L)  | TDI (mg/L)      | TDS (mg/L)  | Colour (True)    | SAR         | Free Chlorine (mg/L) | THMs (µg/L)  |               |
|-----------------------------|---------------------|------------------|----------------|------------------|--|-----------------|----------------|-----------------|-------------|------------------|-------------|----------------------|--------------|---------------|
| ADWG Health Guideline Value | 0                   | NA               |                | NA               | NA                                     |                 |                |                 | NA          | NA               |             |                      | 250          |               |
| ADWG Aesthetic Value        | NA                  | 5                |                | 6.5-8.5          | 200                                    |                 |                |                 | 600         | 15               |             |                      | NA           |               |
| Minimum                     | -                   | 0.06             | 640            | 7.8              | 20.0                                   | 210             | 14             | 486             | 370         | <8               | 11          | 0.37                 | 100          |               |
| Maximum                     | -                   | 0.65             | 1000           | 8.41             | 41.00                                  | 370             | 20             | 784             | 580         | 16               | 16          | 4.3                  | 270          |               |
| Average                     | -                   | 0.26             | 714            | 8.21             | 28.6                                   | 246             | 17             | 549             | 416         | <8               | 13          | 1.87                 | 178          |               |
| Number of Samples           | 39                  | 39               | 39             | 39               | 39                                     | 38              | 39             | 39              | 39          | 39               | 39          | 39                   | 9            |               |
| Parameter                   | Sodium (mg/L)       | Potassium (mg/L) | Calcium (mg/L) | Magnesium (mg/L) | Chloride (mg/L)                        | Fluoride (mg/L) | Nitrate (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Manganese (mg/L) | Zinc (mg/L) | Aluminium (mg/L)     | Boron (mg/L) | Copper (mg/L) |
| ADWG Health Guideline Value | NA                  | NA               | NA             | NA               | NA                                     | 1.5             | 50             | NA              | NA          | 0.5              | NA          | NA                   | 4            | 2             |
| ADWG Aesthetic Value        | 180                 | NA               | NA             | NA               | 250                                    | NA              | NA             | 250             | 0.3         | 0.1              | 3           | 0.2                  | NA           | 1             |
| Minimum                     | 130                 | 1.8              | 4.7            | 1.5              | 64                                     | 0.36            | 1.0            | 11.0            | <0.01       | <0.001           | <0.03       | <0.03                | 0.06         | <0.003        |
| Maximum                     | 220                 | 2.8              | 50             | 3.7              | 93                                     | 0.53            | 2.8            | 17.0            | 0.05        | 0.03             | <0.06       | 0.07                 | 0.1          | 0.007         |
| Average                     | 154                 | 2.2              | 8.7            | 2.4              | 70                                     | 0.40            | 17             | 13.8            | <0.01       | <0.001           | <0.06       | <0.03                | 0.07         | <0.003        |
| Number of Samples           | 39                  | 39               | 39             | 39               | 39                                     | 39              | 39             | 38              | 38          | 39               | 39          | 39                   | 39           | 39            |

There have been no *E. coli* detections, and the rolling compliance value is 100%.