



Aquacell– Kurrajong Sewerage Scheme

Operational Audit

#14066-10-001 Version 2.0

Independent Pricing and Regulatory Tribunal

March 2018

Document History

Aquacell– Kurrajong Sewerage Scheme

Operational Audit

Independent Pricing and Regulatory Tribunal

This document has been issued and amended as follows:

Version	Date	Description	Created by	Checked by	Approved by
1.0	1 March 2018	Draft	Jim Sly	Dan Deere	Jim Sly
2.0	2 March 2018	Final	Jim Sly	Dan Deere	Jim Sly

Cobbitty Consulting Pty Ltd
ABN: 45 164 692 488

PO Box 561, Bayswater VIC 3153
Telephone: +61 (0) 423 326 693
Email: jim.sly@cobbittyconsulting.com.au

Cobbitty Consulting has prepared this document in accordance with the instructions of *Independent Pricing and Regulatory Tribunal* for its sole and specific use. Any other persons who use the information contained herein do so at their own risk.

© Cobbitty Consulting Pty Ltd, 2018

Contents

1. Executive Summary	1
1.1 Auditor Declaration	1
1.2 Major Findings	1
1.3 Recommendations	1
2. Introduction	2
2.1 Objectives	2
2.2 Licensee's Infrastructure, Systems and Procedures	2
2.3 Audit Method	2
2.4 Regulatory Regime	4
2.5 Quality Assurance Process	4
2.6 Audit Findings	4
3. Low Risk Obligations	5
3.1 Summary of Findings	5
3.2 Review of Actions	5
3.3 Opportunities for Improvement	5
4. General Obligations of a Network Operator	6
4.1 Summary of Findings	6
4.2 Review of Actions	6
4.3 Opportunities for Improvement	6
5. Sewerage Infrastructure	7
5.1 Summary of Findings	7
5.2 Review of Actions	7
5.3 Opportunities for Improvement	7
6. Schedule A to the Network Operator's Licence	8
6.1 Summary of Findings	8
6.2 Review of Actions	8
6.3 Opportunities for Improvement	8
7. Schedule B to the Network Operator's Licence	9
7.1 Summary of Findings	9
7.2 Review of Actions	9
7.3 Opportunities for Improvement	9

Appendix A	Detailed Audit Findings – Low Risk Obligations	11
Table A.1	Low Risk Obligations – WIC Reg Sched 1 cl.16	13
Appendix B	Detailed Audit Findings – General Obligations of a Network Operator	15
Table B.1	General Obligations – WIC Reg Sched 1 cl.1(2)(a), (b), (c) and (e)	17
Table B.2	General Obligations – WIC Reg Sched 1 cl.2(1), 2(2)(a) and 2(2)(b)	20
Table B.3	General Obligations – WIC Reg Sched 1 cl.3(c)	22
Appendix C	Detailed Audit Findings – Sewerage Infrastructure	25
Table C.1	Sewerage Infrastructure – WIC Reg Sched 1 cl.13(2)(a)	27
Table C.2	Sewerage Infrastructure – WIC Reg Sched 1 cl.14(3)(a)	31
Appendix D	Detailed Audit Findings – Schedule A to the Network Operator’s Licence	35
Table D.1	Schedule A to the Network Operator’s Licence – clause A3.1, table 3.1	37
Table D.2	Schedule A to the Network Operator’s Licence – clause A3.1, table 3.2	39
Table D.3	Schedule A to the Network Operator’s Licence – clause A3.1, table 3.3	41
Table D.4	Schedule A to the Network Operator’s Licence – clause A3.1, table 3.4	42
Appendix E	Detailed Audit Findings – Schedule B to the Network Operator’s Licence	45
Table E.1	Schedule B to the Network Operator’s Licence – clause B3	47

1. Executive Summary

1.1 Auditor Declaration

This report presents the findings of an Operational Audit of Aquacell Pty Ltd's compliance with the requirements of its Network Operator's Licence (Licence No: 15_032) and the relevant provisions of the *Water Industry Competition (General) Regulation 2008* as they relate to the sewerage scheme at Kurrajong.

The auditor confirms that:

- the auditor was provided with sufficient evidence on which to base the conclusions reached during the audit;
- the audit findings accurately reflect the professional opinion of the auditor;
- the auditor has conducted the audit, determined the audit findings and prepared this report in accordance with the requirements of the *WIC Act Audit Guidelines*¹ and the provisions of the Audit Deed; and
- the audit findings have not been unduly influenced by the Licensee and/or any of its associates and express the auditor's opinion as to whether the Licensee has met the Licence conditions and regulatory requirements as specified in the scope.

1.2 Major Findings

The Licensee, Aquacell Pty Ltd, was found to be operating and maintaining the sewerage scheme at Kurrajong in full compliance with the assessed audit criteria (no design or construction activities were undertaken during the audit period), with the exception of the following:

- ***WIC Reg Sched 1 cl.16 – Non-complaint Insignificant:***

Aquacell maintains a website in respect of the Kurrajong Sewerage Scheme; however, during the audit period it did not have all required items available for inspection by members of the public. Whilst a Licence Plan Audit Report, which meets the requirements of paragraphs d) and e), was available at the time of reporting, a plan showing the general arrangement of the infrastructure was not available on, or accessible via, the website.

No other non-compliances were identified and the infrastructure was found to be operating safely.

1.3 Recommendations

The following recommendation has been made as a result of this audit:

- **REC-KSS-2018.01:** It is recommended that Aquacell includes (or provides access to) a plan showing the general arrangement of the Kurrajong Sewerage Scheme infrastructure on its scheme website.

Four (4) opportunities for improvement, which the Licensee may wish to consider, are identified in the body of the report.

¹ IPART, *Audit Guideline for Brownfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013.

2. Introduction

2.1 Objectives

This report presents the findings of an Operational Audit undertaken for the Independent Pricing and Regulatory Tribunal (IPART) under the provisions of the *Water Industry Competition Act 2006*.

The objective of the audit was to assess compliance of the Licensee, Aquacell Pty Ltd (Aquacell), in meeting the requirements of the relevant legislation (the *Water Industry Competition Act 2006* and *Water Industry Competition (General) Regulation 2008*) and its Network Operator's Licence (Licence No: 15_032) for the sewerage scheme at Kurrajong.

2.2 Licensee's Infrastructure, Systems and Procedures

The infrastructure, systems and procedures subject to audit are those related to the sewerage scheme at Kurrajong (refer <http://aquacell.com.au/resources/community-information/kurrajong/>). Aquacell provides sewage treatment and disposal services to the Tallowood Community Estate, a residential development located some 70 kilometres north-west of the Sydney CBD.

Wastewater, which is collected from all residences within the development, is treated on-site to a high standard prior to disposal via subsurface irrigation. The treatment plant uses Membrane Bioreactor (MBR) technology to achieve the required water (effluent) quality. All effluent is disposed of within the boundaries of the Tallowood Community Estate.

Aquacell Pty Ltd (ACN 072 487 015) is the Licensee, holding Network Operator's Licence No: 15_032. As Licensee, Aquacell is responsible for the ongoing operation and maintenance of the treatment facility in accordance with its Licence Plans including:

- Infrastructure Operating Plan – Aquacell, *Infrastructure Operating Plan; Blackwater Recycling Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)*, 28 January 2016; and
- Sewage Management Plan – Aquacell, *Tallowood Residential Community Development – Kurrajong NSW; Sewage Management Plan (Revision 3)*, 7 January 2016.

2.3 Audit Method

2.3.1 Audit Scope

The audit comprised an Operational Audit conducted pursuant to the *WIC Act Audit Guidelines*.² The specific scope of the audit was as defined in IPART's letter to Aquacell (reference D17/28029) dated 29 November 2017. The nominated scope addresses selected requirements of:

- the *Water Industry Competition (General) Regulation 2008*; and
- Network Operator's Licence No: 15_032.

