

Network Operator's Licence Audit Report

Rosehill Recycled Water Scheme Rosehill Recycled Water Network

Operational Audit 2022

IPART Reference: D22/20052

Licence Holder: Rosehill Network Pty Ltd

Licence Number: 09_002

Document Version 3, Final Report, prepared 2 February 2023

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1. Executive Summary

1.1 Objective

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

1.2 Audit scope

The audit covered the infrastructure operated under Network Operator's Licence No. 09_002 relating to non-potable (recycled) water for the Rosehill Network. The licence is held by Rosehill Network Pty Ltd (Rosehill Network). The type of audit undertaken was an 'Operational Audit'. The audit period was 21 September 2021 to 30 September 2022.

1.3 Auditor declaration

The auditors have observed the requirements of the *IPART Audit Guideline Water Industry Competition Act 2006 Water – Guidelines (July 2020)*, (WICA Audit Guideline), and the audit deed in conducting the audit, determining audit findings, and preparing the report. The auditors were provided with sufficient and appropriate evidence, as described in the WICA Audit Guideline, on which to base the conclusions reached during the audit. The audit report findings accurately reflect the professional opinion of the auditors. The findings have not been unduly influenced by the Licensee or any of its associates and express the auditors' opinions as to whether the Licensee has met the licence conditions and regulatory requirements as specified in the scope.

1.4 Audit findings

The Licensee, Rosehill Network, was found to have operated and maintained the Rosehill Network in full compliance with the assessed audit criteria. A summary of the audit findings is given in the following chapters and a detailed breakdown of the full audit findings against the audited criteria is given in the appendices. Recommendations and opportunities for improvement (OFI) are summarised as follows:

Recommendations

No recommendations have been made resulting from this audit.

Opportunities for improvement

- The SCADA system for the network could be changed and aligned with that used for the Fairfield Recycled Water Treatment Plant (FRWRP).
- A defensible process could be set up for extending/repurposing reagents and standards that have past their minimum shelf life and/or taking steps to mitigate supply chain disruption, such as earlier ordering, or having backup testing methods available.
- It is recommended that Veolia formally report to Sydney Water Laboratories (SWL) that there is a discrepancy relating to the sampling times noted on the Chain of Custody vs. the Certificate of Analysis.

2. Introduction

2.1 Objective

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

2.2 Scope

The specific items audited were those identified in the IPART audit request letter (IPART reference D22/20052) dated 20 September 2022 with the detailed audit scope appended to the same letter.

The audit covered the infrastructure operated under Network Operator's Licence No. 09_002 relating to non-potable (recycled) water.

The type of audit undertaken was an 'Operational Audit' relating to non-potable (recycled) water infrastructure.

The audit period was 21 September 2021 to 30 September 2022.

Note that the licence audited is just one of three licences held for the Rosehill Recycled Water Scheme (RRWS). The scope of the licence subjected to audit is the Rosehill Network. The licence is held by Rosehill Network Pty Ltd (Rosehill Network). The Fairfield Recycled Water Treatment Plant (FRWTP) licence (Network Operator's Licence number 09_001) and the Rosehill Recycled Water Retail Supply Licence (Retail Supplier's Licence Number 10_01R) are both outside of the scope of this audit.

2.3 Regulatory regime

When auditing, relevant aspects of the following standards and regulations were considered:

- *Water Industry Competition Act 2006* (WICA).
- *Water Industry Competition (General) Regulation 2021* (WIC Reg).
- *IPART Audit Guideline Water Industry Competition Act 2006 Water – Guidelines (July 2020)* provided as part of the above framework.
- *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1), 2006*.
- Relevant NSW and national water industry and environmental codes of practice and regulations, as applicable.

2.4 Audit standard

The audit broadly followed the generic principles of auditing given in *ISO 19011:2018 - Guidelines for auditing management systems*. The principal document used to guide the audit was *IPART Audit Guideline Water Industry Competition Act 2006 Water – Guidelines (July 2020)* (WICA Audit Guideline). The audit was reported in accordance with the WICA Audit Guideline and its associated Appendices. Audit grades have been awarded as recommended in the WICA Audit Guideline.

3. Methodology

3.1 Audit steps

An Audit Proposal was submitted to both IPART and the Licensee prior to the audit being undertaken. The Licensee supplied documentation to both the auditor and IPART prior and subsequent to the audit. The audit, which comprised of a site inspection and office-based desktop audit, took place on Thursday, 5 January 2023. The audit process involved seeking objective evidence that the Licensee met the audit criteria set by IPART. The auditors collected evidence through interview, document review, site inspections and review of photographs taken at the site. The auditors randomly sampled examples sufficient to verify claims made by the Licensee. Quality was assured using a professional review process; each auditor's work was reviewed and approved by the other auditor.

3.2 Audit team

The audit team was:

- Audit initiation, site inspection and interviews, and detailed reporting of the audit: Dr Dan Deere.
- Quality assurance of the audit report: Mr Tom Carpenter.

The audit team notes, and greatly appreciates:

- the work and effort put in by those audited, including all CoNEXA and Veolia; and
- the support of IPART representative, Guðný Pálsdóttir and Mamata Titus, in organising the audit.

3.3 Audit evidence

Evidence provided for this audit included the following:




- Site inspections and interviews at the Rosehill Network site (including inspection of the infrastructure, the online monitoring instruments, the onsite laboratory, the benchtop monitoring instruments, and various documents and records and their associated management systems).
- Interviews with staff including Phil Birkby, Sonali Pinge, and Steve Buvcevski.
- The Licence Plans for the scheme:
 - Water Utilities Australia, Water Quality Plan, Version 1.0, RRWS-IMS-DOC-003, 19 August 2020.
 - [and noting the Veolia, Rosehill Recycled Water Scheme, Water Quality Management Plan, MAN-3936-3, 24/04/2020; and -4, 21/11/2022].
 - Water Utilities Australia, Infrastructure Operating Plan, Version 1.0, RRWS-IMS-DOC-002, 19 August 2020.
 - [and noting the Veolia, Rosehill Recycled Water Scheme, Infrastructure Operating Plan, MAN-3814-2, 12/05/2021].
- The previous Licence Plan audit for the scheme (referred to in this report as the 'previous audit'):
 - Water Futures and Cobbitty Consulting, Rosehill Network Pty Ltd and AquaNet Sydney Pty Ltd, Licence Plan Audit – Combined Report, 18 April 2021.


4. Audit findings


Audit findings are summarised in the following Appendices:


- Appendix A for the Summary of Audit Findings.
- Appendix B for the Detailed Audit Findings regarding WIC Reg Sched 1 cl.7(4)(a) – Water Quality Plan (non-potable water) (WQP (npw)).
- Appendix C provides some photographic records to illustrate observations.


Appendix A Summary of Audit Findings

Requirement	Audit observations	Compliance Grade
<p>WIC Reg Sch 1 cl. 7(4)(a). The licensee must ensure that the licensee's water quality plan is fully implemented and kept under regular review and the licensee's activities are carried out in accordance with that plan</p>	<p>During the audit period the WQMP has been fully implemented and kept under regular review, with the licensee's activities carried out in accordance with that plan. Appendix B provides a detailed summary of the audit of the WQMP.</p>	 Compliant
<p>WIC Reg Sch 1 cl. 7(5)(a). If the Minister or IPART demands, or if any significant change is made to its water quality plan, the licensee must provide the Minister or IPART with a report, prepared by an approved auditor in the way the Minister or IPART may direct, about the adequacy of the plan.</p>	<p>No significant changes have been made to the licence plans since the previous licence plan audit that would trigger the need to undertake a new licence plan audit.</p>	 No requirement
<p>WIC Reg Sch 1 cl. 7.1. The Licensee must undertake any monitoring that is required for the purposes of this Licence, any Plan, the Act or the Regulation in accordance with this clause 7.</p> <p>WIC Reg Sch 1 cl. 7.2. The Licensee must keep the following records of any samples taken for monitoring purposes specified in the Water Quality Plan:</p>	<p>The three principal laboratory verification monitoring sites are the Visy, Rosehill, and Rosehill Network sample points. Sample points were clearly located, were amenable to flaming and were connected to the wet racks, where applicable, to help allow for correlation between grab and online samples. There was only one sample tap at each site to help avoid confusion over sample tap locations.</p> <p>The point of truth for the verification monitoring schedule is as stated in the subordinate Veolia WQMP: <i>TEM-3799-x Laboratory Analysis Schedule</i>, which is a worksheet. The latest version of the worksheet is version -5. The schedule was audited against the records of monitoring with the two matching. In line with the subordinate Veolia WQMP and verification schedule the SWL tests weekly for <i>E. coli</i>, total coliforms and various physical and chemical parameters including turbidity, total dissolved solids, total phosphorus, total nitrogen and chemical oxygen demand, and biological oxygen demand is tested monthly.</p>	 Compliant