² IPART, *Audit Guideline for Brownfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013.

2.3.2 Audit Standard

The audit has been undertaken in accordance with the principles/guidance presented in:

- ISO 19011:2011 *Guidelines for auditing management systems*; and
- IPART, *Audit Guideline for Brownfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013 (WIC Act Audit Guidelines).

2.3.3 Audit Steps

The audit has been undertaken generally in accordance with the procedure outlined in the *WIC Act Audit Guidelines*.

Following approval of an *Audit Proposal* by IPART, an *Audit Agenda* and *Information Request* were sent to both the Licensee and IPART approximately a week prior to the audit fieldwork being undertaken. Audit fieldwork comprising a site inspection of the infrastructure and a desktop audit of relevant documentation/records was undertaken on 31 January 2018.

A draft audit report was prepared and submitted to the Licensee for review, before being finalised and issued to both the Licensee and IPART.

The audit process involved seeking objective evidence that the Licensee had complied with the obligations identified for audit by IPART. Evidence was obtained through interview, review of relevant documentation and records, and site inspection.

2.3.4 Audit Team

The audit was conducted by Jim Sly and the quality assurance review was undertaken by Dr Dan Deere. Both auditors hold relevant Lead Auditor accreditation on IPART's Technical Services and Water Licensing Panel.

- Aquacell was represented by Justin Taylor, Colin Fisher, Roger Phelps and Thai Law. IPART representative Jamie Luke attended as an observer during the audit fieldwork.

2.3.5 Audit Grades

Audit grades have been awarded in accordance with guidance presented in the *WIC Act Audit Guidelines*. The compliance grades applicable for the purposes of this audit were as identified in **Table 2.1**.

Table 2.1 Audit Compliance Grades

Compliance Grade	Description
Compliant	Sufficient evidence has been provided in the audit on which to make a judgment on all requirements, and all requirements have been met.
Non-compliant Insignificant	There is a deficiency in compliance, however, it does not adversely impact on the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
Non-compliant Significant	There is a deficiency in compliance which adversely impact on the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
No Requirement	There was no requirement to comply with the Licence condition during the audit period.

2.4 Regulatory Regime

The sewerage scheme at Kurrajong operates in accordance with the provisions of a Network Operator's Licence (Licence No: 15_032) issued under the *Water Industry Competition Act 2006* (NSW). Other relevant regulatory instruments and standards/guidelines include:

- *Water Industry Competition (General) Regulation 2008* (NSW);
- IPART, *Audit Guideline for Brownfield Schemes; Water Industry Competition Act 2006* (NSW), July 2013;
- *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006*;
- *Plumbing Code of Australia*;
- *Plumbing and Drainage Act 2011* (NSW); and
- NSW and national water industry and environmental regulations and codes of practice as applicable.

2.5 Quality Assurance Process

The quality of this audit report was assured through a professional review process. The report has been independently reviewed by a Lead Auditor who holds relevant accreditation on IPART's Technical Services and Water Licensing Panel.

2.6 Audit Findings

Audit findings are summarised in the following **Sections 3 to 7**, and are presented in full detail in **Appendices A to E**.

3. Low Risk Obligations

3.1 Summary of Findings

Aquacell was found not to be fully compliant with the audited clause of the *Water Industry Competition (General) Regulation 2008* identified as a *Low Risk Obligation* (refer to **Appendix A** for detailed audit findings), as follows:

- ***WIC Reg Sched 1 cl.16 – Non-complaint Insignificant:***

Aquacell maintains a website in respect of the Kurrajong Sewerage Scheme; however, during the audit period it did not have all required items available for inspection by members of the public. Whilst a Licence Plan Audit Report, which meets the requirements of paragraphs d) and e), was available at the time of reporting, a plan showing the general arrangement of the infrastructure was not available on, or accessible via, the website.

To achieve full compliance, Aquacell should include (or provides access to) a plan showing the general arrangement of the Kurrajong Sewerage Scheme infrastructure on its scheme website.

Detailed discussion in respect of this obligation is presented in **Table A.1**.

3.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

3.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the of the audited *WIC Regulation* clauses identified as *Low Risk Obligations*:

4. General Obligations of a Network Operator

4.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of the *Water Industry Competition (General) Regulation 2008* that address the *General Obligations of a Network Operator* (refer to **Appendix B** for detailed audit findings).

4.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

4.3 Opportunities for Improvement

The following opportunities for improvement have been identified in respect of the audited *WTC Regulation* clauses that address the *General Obligations of a Network Operator*:

- **OFI-KSS-2018.01:** It is suggested that Aquacell revises its *Sewage Management Plan* to reference the current version of the IPART *Incident Notification by Network Operators and Retail Suppliers*, or alternatively, to reference the document generically (i.e. exclude the version details).
- **OFI-KSS-2018.02:** It is suggested that Aquacell reviews and updates the incident/emergency contact lists presented in the *Sewage Management Plan* and *Operation and Maintenance Manual*. As an alternative approach, Aquacell may wish to consider preparing a separate stand-alone (and more readily updated) contact list that is referenced in these documents; such list should be systematically reviewed and updated at least annually, as well as if and when Aquacell becomes aware of changed contact details.

5. Sewerage Infrastructure

5.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of the *Water Industry Competition (General) Regulation 2008* related to *Sewerage Infrastructure* (refer to **Appendix C** for detailed audit findings).

5.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

5.3 Opportunities for Improvement

The following opportunities for improvement have been identified in respect of the audited *WTC Regulation* clauses related to the *Sewerage Infrastructure*:

- **OFI-KSS-2018.03:** It is suggested that Aquacell identifies the review frequency of the Infrastructure Operating Plan within the Plan.
- **OFI-KSS-2018.04:** It is suggested that Aquacell changes its calendar reminders for review of the *Infrastructure Operating Plan* and *Sewage Management Plan* so that reminders are issued to multiple personnel, or preferably a functional group, thereby ensuring that the review process is not impacted by personnel changes.

6. Schedule A to the Network Operator's Licence

6.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of *Schedule A to the Network Operator's Licence* (refer to **Appendix D** for detailed audit findings).

6.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

6.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the audited clauses of *Schedule A to the Network Operator's Licence*.

7. Schedule B to the Network Operator's Licence

7.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of *Schedule B to the Network Operator's Licence* (refer to **Appendix E** for detailed audit findings).

7.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

7.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the audited clauses of *Schedule B to the Network Operator's Licence*.

Appendix A Detailed Audit Findings – Low Risk Obligations

Detailed audit findings in respect of the audited *Low Risk Obligations* are presented in this Appendix.

Table A.1 Low Risk Obligations – WIC Reg Sched 1 cl.16

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.16	<p>The Licensee must have an internet website on which the following matters are available for inspection by members of the public:</p> <ul style="list-style-type: none"> (a) a plan showing the nature and general location of the separate components of the infrastructure (that is, each component that is used for the treatment, storage, conveyance or reticulation of sewage), (b) the licensee's infrastructure operating plan, (c) the licensee's sewage management plan, (d) the most recent auditor's report under clause 13 that applies to the licensee, (e) the most recent auditor's report under clause 14 that applies to the licensee. 	Non-compliant Insignificant

Risk

Non-compliance with the requirements of this clause presents low (if any) risk. The availability the requisite information for inspection by members of the public does, however, ensure transparency in respect of any potential risks to public health and/or the environment.

Target for Full Compliance

Evidence that the Licensee has maintained an internet website on which the requisite information is available for inspection by members of the public.

Evidence sighted

- Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.
- Aquacell's website for the Kurrajong Sewerage Scheme at: <http://aquacell.com.au/resources/community-information/kurrajong/>.