Requirement	Audit observations	Compliance Grade
<p>a) the date on which the sample was taken;</p> <p>b) the time at which the sample was collected;</p> <p>c) the point or location at which the sample was taken; and</p> <p>d) the chain of custody of the sample (if applicable).</p> <p>WIC Reg Sch 1 cl. 7.3. The Licensee must ensure that analyses of all samples taken for the purposes of Verification Monitoring are carried out by a laboratory accredited for the specified tests by an independent body that is acceptable to NSW Health, such as the National Association of Testing Authorities or an equivalent body.</p>	<p>The verification monitoring results are reported in the monthly, quarterly and annual reporting to CoNEXA. The structure of both the Veolia schedule and the reports are easy to scan, follow, and audit. Veolia takes data from SWL into Excel, then uses a macro to generate summary reports that are transcribed into Google Sheets to generate the reports.</p> <p>Monthly Reports were viewed in detail for June and November 2022 along with the Quarterly Report for August 2022. All relevant verification monitoring results were reported at all three reporting site and all verification monitoring results were compliant.</p> <p>SWL sends verification monitoring results to Veolia SW in both Excel and PDF formats. SWL has NATA Corporate Accreditation No 63. Results are supplied via a formal NATA certified PDF Analytical Report. An example was viewed from November 2022 for the samples collected 29/11/22, being Analytical Report 275535, which was sent to Sonali Pinge from Veolia. Another example was checked from the samples collected 28/6/22. Both the Chain of Custody (CoC) and Certificate of Analysis (CoA) were viewed. These included results from the appropriate sites (ZROSE, ZFAIR and ZVISY), for the appropriate analytes, and noted the location, date and time of the sample.</p> <p>It was noted the time shown on the CoA was 08:00 for all three samples. Review of the CoC showed that the samples were in fact collected throughout the morning. This discrepancy could cause confusion and should adverse results be reported the time of sampling may be important. It is recommended that Veolia formally report to SWL that there is a discrepancy relating to sampling times on the CoC and CoA.</p>	
<p>WIC Reg Sch 1 cl. 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>Some infrastructure has been repaired and maintained during the audit period, including replacing some component parts. In addition, one new recycled water customer (Equinix) has been connected during the audit period. However, these changes do not represent 'new infrastructure' as defined under this clause and no changes occurred that would represent 'new infrastructure'.</p>	 <p>No requirement</p>

Requirement	Audit observations	Compliance Grade
<p>WIC Reg Sch 1 cl. 6(2)(a). The licensee must ensure that the infrastructure operating plan is fully implemented and kept under regular review and, in particular, that all of its activities are carried out in accordance with that plan.</p>	<p>Veolia summarises asset management performance in accordance with the IOP in its monthly, quarterly and annual reports to CoNEXA. These reports cover workplace health and safety, operations, water production, water quality verification, critical control point compliance, and maintenance activities (preventive maintenance work orders scheduled vs. delivered). The one report covers the whole scheme – the FRWTP and the network.</p> <p>Evidence was provided of preventive maintenance activities occurring for the network. Special attention was paid to online monitoring instruments. Scheduled inspections and cleans were illustrated for the three relevant wet racks (at Fairfield, Rosehill and Visy). These included the “2 Monthly [site] Wet Rack Inspection & Instrument Service” and the “4 Monthly [site and instrument] Analyser” work orders. Specific work orders were viewed as examples of the process in action.</p> <p>All the pumps were found to be in good visual condition upon inspection and appeared well maintained. The pumps were identified in the asset management system and were being tested using vibration testing methods quarterly. Records of these inspections were viewed from the audit period (March, June, and September 2022). The pumps were being refurbished and maintained as required.</p> <p>The instrumentation and SCADA system were functional, and were monitoring and recording flows, pressures and water quality. The instruments were retained in a stainless steel box or within a building and in the former case a fan was used to help control temperature. These systems, and diversion valve operation, were supported by a UPS. During the audit evidence was provided that the UPS was tested and well maintained by a specialist contractor (last serviced by Petech on 4/4/22, next due 4/4/23, with the battery scheduled for replacement at a five-yearly interval).</p> <p>In the event of recycled water plant failure, potable water is fed to the tanks as a backup supply to maintain system pressure and water supply to customers. These potable water top up lines were seen in place during the audit.</p> <p>All the reticulation system infrastructure inspected was in good visual condition, with the appropriate parts and fittings being observed. This included the recycled water pipes, customer meters, backflow prevention devices on recycled water mains at customer interface points, covers (on scour valves, stop valves, and air valves). Purple paint and coatings, colouring, and signage were appropriate and clear. A scheduled program of annual checks and replacement of faded or missing signs or colourings was in place, and such an activity had been undertaken during the audit period.</p>	 <p>Compliant</p>

Requirement	Audit observations	Compliance Grade
	<p>Treated water storage tanks were in secure sites, were trimmed free from overhanging vegetation, did not support overhanging telecommunications infrastructure, and were said to be vermin-proofed. Security was fully intact and included fences, locks, and hatches. The tank vents and hatches and roof structures were not inspected but photographs and records of recent inspections were provided. Repair of corrosion had been undertaken during the audit period to replace corroded roof sheets and other components (Work Order 100683871 “Replace Damaged Purlins at Rosehill Tank Near Roof Hatch”). Inspections had been undertaken on the roofs as well as from within using ROVs. Repairs were made using access from the roof whilst reservoirs were online.</p> <p>Asset condition assessments are undertaken every quarter. Urgent actions are programmed urgently. Less urgent actions are scheduled and prioritised for the following fiscal period. To inform each fiscal year, every June, a major Annual Condition Assessment and Capital Review is undertaken by specialist Veolia asset management team personnel alongside operational personnel from the site. These are largely based on visual and experienced judgement from those parties. Veolia then uses its asset assessment and management system to program any preventive or corrective works.</p>	
<p>WIC Reg Sch 1 cl. 6(3)(a). If the Minister or IPART demands, or if any significant change is made to its infrastructure operating plan, the licensee must provide the Minister or IPART with a report, prepared by an approved auditor in the way the Minister or IPART may, having regard to the purpose for which it was licensed, direct, about the adequacy of the plan, and about the condition of its infrastructure.</p>	<p>No significant changes have been made to the licence plans since the previous licence plan audit that would trigger the need to undertake a new licence plan audit.</p>	 <p>No requirement</p>


Requirement	Audit observations	Compliance Grade
<p>WIC Reg Sch 1 cl. 1(2). The licensee must immediately notify the following persons of an incident in the conduct of the licensee’s activities that threatens, or could threaten, water quality, public health or safety—</p> <ul style="list-style-type: none"> (a) IPART, (b) the Minister administering the Public Health Act 2010, (c) the Minister administering the Act, Part 2, (d) N/A (e) any other licensed network operator or public water utility whose infrastructure is connected to the licensee’s infrastructure. 	<p>Veolia advised that no events occurred during the audit period that threaten, or could threaten, water quality, public health or safety. Review of water quality operational and verification monitoring data found no evidence of notifiable events having occurred.</p>	<div style="text-align: center;">  <p>No requirement</p> </div>


Appendix B Detailed Audit Findings – WIC Reg Sched 1 cl.7(4)(a) – Water Quality Plan (non-potable water) (WQP (npw))