Summary of reasons for grade

Aquacell maintains a website in respect of the Kurrajong Sewerage Scheme; however, during the audit period it did not have all required items available for inspection by members of the public. Whilst a Licence Plan Audit Report, which meets the requirements of paragraphs d) and e) was available at the time of reporting, a plan showing the general arrangement of the infrastructure was not available on, or accessible via, the website.

Accordingly, Aquacell is assessed not to have been fully compliant with this obligation; however, given the scheme description that was available on the website, the non-compliance is not deemed to be significant.

Discussion and notes

Note: the audit scope, as defined by IPART, requires assessment of compliance with paragraphs a), d) and e) only.

Aquacell's website for the Kurrajong Sewerage Scheme³ was viewed to assess compliance with this obligation. Each auditable requirement is assessed in the following:

³ Aquacell's website for the Kurrajong Sewerage Scheme at: <http://aquacell.com.au/resources/community-information/kurrajong/>.

Plan showing general arrangement of the infrastructure:

Review of the website reveals that it provides a clear and simple overview of the scheme and how it operates; however, it does not include (or provide access to) a plan showing the nature and general location of the separate components of the infrastructure.

It is therefore recommended (**REC-2018.01**) that Aquacell includes (or provides access to) a plan showing the general arrangement of the Kurrajong Sewerage Scheme infrastructure on its scheme website.

Licence Plan Audit Report – Infrastructure Operating Plan:

WIC Reg. Sched 1 clause 13 requires the preparation of a report as to the adequacy of the Licensee's *Infrastructure Operating Plan*. At the time of the audit fieldwork, such report was not available on the website (an alternative report was available);⁴ however, the most recent Licence Plan Audit Report in respect of the *Infrastructure Operating Plan* (which also addresses the *Sewage Management Plan*) had been provided by the time of reporting.

Accordingly, Aquacell is assessed as now being compliant with this obligation.

It is noted that a copy of the most recent Operational Audit Report⁵ is also available on the website.

Licence Plan Audit Report – Sewage Management Plan:

WIC Reg. Sched 1 clause 14 requires the preparation of a report as to the adequacy of the Licensee's *Sewage Management Plan*. As noted above, at the time of the audit fieldwork, such report was not available on the website; however, the most recent Licence Plan Audit Report in respect of the *Sewage Management Plan* (which also addresses the *Infrastructure Operating Plan*) had been provided by the time of reporting.

Accordingly, Aquacell is assessed as now being compliant with this obligation.

Recommendations

The following recommendation is made in respect of this obligation:

- **REC-KSS-2018.01:** It is recommended that Aquacell includes (or provides access to) a plan showing the general arrangement of the Kurrajong Sewerage Scheme infrastructure on its scheme website.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

⁴ A Licence Plan Audit Report in respect of the Aquacell's Retail Supply Management Plan (Licence No: 09_004R) was initially available.

⁵ Water Futures/Cobbitty Consulting, *Report on the Operational Audit of the Kurrajong Sewerage Scheme* (Final Report), 10 March 2017.

Appendix B Detailed Audit Findings – General Obligations of a Network Operator

Detailed audit findings in respect of the *General Obligations of a Network Operator* are presented in this Appendix.

Table B.1 General Obligations – WIC Reg Sched 1 cl.1(2)(a), (b), (c) and (e)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.1(2)(a), (b), (c) and (e)	<p>[1(2)(a)] The licensee must immediately notify IPART of any incident in the conduct of its activities that threatens, or could threaten, water quality, public health or safety.</p> <p>[1(2)(b)] The licensee must immediately notify the Minister administering the <i>Public Health Act 2010 (NSW)</i> and the <i>Public Health Regulation 2012 (NSW)</i> of any incident in the conduct of its activities that threatens, or could threaten, water quality, public health or safety.</p> <p>[1(2)(c)] The licensee must immediately notify the Minister administering Part 2 of the <i>Water Industry Competition Act 2006 (NSW)</i> of any incident in the conduct of its activities that threatens, or could threaten, water quality, public health or safety.</p> <p>[1(2)(e)] The licensee must immediately notify any licensed network operator or public water utility whose infrastructure is connected to the licensed network operator’s infrastructure of any incident in the conduct of its activities that threatens, or could threaten, water quality, public health or safety.</p> <p><i>Note: cl.1(2)(d) is not applicable for the purposes of this scheme.</i></p>	No Requirement
Risk	Target for Full Compliance	
This requirement reflects a high operational risk. It is essential that relevant stakeholders are made aware of incidents that threaten, or could threaten, water quality, public health or safety.	In the event that a notifiable incident has occurred, evidence that the Licensee provided the required notifications.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Site inspection of the infrastructure at Kurrajong on 31 January 2018.Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016.Aquacell, <i>Tallowood Residential Community Development – Kurrajong NSW; Sewage Management Plan (Revision 3)</i>, 7 January 2016.Aquacell, <i>Tallowood Hamlet; Tallowood Residential Estate; Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal (Revision A0069-3)</i>, 28 January 2016.SCADA data trends for audit period (printed extracts).EnviroLab Certificate of Analysis Nos: 167502, 172638, 173591, 174633, 176047, 177021 and 179565.		
Summary of reasons for grade		
No notifiable incidents occurred during the audit period; accordingly, there was “No Requirement” in respect of these obligations.		

Discussion and notes

The auditor questioned whether there had been any incidents arising from the conduct of the network operator's activities during the audit period that threatened, or could have threatened, water quality, public health or safety and, if so, whether IPART, the Minister administering the *Public Health Act 2010 (NSW)* and the *Public Health Regulation 2012 (NSW)*, the Minister administering Part 2 of the *Water Industry Competition Act 2006 (NSW)* and any connected network operator or public water utility had been notified as required.

Aquacell advised that there had been no such incidents during the audit period.

A review of a sample of SCADA data trends for treated water turbidity, the sole critical control point (CCP) for the plant, across the audit period did not reveal any contrary evidence. The target turbidity value for the treated water is <5 NTU and an alert level at >2 NTU is maintained in the SCADA system to provide warning of any potential problem.⁶

The SCADA trends showed that turbidity remained less than 0.2 NTU for the majority of the period; the alert level was exceeded briefly on (or about) 10 June 2017, when it reached approximately 3.5 NTU, and 22 September 2017, when it reached approximately 4.4 NTU. Cumulative monitoring of plant discharge flows revealed that the increased turbidity on 10 June 2017 (for example) was not discharged into supply, notwithstanding that it remained below the target value.

A review of a sample of laboratory test results for *E. coli* in the treated water also supported Aquacell's advice. Test certificates revealed the following values for samples taken on the nominated dates:⁷

- 19 May 2017: <10 CFU/100 mL;
- 3 August 2017: <1 CFU/100 mL (none detected);
- 17 August 2017: <1 CFU/100 mL (none detected);
- 31 August 2017: <1 CFU/100 mL (none detected);
- 20 September 2017: <1 CFU/100 mL (none detected);
- 5 October 2017: 1 approximate CFU/100 mL; and
- 9 November 2017: 2 approximate CFU/100 mL (none detected).

The target value for *E. coli*, which has adopted as an ongoing verification test parameter, is <1,000 CFU/100 mL,⁸ so all values are well within the limit.

The *Sewage Management Plan*⁹ outlines the arrangements for the management of incidents and emergencies, including notification requirements in the event of any incident that potentially places public health at risk. Reference is made to IPART's *Incident Notification by Private Sector Water Licensees*¹⁰; it is noted that this document has been revised on several occasions, most recently in February 2018. As an opportunity for improvement (**OFI-KSS-2018.01**), it is suggested that Aquacell revises its *Sewage Management Plan* to reference the current version of the IPART *Incident Notification by Network Operators and Retail Suppliers*, or alternatively, to reference the document generically (i.e. exclude the version details).

It is noted that some contact details in respect of incident notification are listed in the *Sewage Management Plan*,¹¹ and also in the *Operation and Maintenance Manual*;¹² however, these lists do not include all relevant parties that may require notification, and some appear to be out-of-date. As an opportunity for improvement (**OFI-KSS-2018.02**), it is suggested that Aquacell reviews and updates the

⁶ *Sewage Management Plan*, section 11.1.3.

⁷ Envirolab Certificate of Analysis Nos: 167502, 172638, 173591, 174633, 176047, 177021 and 179565 (respectively).

⁸ *Sewage Management Plan*, section 11.1.3.

⁹ *Sewage Management Plan*, section 12.

¹⁰ IPART's *Incident Notification by Private Sector Water Licensees*; *WICA 2006 – Water Incident Notification*, August 2009.

¹¹ *Sewage Management Plan*, section 12.

¹² *Operation and Maintenance Manual*, section 1.4.

incident/emergency contact lists presented in the *Sewage Management Plan* and *Operation and Maintenance Manual*. As an alternative approach, Aquacell may wish to consider preparing a separate stand-alone (and more readily updated) contact list that is referenced in these documents; such list should be reviewed and updated at least annually.

It is further noted that Aquacell has in place an *Incident Notification Form*, a copy of which is included in the *Sewage Management Plan*; this form would be used for the reporting and notification of any incidents.

Recommendations

There are no recommendations in respect of these obligations.

Opportunities for improvement

The following opportunities for improvement have been identified in respect of these obligations:

- **OFI-KSS-2018.01:** It is suggested that Aquacell revises its *Sewage Management Plan* to reference the current version of the IPART *Incident Notification by Network Operators and Retail Suppliers*, or alternatively, to reference the document generically (i.e. exclude the version details).
 - **OFI-KSS-2018.02:** It is suggested that Aquacell reviews and updates the incident/emergency contact lists presented in the *Sewage Management Plan* and *Operation and Maintenance Manual*. As an alternative approach, Aquacell may wish to consider preparing a separate stand-alone (and more readily updated) contact list that is referenced in these documents; such list should be systematically reviewed and updated at least annually, as well as if and when Aquacell becomes aware of changed contact details.
-

Table B.2 General Obligations – WIC Reg Sched 1 cl.2(1), 2(2)(a) and 2(2)(b)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.2(1), 2(2)(a) and 2(2)(b)	<p>[2(1)] The licensee must not bring any new water or sewerage infrastructure into commercial operation without the written approval of the Minister.</p> <p>[2(2)(a)] The licensee must provide to the Minister a report, prepared by an approved auditor that indicates that the infrastructure complies with the requirements of the Regulation and any licence conditions.</p> <p>[2(2)(b)] The licensee must provide to the Minister a report, prepared by an approved auditor that indicates that the infrastructure is capable of operating safely and in accordance with its infrastructure operating plan and its water quality or sewage management plan, as the case requires.</p>	<p>Clause 2(1) Compliant</p> <p>Clauses 2(2)(a) and 2(2)(b) No Requirement</p>
Risk	Target for Full Compliance	
<p>This requirement reflects a high operational risk. The Minister’s written approval is only provided when the Licensee has demonstrated that the infrastructure complies and can be operated in accordance with the relevant requirements. Accordingly, the absence of the Minister’s written approval may mean that the infrastructure has not been so assessed.</p>	<p>Evidence that the written approval of the Minister was obtained prior to bringing new water or sewerage infrastructure into service.</p>	
Evidence sighted	<ul style="list-style-type: none"> Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018. Site inspection of the infrastructure at Kurrajong on 31 January 2018. Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016. Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015. 	
Summary of reasons for grade	<p>No new infrastructure (water or sewerage) had been brought into commercial operation during the audit period; accordingly, Aquacell was assessed as being compliant with the provisions of clause 2(1). Furthermore, as no new infrastructure had been brought into operation, there was “No Requirement” for compliance with the provisions of clauses 2(2)(a) or 2(2)(b) during the audit period.</p>	

Discussion and notes

Aquacell advised that no new infrastructure had been brought into commercial operation during the audit period. Although some new reticulation sewers had been constructed in the “Nugget Hill” area (i.e. the area west of Vincents Road), under the provisions of WIC Reg Sched 1 cl.(3) this does not constitute “new infrastructure”.

Observations made during inspection of the infrastructure at Kurrajong revealed no evidence to the contrary. Furthermore, the infrastructure in service at the time of the audit remained consistent with that identified in the *Network Operator’s Licence*.¹³

It is noted that the existing infrastructure was operating commercially under the provisions of section 68 of the *Local Government Act 1993* prior to the Licence being issued.¹⁴ In these circumstances, the approval of the Minister to commence commercial operation of the existing infrastructure was not required.

Accordingly, it was evident that Aquacell had not brought any new infrastructure into commercial operation without the approval of the Minister and was therefore compliant with clause 2(1). Furthermore, there was no requirement for any action under the provisions of clause 2(2).

Recommendations

There are no recommendations in respect of these obligations.

Opportunities for improvement

No opportunities for improvement have been identified in respect of these obligations.

¹³ New South Wales Government, Network Operator’s Licence No: 15_032 (as varied on 26 July 2015), Table 2.

¹⁴ The scheme was licensed under the WICA as a “brownfield” scheme.

Table B.3 General Obligations – WIC Reg Sched 1 cl.3(c)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.3(c)	The licensee must ensure that its water or sewerage infrastructure is properly designed and constructed, operated in a safe and reliable manner and maintained in a proper condition, having regard to any publicly available standards or codes relating to its design, construction, operation and maintenance.	Compliant
Risk	Target for Full Compliance	
This requirement reflects a high operational risk. Proper design and construction, safe and reliable operation, and maintenance of infrastructure in proper condition is essential to the effective (safe and reliable) delivery of agreed levels of service.		Evidence that the Licensee has procedures in place for ensuring that practices are kept up to date with changes to such standards or codes.
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018. Site inspection of the infrastructure at Kurrajong on 31 January 2018. Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallonwood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016. Aquacell, <i>Tallonwood Residential Community Development – Kurrajong NSW; Sewage Management Plan (Revision 3)</i>, 7 January 2016. Aquacell, <i>Tallonwood Hamlet; Tallonwood Residential Estate; Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal (Revision A0069-3)</i>, 28 January 2016. 		
Summary of reasons for grade		
<p>Although no new infrastructure was designed or constructed during the audit period, on the basis of observations made during the audit it was apparent that the infrastructure had continued to be operated in a safe and reliable manner and maintained in proper condition having regard for publicly available standards and codes, and typical industry practice, during the audit period.</p> <p>Arrangements employed by Aquacell for ensuring that codes and standards it references are current appear to be consistent with other organisations of its size.</p> <p>Accordingly, Aquacell was assessed as having demonstrated full compliance with this obligation.</p>		
Discussion and notes		
<i>Design and Construction of Infrastructure:</i>		
<p>As noted in Table B.2, no new infrastructure was brought into commercial operation during the audit period. Although an extension to the existing gravity sewer network had been constructed, this was not yet operational at the time of the audit.</p> <p>The arrangements in relation to design and construction of the infrastructure that was in operation during the audit period was assessed as part of a Licence Plan Audit undertaken in January 2016, which also assessed the condition of the infrastructure. As reported,¹⁵ the infrastructure had been:</p>		

¹⁵ Water Futures/Cobbitty Consulting, *WICA Audit Report to IPART Licence Plan Audit (Sewerage) Aquacell (Kurrajong)* (Version 4), 2 February 2016, table A1.1.

“...developed (designed and constructed) under approvals granted by Hawkesbury City Council pursuant to Section 68 of the Local Government Act.”

The further assessment presented in the Licence Plan Audit Report indicates that the infrastructure would have been assessed as having been properly designed and constructed having regard for publicly available standards and codes.