Requirement	Audit observations	Compliance Grade
Commitment to responsible use and management of recycled water quality Assessment of the recycled water system (Element 1).	A company-wide policy, held by CoNEXA, being “WUA-IMS- DOC-001 Quality, Health, Safety and Environment Policy”, provides an overarching policy commitment that implicitly covers recycled water quality within its scope. Other than that, the description of the infrastructure stakeholders and regulatory and formal requirements remain accurately described, as assessed in the previous Licence Plan audit. Regular stakeholder interaction takes place with Sydney Water to discuss operations, maintenance. In addition, quarterly ‘interface meetings’ take place with CoNEXA. Given that nothing substantive has changed since that previous audit, other than the involvement of CoNEXA, the findings of that previous audit remain valid, and a compliant finding is made from this audit.	 Compliant
Assessment of the recycled water system (Element 2)	The description of the infrastructure and the risk assessment given in the scheme WQMP and subordinate Veolia WQMP remain accurately described, as assessed in the previous Licence Plan audit. Given that nothing substantive has changed since that previous audit, the findings of that previous audit remain valid, and a compliant finding is made from this audit.	 Compliant
Preventive measures for recycled water management (Element 3)	<p>The description of the preventive measures remains accurately described in the WQMP and subordinate Veolia WQMP, as assessed in the previous Licence Plan audit. Given that nothing substantive has changed since that previous audit, this audit focused on operational implementation of the preventive measures.</p> <p>Once fit-for-purpose recycled water has been supplied from the Fairfield Recycled Water Treatment Plant (FRWTP), its quality is maintained via distribution in a closed network. Therefore, the principal preventive measures to protect water quality of relevance to the scope of this audit are:</p> <ul style="list-style-type: none"> • closed, pressurised, piped distribution; • closed water storage, protected from runoff and vermin ingress; • backflow prevention; and • maintenance of residual chlorine. 	 Compliant



Requirement	Audit observations	Compliance Grade
	<p>Additional preventive measures relating to mitigating risks of inadvertent exposure are:</p> <ul style="list-style-type: none"> • labelling and signage of pipes and fittings; • air gaps on potable water top up; • backflow prevention on connected potable water supplies; and • agreements with end users that set out recycled water management and use requirements. <p>These preventive measures were all assessed during the audit.</p> <p>Pressure was being maintained in the closed distribution network using pumps that lift water into the water storage tanks that in turn gravity feed to the network. There are three pumps at Fairfield and another three at Rosehill. The pumps can be run at variable speed and in duty/assist and duty/standby, mode which allows for reliable pumping. All the pumps were found to be in good visual condition upon inspection and appeared well maintained. The pumps were identified in the asset management system and were being tested using vibration testing methods. Records of these inspections were viewed from the audit period (March, June, and September 2022). The pumps were being refurbished and maintained as required.</p> <p>Level and pressure sensors and flow meters are used to trigger pump operations to maintain system pressure. Major loss of pressure, or drops in tank level, e.g., due mains burst or pump failure, is detected via the SCADA system. This helps to detect major ingress events or the loss of pressure. The SCADA system and diversion valve operation is supported by a UPS. During the audit evidence was provided that the UPS was tested and well maintained by a specialist contractor (last serviced by Petech on 4/4/22, next due 4/4/23, with the battery scheduled for replacement at a five-yearly interval). The SCADA display was shown, with the CITECT interface showing levels and flows, and recording a history of those readings.</p> <p>In the event of recycled water plant failure, potable water is fed to the tanks as a backup supply to maintain system pressure and water supply to customers. These potable water top up lines were seen in place during the audit and remained suitably placed as top fill.</p> <p>All the reticulation system infrastructure inspected was in good visual condition, with the appropriate parts and fittings being observed. This included the recycled water pipes, customer meters, backflow prevention devices on recycled water mains at customer interface points, covers (on scour valves, stop valves, and air valves). Purple paint and coatings, colouring, and signage were appropriate and clear. A scheduled program of annual checks and replacement of faded or missing signs or colourings was in place, and such an activity had been undertaken during the audit period.</p>	