Operation and Maintenance of Infrastructure:

Operation and maintenance of the infrastructure is undertaken in accordance with the general principles (maintenance strategy) outlined in the *Infrastructure Operating Plan*,¹⁶ which further indicates that Aquacell is solely responsible for maintenance activities. More specific guidance is provided in the *Operation and Maintenance Manual*.¹⁷ Roles and responsibilities are documented in more specific detail in the *Sewage Management Plan*.¹⁸

On the basis of observations made during the audit site inspection, it was apparent that the infrastructure had been/was being operated in a safe and reliable manner and maintained in a proper condition. Furthermore, on the basis of the auditor’s experience, it appeared that such operation and maintenance had been/was generally being undertaken having regard to relevant publicly available standards and/or codes.

Codes and standards specifically referenced in the *Operation and Maintenance Manual* include (for example):¹⁹

- *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006;*
- *AS/NZS 3500:2015 Plumbing and drainage;*
- *NSW Confined Space Code of Practice 2011.*

Although there are general references, there are no specific references to codes and standards related to operation and maintenance of the infrastructure in the *Infrastructure Operating Plan*.

Aquacell’s approach to operation and maintenance of the infrastructure is further discussed in Table C.1.

Currency of Standards and Codes:

Although not sighted, Aquacell advised that it maintains a directory on its server with relevant codes and standards. Aquacell also advised that it is on the email lists for organisations such as the Australian Water Association (AWA) and IPART, which typically advise of major changes to significant documentation that may affect its operations.

This approach is considered typical of organisations of Aquacell’s size.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹⁶ *Infrastructure Operating Plan*, section 5.2.

¹⁷ Aquacell, Tallowood Hamlet; Tallowood Residential Estate; *Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal* (Revision A0069-3), 28 January 2016.

¹⁸ *Sewage Management Plan*, section 5/table 1.

¹⁹ *Operation and Maintenance Manual*, sections 2.1 and 2.3.4.

Appendix C Detailed Audit Findings – Sewerage Infrastructure

Detailed audit findings in respect of the obligations related to *Sewerage Infrastructure* are presented in this Appendix.

Table C.1 Sewerage Infrastructure – WIC Reg Sched 1 cl.13(2)(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.13(2)(a)	The licensee must ensure that its infrastructure operating plan is fully implemented and kept under regular review and, in particular, that all of the network operator’s activities are carried out in accordance with that plan.	Compliant
<hr/>		
Risk	Target for Full Compliance	
This requirement reflects a high operational risk. Implementation of the <i>Infrastructure Operating Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Infrastructure Operating Plan</i> is fully implemented and the Licensee’s activities are carried out in accordance with that <i>Plan</i> ; evidence that the <i>Plan</i> is kept under regular review.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Site inspection of the infrastructure at Kurrajong on 31 January 2018.Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016.Aquacell, <i>Tallowood Residential Community Development – Kurrajong NSW; Sewage Management Plan (Revision 3)</i>, 7 January 2016.Aquacell, <i>Tallowood Hamlet; Tallowood Residential Estate; Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal</i> (Revision A0069-3), 28 January 2016.Aquacell, Maintenance Log for <i>S0069 Kurrajong</i> (latest entry 23 January 2018).Aquacell, <i>Monthly Report (for June 2017)</i>, 4 July 2017.Aquacell, <i>Periodic Review of Regulatory Documentation</i> register, record of review dated August 2017.		
<hr/>		
Summary of reasons for grade		
<p>Aquacell demonstrated that it is fully implementing, and is carrying out its infrastructure management activities in accordance with principles documented in, the <i>Infrastructure Operating Plan</i>. This was evident from the effective operation of the infrastructure and the implementation of maintenance practices. Opportunities for improvement identified during the previous audit had also been implemented.</p> <p>Aquacell also demonstrated that the <i>Infrastructure Operating Plan</i> is kept under regular review; this process is being managed through an annually recurring calendar reminder.</p> <p>Accordingly, Aquacell was assessed to have demonstrated compliance with this obligation.</p>		
<hr/>		
Discussion and notes		
<p>The auditor checked for evidence that the <i>Infrastructure Operating Plan</i> was being fully implemented and kept under regular review and that all of the Network Operator’s activities are carried out in accordance with that <i>Plan</i>.</p> <p>Design and Construction:</p> <p>The infrastructure that comprises the Kurrajong Sewerage Scheme was already operational at the time it was licensed in July 2015. As reported in Table B.3, no design or construction activity was undertaken during the audit period.</p>		

Operation and Maintenance:

As noted in Table B.3, operation and maintenance of the infrastructure is undertaken in accordance with the general principles (maintenance strategy) outlined in the *Infrastructure Operating Plan*.²⁰ More specific guidance provided in the *Operation and Maintenance Manual*²¹ and associated procedures.

Review of the *Operation and Maintenance Manual* reveals that it includes detailed guidance in respect of:

- Plant operation – including (for example) plant control; online monitoring of plant status and instrument data; set point control; changing process variables; membrane management; and water sampling.
- Maintenance procedures – including (for example) membrane cleaning; instrument calibration; irrigation system maintenance; and troubleshooting.

The adopted operation and maintenance strategy comprises daily remote monitoring of plant operation via SCADA, monthly inspections and minor maintenance, periodic maintenance (generally in accordance with equipment manufacturer recommendations), periodic inspection of the irrigation field and reactive maintenance in response to alarm conditions.²² The majority of equipment is operated on a ‘run to fail’ basis; duty/standby configuration (for some equipment) enables ongoing plant operation in the event of equipment failure.²³

Pursuant to the requirements of the *Infrastructure Operating Plan*,²⁴ Aquacell provides monthly reports to its customer, the Tallowood Community Association. These reports include details of the water supplied (quantity and quality), details of activities undertaken at the plant and identification of maintenance work that needs to be undertaken.

Operation and maintenance activity is also documented in these monthly reports, which become the formal record of such activity in a standardised format. Operation and maintenance activity is also recorded in an ongoing Maintenance Log (copy provided includes activities from October 2014 through to January 2018)²⁵ from which input for the monthly report is extracted. Review of the log confirmed that inspection/servicing had been undertaken at least monthly during the audit period.

Review of the monthly report for June 2017²⁶ revealed that (for example):

- The site had been attended on three occasions during the month, with the monthly inspection/servicing undertaken on 20 June 2017. Technical servicing and Calibration and cleaning activities recorded and comments provided.
- The site was attended on 9 June 2017 to clear the screen; the membranes were backflushed and a dislodged airline refitted.
- The site was attended on 29 June 2017 to manually clean and perform maintenance on the spiral screen. The reported noted that:

“Production has been interrupted during the month due to a jammed spiral in the mechanical screen. The screen was manually cleaned during the month to maintain production until the 29/06/17, when the screen was removed with the assistance of an excavator, the screen disassembled and the spiral unjammed. The screen was regreased and reassembled, tested, and returned to operation.”
- The treated water pH probe was replaced and successfully calibrated during the monthly service visit.

²⁰ *Infrastructure Operating Plan*, section 5.2.

²¹ Aquacell, *Tallowood Hamlet; Tallowood Residential Estate; Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal* (Revision A0069-3), 28 January 2016. Aquacell, *Monthly Report (for August 2016)*, 20 September 2016.

²² *Sewage Management Plan*, section 11.1.

²³ *Infrastructure Operating Plan*, section 5.2.

²⁴ *Infrastructure Operating Plan*, section 4.

²⁵ Aquacell, Maintenance Log for *S0069 Kurrajong* (latest entry 23 January 2018).

²⁶ Aquacell, *Monthly Report (for June 2017)*, 4 July 2017.

-
- Required maintenance work includes:
 - Replacement of Buffer Pump 2, which is faulty (burnt-out motor); and
 - Replacement of a faulty buffer tank level sensor.