Requirement	Audit observations	Compliance Grade
	<p>Treated water storage tanks were in secure sites, were trimmed free from overhanging vegetation, did not support overhanging telecommunications infrastructure, and were said to be vermin-proofed. The tank vents and hatches and roof structures were not inspected but photographs and records of recent inspections were provided. Repair of corrosion had been undertaken during the audit period to replace corroded components (Work Order 100683871 “Replace Damaged Purlins at Rosehill Tank Near Roof Hatch”). Inspections had been undertaken on the roofs as well as from within using remotely operated submersible vehicles. Repairs were made using access from the roof as well as using divers from within boats whilst reservoirs were online. Security was fully intact and included fences, locks, and hatches.</p> <p>Records indicated that residual chlorine was reliably maintained during the audit period. The chlorine demand of the water is low, and this was consistent with the results from the chlorine monitoring at the online monitoring points at the FRWTP interface point and the Rosehill Reservoir. The SCADA traces were viewed on line for chlorine and pH. Grab samples were collected from the same locations for chlorine and pH testing weekly. The evidence was consistent with reliable chlorine residuals having been maintained.</p> <p>The early warning and critical alarm limits given in the SCADA system were consistent with those in the WQMP and subordinate Veolia WQMP, which were found to be compliant in the previous Licence Plan audit. However, there are three issues noted with the SCADA system for the network that make it relatively sub-optimal compared with that for the FRWTP. These were:</p> <ul style="list-style-type: none"> • Operators cannot introduce earlier warning or other limits into the SCADA system. This increases the risk of critical limit exceedances arising since there is less time to react to earlier warnings. • The interface between the ClearSCADA and CITECT system does not permit operators to so readily view, assess and troubleshoot instrument displays and trends when compared with the system in place for the FRWTP. This makes it hard to review and diagnose process operation and interpret results. • The masking or holding of results during periods of instrument calibration, maintenance and cleaning, or when parts of the network are offline, is not set up. This leads to some potentially misleading and confusing instrument readings on the SCADA historian and associated trends. Such data requires post hoc ‘cleaning’. In contrast, the FRWTP does have these features. <p>Therefore, as an OFI, to help reduce the high risk of possible or actual future non-compliances, consideration should be given to the SCADA system for the network being changed and aligned with that used for the FRWTP.</p>	