The *Sewage Management Plan*²⁷ outlines arrangements for the management of any complaints. Whilst Aquacell advised that there had been no service complaints during the audit period, it noted that a resident report of unusual noise had led to identification of a split flexi-coupling on an air scouring line. The Maintenance Log entry for 28 April 2017 recorded replacement of the coupling.

As reported in Table B.3, on the basis of observations made during the audit site inspection it was apparent that the infrastructure had been/was being operated in a safe and reliable manner and maintained in a proper condition.

Previously identified Opportunities for Improvement:

Several opportunities for improvement identified during the previous Operational Audit

- Remote connection to SCADA system – at the time of previous audits, the site communication link was inoperable thereby prevented remote monitoring of the treatment plant operation. The communication link has now been reliably established, and the plant is being remotely monitored on a daily basis as proposed in the *Sewage Management Plan*.²⁸
- Minor maintenance items – a number of issues requiring minor maintenance were identified during the previous audit; these included electrical cable damage; a minor leak; excessive vegetation; a wasp nest; and bent star picket (marker post). It appeared that each of these items had been addressed.
- Selective use of irrigation lines – in view of some minor surface pooling of irrigation water (likely affected by with recent high rainfall), it was suggested that subsurface irrigation lines be selectively used to minimise discharge of treated water to lower areas. Aquacell advised that discharge of water via irrigation lines is automatically rotated by the irrigation system controller. No change has been implemented.

Capability and Training:

The *Infrastructure Operating Plan*²⁹ indicates that Aquacell is solely responsible for operation and maintenance of the infrastructure. Roles and responsibilities are documented in more specific detail in the *Sewage Management Plan*.³⁰

Based on discussions with Aquacell personnel, including the operators (service technicians), during the audit confirmed that they hold appropriate knowledge and skills to operate and maintain the infrastructure.

Regular Review of Infrastructure Operating Plan:

The *Infrastructure Operating Plan* remained unchanged throughout the audit period. It is noted within the *Plan*³¹ that:

“Aquacell, as the licensee, will ensure that the Infrastructure Operating Plan is ... kept under regular review ... Aquacell will, if the Minister so directs, amend this IOP in accordance with the Minister’s direction.”

However, the frequency at which the *Plan* is to be reviewed is not stated. As an opportunity for improvement (**OFI-KSS-2018.03**), it is suggested that Aquacell identifies the review frequency for the *Infrastructure Operating Plan* within the *Plan*.

Aquacell advised that the *Infrastructure Operating Plan* is reviewed annually, and that a Google calendar reminder is used to prompt review of both the *Infrastructure Operating Plan* and *Sewage Management Plan* each

²⁷ *Sewage Management Plan*, section 11.2.

²⁸ *Sewage Management Plan*, section 11.1.1.

²⁹ *Infrastructure Operating Plan*, section 5.2.

³⁰ *Sewage Management Plan*, section 5/table 1.

³¹ *Infrastructure Operating Plan*, section 2.

year. This functionality has been sighted by the auditor during a previous audit of an Aquacell scheme.

It was noted, however, that the calendar reminder is currently issued to a single person (Justin Taylor), whose role has recently changed. As an opportunity for improvement (**OFI-KSS-2018.04**), it is suggested that reminders be issued to multiple personnel, or preferably a functional group, thereby ensuring that the review process is not impacted by personnel changes. Aquacell indicated that its “service” email/calendar group would be appropriate.

Review of the *Periodic Review of Regulatory Documentation* register,³² which indicated that Revision 4, dated 28 January 2016, of the *Infrastructure Operating Plan* had been reviewed in August 2017. The review comment indicated: “No changes to operation. All information current. No update to document required.”

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

The following opportunities for improvement have been identified in respect of this obligation:

- **OFI-KSS-2018.03:** It is suggested that Aquacell identifies the review frequency of the *Infrastructure Operating Plan* within the *Plan*.
 - **OFI-KSS-2018.04:** It is suggested that Aquacell changes its calendar reminders for review of the *Infrastructure Operating Plan* and *Sewage Management Plan* so that reminders are issued to multiple personnel, or preferably a functional group, thereby ensuring that the review process is not impacted by personnel changes.
-

³² Aquacell, *Periodic Review of Regulatory Documentation* register, record of review dated August 2016.

Table C.2 Sewerage Infrastructure – WIC Reg Sched 1 cl.14(3)(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.14(3)(a)	The licensee must ensure that its sewage management plan is fully implemented and kept under regular review and, in particular, that all if its activities are carried out in accordance with that plan.	Compliant
Risk	Target for Full Compliance	
This requirement reflects a high operational risk. Implementation of the <i>Sewage Management Plan</i> ensures that the treated effluent supplied complies with the specified quality requirement.		Evidence that the <i>Sewage Management Plan</i> is fully implemented and the Licensee's activities are carried out in accordance with that <i>Plan</i> ; evidence that the <i>Plan</i> is kept under regular review.
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018. Site inspection of the infrastructure at Kurrajong on 31 January 2018. Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016. Aquacell, <i>Tallowood Residential Community Development – Kurrajong NSW; Sewage Management Plan (Revision 3)</i>, 7 January 2016. Aquacell, <i>Tallowood Hamlet; Tallowood Residential Estate; Operation and Maintenance Manual; Sewage Network, Water Treatment Plant, Irrigation Disposal (Revision A0069-3)</i>, 28 January 2016. Aquacell, <i>Monthly Report (for August 2016)</i>, 20 September 2016. Various instrument displays as noted. SCADA data trends for audit period (printed extracts). EnviroLab Certificate of Analysis Nos: 167502, 172638, 173591, 174633, 176047, 177021 and 179565. Aquacell, <i>Periodic Review of Regulatory Documentation</i> register, record of review dated August 2017. 		
Summary of reasons for grade		
<p>Aquacell demonstrated that it is fully implementing, and is carrying out its sewage management activities in accordance with principles documented in, the <i>Sewage Management Plan</i>. This was evident from the effective monitoring and testing processes that are being implemented.</p> <p>Aquacell also demonstrated that the <i>Sewage Management Plan</i> is kept under regular review; this process is being managed through an annually recurring calendar reminder.</p> <p>Accordingly, Aquacell was assessed to have demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>The auditor checked for evidence that the <i>Sewage Management Plan</i> was being fully implemented and kept under regular review and that all of the Network Operator's activities are carried out in accordance with that <i>Plan</i>.</p>		

Operational Monitoring:

As identified in the *Sewage Management Plan*,³³ operational monitoring of treated water turbidity, the sole Critical Control Points (CCP), is used to monitor and control operation of the plant. This parameter is continually monitored via the SCADA system. The target turbidity value (critical limit) for the treated water is <5 NTU and an alert level at >2 NTU is maintained in the SCADA system to provide warning of any potential problem;³⁴ these values were reflected by the SCADA alarm set points. Any breaches of the critical limit are alarmed and water is diverted from supply.

As reported in Table B.1, review of a sample of SCADA data trends for treated water turbidity across the audit period showed that turbidity remained less than 0.2 NTU for the majority of the period; the alert level was exceeded briefly on (or about) 10 June 2017, when it reached approximately 3.5 NTU, and 22 September 2017, when it reached approximately 4.4 NTU. Cumulative monitoring of plant discharge flows revealed that the increased turbidity on 10 June 2017 (for example) was not discharged into supply, notwithstanding that it remained below the target value.

A number of other parameters are continuously monitored via the SCADA system. To assess the integrity of data captured, observed instrument readings were recorded and checked for consistency with those reported in the SCADA system; these values were as follows:

Parameter	Units	Instrument Reading	SCADA Reading
Incoming sewage pH	pH units	7.44	7.5
Outgoing effluent pH	pH units	6.96	7.0
Dissolved Oxygen	mg/L	2.35	2.3
Turbidity	NTU	0.05	0.05
Flow (cumulative volume)	kL	3,165	3,161

It is noted that no flow was being discharged from the plant at the time the readings were taken.

Water Quality Verification Monitoring:

Water quality verification monitoring is being undertaken in accordance with the *Sewage Management Plan*.³⁵ The Plan requires at least quarterly sampling and testing to monitor *E. coli*; in practice, testing is undertaken at (nominally) monthly intervals.

The target value for *E. coli* in the treated water is <1,000 CFU/100 mL.³⁶ Review of a sample of laboratory test certificates revealed the following values for samples taken on the nominated dates:³⁷

- 19 May 2017: <10 CFU/100 mL;
- 3 August 2017: <1 CFU/100 mL (none detected);
- 17 August 2017: <1 CFU/100 mL (none detected);
- 31 August 2017: <1 CFU/100 mL (none detected);
- 20 September 2017: <1 CFU/100 mL (none detected);
- 5 October 2017: 1 approximate CFU/100 mL; and
- 9 November 2017: 2 approximate CFU/100 mL (none detected).

³³ *Sewage Management Plan*, section 11.1.3.

³⁴ *Sewage Management Plan*, section 11.1.3.

³⁵ *Sewage Management Plan*, section 11.1.3.

³⁶ *Sewage Management Plan*, section 11.1.3.

³⁷ Envirolab Certificate of Analysis Nos: 167502, 172638, 173591, 174633, 176047, 177021 and 179565 (respectively).

These values indicate that the discharged effluent remained well within the safe quality limits.

Review of the documentation in respect of sample/test number 179565 reveals that:

- The *Chain of Custody* indicates that the sample was taken by Roger Phelps (Aquacell) at 5:30 pm on 9 November 2017 and received by Envirolab at 5:45 pm on the same day. The sample was collected for monthly testing of *E. coli*.
- The *Certificate of Analysis* indicates that:
 - the testing was subcontracted to Sonic Food and Water Testing, which holds NATA Accreditation No: 4034;
 - the test was undertaken on 10 November 2017; and
 - the test result revealed 2 approximate CFU/100 mL
 - the result was approved by Envirolab, which holds NATA Accreditation No: 2901.

This indicates that monitoring and testing is undertaken appropriately.

Permitted Uses:

The *Sewage Management Plan* identifies the acceptable uses for the treated water as follows:³⁸

“The treated water is intended only for disposal by subsurface irrigation in the designated area within the Tallowood development. The treatment process and associated risk has been assessed on that basis, and although the water quality may exceed the requirements, it is not intended for reuse or disposal by any other means.”

Observations made during the audit site inspection identified no evidence that the treated water was being used other than subsurface irrigation within the designated area.

Regular Review of Water Quality Plan:

The *Sewage Management Plan* remained unchanged throughout the audit period. It is noted within the *Plan*³⁹ that:

“This SMP will be reviewed on an annual basis or when a major change or addition to the blackwater treatment system is implemented.”

Review of the *Periodic Review of Regulatory Documentation* register,⁴⁰ which indicated that Revision 3, dated 7 January 2016, of the *Sewage Management Plan* had been reviewed in August 2017. The review comment indicated: “No changes to operation. All information current. No update to document required.”

Commentary provided in Table C.1 in respect of Aquacell’s use of a calendar reminder to prompt review of both the *Infrastructure Operating Plan* and *Sewage Management Plan*, including the opportunity for improvement (**OFI-KSS-2018.04**), is also applicable to the *Sewage Management Plan* but not repeated here.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

OFI- KSS-2018.04 (refer Table C.1) is applicable. No further opportunities for improvement have been identified in respect of this obligation.

³⁸ *Sewage Management Plan*, section 7.2.

³⁹ *Sewage Management Plan*, section 16.

⁴⁰ Aquacell, *Periodic Review of Regulatory Documentation* register, record of review dated August 2016.

Appendix D Detailed Audit Findings **– Schedule A to the Network Operator’s Licence**

Detailed audit findings in respect of the obligations under *Schedule A to the Network Operator’s Licence* are presented in this Appendix.

Table D.1 **Schedule A to the Network Operator’s Licence – clause A3.1, table 3.1**

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.A3.1, table 3.1	<p>Authorised persons</p> <p>Only the Licensee and/or the authorised third parties have constructed, operated and/or maintained the water industry infrastructure.</p>	Compliant

Risk

This requirement presents moderate risk that the appropriate operational controls may not be in place.

Target for Full Compliance

Evidence that only the Licensee and authorised third parties have constructed, operated and/or maintained the water industry infrastructure.

Evidence sighted

- Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.
- Site inspection of the infrastructure at Kurrajong on 31 January 2018.
- Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015.
- Aquacell, *Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)*, 28 January 2016.

Summary of reasons for grade

On the basis of the documentation reviewed, observations made during the audit and discussions with Aquacell personnel, it was apparent that operation and maintenance of the infrastructure has been undertaken by the Licensee (no “Authorised persons” are nominated). It is noted that the existing infrastructure was designed and constructed prior to the scheme being licensed; consequently, that component of the obligation is not applicable for the purposes of this audit.

Accordingly, Aquacell was assessed to be compliant with this obligation.

Discussion and notes

Evidence was sought that only the Licensee and any authorised third parties have constructed, operated and/or maintained the specified water industry infrastructure. The Licence (Network Operator’s Licence No: 15_032)⁴¹ does not nominate any “Authorised persons”; accordingly, all activities must be undertaken by the Licensee, i.e. Aquacell.

Design and construction of the infrastructure was undertaken prior to licensing of the Kurrajong Sewerage Scheme as a “brownfield scheme”. Although not applicable for the purposes of this audit, it is understood that Aquacell was responsible for design and construction of the treatment plant, but not the remaining infrastructure.

Discussions with Aquacell personnel and observations made during the audit confirm that operation and maintenance of the infrastructure is undertaken by Aquacell. This is further evidenced by documentation, including maintenance records and monthly reports, reviewed as part of the audit (refer Table B.3, Table C.1 and Table C.2).

Recommendations

There are no recommendations in respect of this obligation.

⁴¹ Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015, cl.A3.1, table 3.1.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table D.2 **Schedule A to the Network Operator’s Licence – clause A3.1, table 3.2**

Clause	Requirement	Compliance Grade
Network Operator's Licence cl.A3.1, table 3.2	Water industry infrastructure The Licensee and the authorised third parties have constructed, operated and/or maintained the specified water industry infrastructure.	Compliant
<hr/>		
Risk	Target for Full Compliance	
This requirement presents moderate risk that the appropriate operational controls may not be in place.	Evidence that the Licensee and authorised third parties have constructed, operated and/or maintained the only the specified water industry infrastructure.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Site inspection of the infrastructure at Kurrajong on 31 January 2018.Network Operator's Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015.Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016.		
<hr/>		
Summary of reasons for grade		
On the basis of the documentation reviewed and observations made during the audit site inspection, the infrastructure in operation during the audit period is consistent with the specified water industry infrastructure. Accordingly, Aquacell was assessed to be compliant with this obligation.		
<hr/>		
Discussion and notes		
Evidence was sought that the Licensee and any authorised third parties have constructed, operated and/or maintained only the specified water industry infrastructure. The Licence (Network Operator's Licence No: 15_032) ⁴² nominates the following as specified "Water industry infrastructure": "Infrastructure for the reticulation, treatment, storage, conveyance and disposal of sewage." Based on the documentation reviewed and observations made during the audit site inspection, the Kurrajong Sewerage Scheme infrastructure in operation during the audit period comprised: <ul style="list-style-type: none">a gravity sewer reticulation network;a buffer tank (for storage of sewage);a treatment plant;a treated water storage and pumping facility; andan effluent distribution/irrigation network. This infrastructure, which is being operated and maintained by the Licensee, is consistent with the specified water industry infrastructure.		