Requirement	Audit observations	Compliance Grade																																				
	<p>Backflow prevention checks were undertaken by Linbeck on behalf of Veolia during the audit period.</p> <p>It was concluded that the preventive measures were being maintained and operated in accordance with the WQMP and subordinate Veolia WQMP.</p>																																					
<p>Operational procedures and process control (Element 4)</p>	<p>The audit considered the reliability of the online and benchtop monitoring instruments, (being the principal two means by which operational monitoring of the water quality control processes occurs).</p> <p>The online monitoring instruments were clean and in good condition and retained in a stainless steel box or within a building and in the former case a fan was used to help control temperature.</p> <p>The SCADA system was found to be functional during the audit period, as well as on the day of the site audit. SCADA historian traces for the audit period illustrated that the online monitoring instruments had been operating as intended with records being retained. Detailed analysis of SCADA traces was undertaken for June 2022 with performance being found to be within critical limits.</p> <p>The logbooks from operators demonstrated cross-checking of online against benchtop/portable instruments. The records were clearly completed. The sampling and testing procedures were indicated alongside the instruments. Cross checks were being completed weekly with records entered in a hard copy log book – comparing online instruments to benchtop/portable.</p> <p>SCADA scaling was checked during the audit for the Rosehill Reservoir Water Quality and Fairfield Water Quality online monitoring wet racks. Briefly, the results observed were as follows:</p> <table border="1" data-bbox="638 938 1848 1181"> <thead> <tr> <th>Site</th> <th>SCADA</th> <th>Instrument</th> <th>Finding</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">Rosehill Reservoir at 07:59</td> </tr> <tr> <td>pH</td> <td>6.78</td> <td>6.76</td> <td>Consistent</td> </tr> <tr> <td>Chlorine</td> <td>1.46</td> <td>1.47</td> <td>Consistent</td> </tr> <tr> <td>Turbidity</td> <td>0.02</td> <td>0.01</td> <td>Consistent</td> </tr> <tr> <td colspan="4" style="text-align: center;">Fairfield at 09:13</td> </tr> <tr> <td>pH</td> <td>7.1</td> <td>7.11</td> <td>Consistent</td> </tr> <tr> <td>Chlorine</td> <td>1.67</td> <td>1.68</td> <td>Consistent</td> </tr> <tr> <td>Turbidity</td> <td>0.02</td> <td>0.00</td> <td>Consistent</td> </tr> </tbody> </table> <p>One weakness in the cross-checking of online against benchtop/portable monitoring instruments was the absence of a pre-defined tolerance in the procedure used during the audit period. Most readings for most instruments were closely aligned. However, some significant discrepancies were evident for some of the chlorine and turbidity readings. The largest found was for free chlorine, which found a reading of 1.6 vs.</p>	Site	SCADA	Instrument	Finding	Rosehill Reservoir at 07:59				pH	6.78	6.76	Consistent	Chlorine	1.46	1.47	Consistent	Turbidity	0.02	0.01	Consistent	Fairfield at 09:13				pH	7.1	7.11	Consistent	Chlorine	1.67	1.68	Consistent	Turbidity	0.02	0.00	Consistent	<div style="text-align: center;">  <p>Compliant</p> </div>
Site	SCADA	Instrument	Finding																																			
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Requirement	Audit observations	Compliance Grade
	<p>0.75 mg/L for the online and benchtop/portable instruments, respectively, for the Rosehill site as sampled 29/11/22. These findings would have resulted in an OFI being raised. However, at the time of the audit, Veolia has already upgraded its operational monitoring process to align more closely with that used for the FRWTP. Specifically, a pre-defined tolerance has not been included in the procedure for cross-checking of online against benchtop/portable monitoring instruments. This procedure was at the trial stage since the tolerances will need to be developed over time based on experience. To begin with, the same tolerances are being used as per the FRWTP.</p> <p>The onsite lab was audited and found to be in good condition, and well-maintained. Suitable instruments, standards, reagents and procedures were in place. Most of the reagents and standards were within their shelf life. For instance, pH buffers used for two-point calibration of the benchtop/portable pH analyser were well within date (pH 4 and 7 expiring 31/9/24 and 31/3/24, respectively). The turbidity standards were getting close to expiry (0.02, 10 and 1,000 NTU expiring 2/23, 15/3/23 and 2/23, respectively). The chlorine chlorine colourimetric reagent had just past its warranted 'minimum shelf life' (30/9/22), albeit the reagent was within date during the audit period. This highlighted a potential weakness in the cross-checking of online against benchtop/portable monitoring instruments. Some of the reagents and standards were just past their minimum shelf life on the day of the site audit (albeit not during the audit period) and others were getting close. It is understood that there have been some supply chain delays on sourcing replacements. Therefore, as an OFI, to help reduce the risk of possible or actual non-compliances, consideration should be given to setting up a defensible process for extending/repurposing reagents and standards that have past their minimum shelf life and/or taking steps to mitigate supply chain disruption, such as earlier ordering, or having backup testing methods available.</p>	
Verification of recycled water quality and environmental performance (Element 5)	<p>The verification of water quality was occurring as scheduled in the WQMP and subordinate Veolia WQMP. Sample points were clearly located, were amenable to flaming and were connected to the wet racks, where applicable, to help allow for correlation between grab and online samples. There was only one sample tap at each site to help avoid confusion over sample tap locations. Evidence was provided from primary point of truth CoC and CoA forms from SWL, spreadsheet summaries of results and associated statistics, and monthly and quarterly reports to CoNEXA. The reporting was taking place was required.</p> <p>Veolia takes reported verification monitoring data from SWL into Excel, then uses a macro to generate summary reports that are transcribed into Google Sheets to generate the reports.</p>	 Compliant