⁴² Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015, cl.A3.1, table 3.2.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table D.3 **Schedule A to the Network Operator’s Licence – clause A3.1, table 3.3**

Clause	Requirement	Compliance Grade
Network Operator's Licence cl.A3.1, table 3.3	Authorised purposes The Licensee and the authorised third parties have constructed, operated and/ or maintained the water industry infrastructure for the authorised purposes.	Compliant
<hr/>		
Risk	Target for Full Compliance	
This requirement presents moderate risk that the appropriate operational controls may not be in place.	Evidence that the Licensee and authorised third parties have constructed, operated and/or maintained the water industry infrastructure for the authorised purposes.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Site inspection of the infrastructure at Kurrajong on 31 January 2018.Network Operator's Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015.Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016.		
<hr/>		
Summary of reasons for grade		
On the basis of the documentation reviewed and observations made during the audit site inspection, the infrastructure in operation during the audit period was being used only for the authorised purposes, i.e. the disposal of treated sewage effluent by subsurface irrigation. Accordingly, Aquacell was assessed to be compliant with this obligation.		
<hr/>		
Discussion and notes		
Evidence was sought that the Licensee and any authorised third parties have constructed, operated and/or maintained the specified water industry infrastructure for the authorised purposes. The Licence (Network Operator's Licence No: 15_032) ⁴³ nominates the following "Authorised purposes" for which the specified water industry infrastructure can be used: "Disposal of treated sewage effluent by subsurface irrigation."		
Based on the documentation reviewed and observations made during the audit site inspection, the Kurrajong Sewerage Scheme infrastructure in operation during the audit period was being used for the authorised purpose, i.e. the disposal of treated sewage effluent by subsurface irrigation.		
<hr/>		
Recommendations		
There are no recommendations in respect of this obligation.		
<hr/>		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this obligation.		

⁴³ Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015, cl.A3.1, table 3.3.

Table D.4 **Schedule A to the Network Operator’s Licence – clause A3.1, table 3.4**

Clause	Requirement	Compliance Grade
Network Operator's Licence cl.A3.1, table 3.4	<p>Specified area of operations</p> <p>The water industry infrastructure constructed, operated and/or maintained by the Licensee or an authorised third party does not extend outside the area of operations.</p>	Compliant
Risk	Target for Full Compliance	
This requirement presents moderate risk that the appropriate operational controls may not be in place.	Evidence that the Licensee and authorised third parties have constructed operated and/or maintained the water industry infrastructure only within the area of operations.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Site inspection of the infrastructure at Kurrajong on 31 January 2018.Network Operator's Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015.Aquacell, <i>Infrastructure Operating Plan; Blackwater Disposal Scheme; Tallowood Residential Community Development, Kurrajong NSW 2758 (Revision 4)</i>, 28 January 2016.Aquacell Network Operator's Licence Application for Kurrajong Sewerage Scheme, appendix 4, available at: https://www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/supporting_document_-_appendix_4_wica_licence_application_-_aquacell_pty_ltd_-_kurrajong_-_august_2013.pdf.		
Summary of reasons for grade		
<p>On the basis of the documentation reviewed and observations made during the audit site inspection, the water industry infrastructure in operation during the audit period does not extend outside of the area of operations. Accordingly, Aquacell was assessed to be compliant with this obligation.</p>		
Discussion and notes		
<p>Evidence was sought that the water industry infrastructure constructed, operated and/or maintained by the Licensee or any authorised third party does not extend outside the area of operations. The Licence (Network Operator's Licence No: 15_032)⁴⁴ specifies the "Area of operations" using a series of development plan and allotment numbers.</p> <p>Whilst it is difficult to clearly correlate the specified development plan and allotment numbers with available mapping, the area within which the existing infrastructure is located (as observed during the audit site inspection) lies within the area of operations nominated in Aquacell's licence application.⁴⁵ On that basis, it is assessed that the water industry infrastructure does not extend outside the area of operations.</p>		
Recommendations		
<p>There are no recommendations in respect of this obligation.</p>		

⁴⁴ Network Operator’s Licence 15_032 issued to Aquacell Pty Ltd on 26 July 2015, cl.A3.1, table 3.4.

⁴⁵ Aquacell Network Operator’s Licence Application for Kurrajong Sewerage Scheme, appendix 4, available at:
https://www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/supporting_document_-_appendix_4_wica_licence_application_-_aquacell_pty_ltd_-_kurrajong_-_august_2013.pdf.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Appendix E Detailed Audit Findings – Schedule B to the Network Operator’s Licence

Detailed audit findings in respect of the obligations under *Schedule B to the Network Operator’s Licence* are presented in this Appendix.

Table E.1 **Schedule B to the Network Operator’s Licence – clause B3**

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B3	[B3.1] The Licensee must maintain insurance that is appropriate for the size and nature of the activities authorised under this Licence.	Network Operator’s Licence cl.B3.1 Compliant
	[B3.2] The Licensee must provide a copy of each certificate of currency of the insurance maintained by the Licensee to IPART in accordance with the Reporting Manual.	Network Operator’s Licence cl.B3.2 Compliant
<hr/>		
Risk	Target for Full Compliance	
This presents no significant risk to the operational safety of the scheme, however, may present commercial risk to the Licensee.	Evidence that the Licensee has: <ul style="list-style-type: none">maintained insurance appropriate for the size and nature of the activities authorised by the Licence; andprovided copies of certificates of currency to IPART.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">Interviews with Colin Fisher, Justin Taylor, Roger Phelps and Thai Law on 31 January 2018.Email dated 13 July 2017 from Aquacell to IPART (re: <i>Aquacell’s Certificates of Currency</i>).IPART, <i>Network Operators’ Reporting Manual under the Water Industry Competition Act 2006 (NSW)</i> (Issue 5), 1 June 2016.		
<hr/>		
Summary of reasons for grade		
Aquacell demonstrated that it maintained insurance that is appropriate for the size and nature of the activities authorised under this Licence and that it had submitted copies of the relevant insurance certificates of currency to IPART in accordance with the <i>Reporting Manual</i> .		
Accordingly, it was assessed that Aquacell was compliant with these obligations.		
<hr/>		
Discussion and notes		
<i>Maintenance of appropriate insurance:</i>		
In the <i>Kurrajong – 2017 Operational Audit Scope</i> , ⁴⁶ IPART noted that “ <i>Insurance report from December 2015 states that current level of insurance is adequate</i> ”.		
Aquacell demonstrated that it had maintained its insurance cover during the audit period, as follows:		
<ul style="list-style-type: none">as detailed below, Aquacell provided certificates of currency which detailed that it had maintained its insurance cover during the 2017/18 financial year; andevidence provided in respect of the 2017 Operational Audit of the 1 Bligh Street Recycled Water Scheme demonstrated that Aquacell had maintained its insurance cover during the 2016/17 financial year.⁴⁷		

⁴⁶ Attachment A to letter (reference: D17/28029) dated 29 November 2017 from IPART to Aquacell (re: *Network Operator’s Licence Operational Audit*).

⁴⁷ Cobbitty Consulting/Water Futures, *Aquacell (1 Bligh Street) Non-Potable Water Scheme* (Version 2.0), 19 July 2017, table E.2.

The audit period (1 December 2016 to 30 November 2017) falls within these financial years.

In submitting the certificates of currency for the 2017/18 financial year, Aquacell noted that “*There have been no significant changes to the level or type of cover Aquacell has*”. There was no observed evidence to indicate that any change was required.

Provision of insurance certificates of currency:

Aquacell provided evidence that it had submitted copies of its most recent insurance certificates of currency, as required by the *Reporting Manual*.⁴⁸ The certificates, which are effective for the twelve month period ending 30 June 2018, related to business insurance, contract works insurance, public and products liability and workers compensation.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

⁴⁸ IPART, *Network Operators’ Reporting Manual under the Water Industry Competition Act 2006 (NSW)* (Issue 5), 1 June 2016.