Requirement	Audit observations	Compliance Grade
Management of incidents and emergencies (Element 6)	The established incident and emergency response programs in place for the scheme remained in place, as previously audited and found to be in compliance. Veolia advised that no events occurred during the audit period that would have triggered a water quality incident or emergency. Review of water quality operational and verification monitoring data found no evidence of notifiable events having occurred.	 Compliant
Operator, contractor and end user awareness and training (Element 7)	<p>During the audit, key personnel intimately involved with operating the infrastructure were interviewed. Importantly, Veolia rotates staff through the FRWTP duties and into the network duties which provides backup for the network operations. A person with a core function of overseeing the network has recently been recruited to replace a recent departure. This combination of a dedicated network resource, combined with rotation of staff through network operational roles, provides confidence in training and awareness of relevant aspects of operations.</p> <p>In this case, the end users are industrial/commercial customers. Their awareness of recycled water use is maintained via their recycled water agreements.</p>	 Compliant
Community involvement and awareness (Element 8)	The site continues to host school and other tours and maintains a website that summarises the scheme. Since no relevant substantive changes have occurred to either the scheme or to the relevant guidelines and standards, this remains compliant as assessed under the previous audit.	 Compliant
Validation, research and development (Element 9)	The validation of the process controls was assessed under the previous audit. Since no relevant substantive changes have occurred to either the scheme or to the relevant guidelines and standards, this remains compliant.	 Compliant

Requirement	Audit observations	Compliance Grade
Documentation and reporting (Element 10)	<p>The reporting for the scheme is extensive. Very detailed monthly, quarterly and annual reports are provided to CoNEXA, and targeted reports are provided to Sydney Water and the regulator, as applicable. The reports cover operational aspects of the scheme as well as those most closely related to water quality management. During the audit the June and November 2022 Monthly Reports, and the August 2022 Quarterly Report, were viewed in detail. The reports are easy to scan, follow, and audit. The quarterly reports include detailed plots of SCADA data for three years (e.g. pH, TDS, turb and chlorine). The quarterly reports are reviewed by CoNEXA at ‘interface meetings’.</p> <p>The verification monitoring results are reported in the monthly, quarterly and annual reporting to CoNEXA. The structure of both the Veolia schedule and the reports are easy to scan, follow, and audit. These reports cover water quality verification, SCADA results performance, critical control point compliance, and other maintenance activities relevant to water quality management. The one report covers the whole scheme – the FRWTP and the network. The report summarises any verification, action and critical breaches.</p> <p>Monthly Reports were viewed in detail for June and November 2022 along with Quarterly Reports for August 2022. All included summary results for SCADA records for pH, chlorine conductivity and turbidity, at all three reporting sites. All results were compliant. Some turbidity results were above the target 0.5 NTU (1.05 NTU was the maximum SCADA result observed at the Visy site, albeit the duration of the exceedance was not noted during the audit). However, critical limits were not exceeded. The elevated turbidity result was related to instrumentation and electrical issues which have since been resolved through the introduction of new instrumentation cards and RTU.</p>	 Compliant
Evaluation and audit (Element 11)	<p>The monthly and annual reports provided by Veolia to WUA provide for long-term evaluation of results. Both Veolia and CoNEXA are covered under audited ISO quality management systems, in addition to being regularly audited across their various operations by regulators. As a result, the scheme was considered to be subject to audit in line with the AGWR.</p>	 Compliant

Requirement	Audit observations	Compliance Grade
Review and continuous improvement (Element 12)	The scheme WQMP is subject to ongoing review and revision, including most recently during November 2022 for the subordinate Veolia WQMP. Multiple improvements had been made, to instrumentation, SCADA, infrastructure, documentation, and reporting. As a result, the scheme was considered to be subject to review and continuous improvement in line with the AGWR.	 Compliant

Appendix C Photographic record



Figure 1. Typical example of clearly labelled, coloured and signed recycled water infrastructure (Rosehill).



Figure 2. Typical example of clearly coloured and potable water backup infrastructure with testable backflow prevention device (Rosehill).



Figure 3. Typical example of fully functional wet rack, in good condition (Rosehill).



Figure 4. Typical example of appropriate water sampling tap, in good condition (Rosehill).



Figure 5. Potable water top fill line into treated water storage tank (Rosehill).



Figure 6. New connection to Equinix customer with appropriate parts, fittings, labelling and signage.



Figure 7. Typical examples of suitably coloured and labelled covers on network assets.



Figure 8. Images of water tank repairs from within the audit period (supplied by Veolia)