



**IPART** Independent  
Pricing and Regulatory  
Tribunal | NSW

Sydney Water 2023 compliance audit

# Report to the Minister

December 2023

Water >>



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## **Acknowledgment of Country**

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders, past, present and emerging.

We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

## **Tribunal Members**

The Tribunal members for this review are:

Carmel Donnelly PSM, Chair  
Jonathan Coppel

Enquiries regarding this document should be directed to a staff member:

Christine Allen (02) 9290 8412  
Robert Aposhian (02) 9290 8406  
Sachin Singh (02) 9113 7784

## **The Independent Pricing and Regulatory Tribunal**

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## Summary

This is our compliance report to the Minister for Water (Minister) on Sydney Water Corporation's (Sydney Water) compliance with its 2019-2024 Operating Licence (Licence) 1 July 2022 to 30 June 2023. Compliance was tested by an operational audit as required under section 31 of the *Sydney Water Act 1994 (Act)*.

### Sydney Water's operational performance in 2023

Sydney Water was forthcoming and cooperative throughout the audit process, demonstrating a strong culture and commitment to compliance. The quality of water produced by Sydney Water continues to be of a high standard that meets public health requirements. Sydney Water continues to be non-compliant with its asset management obligations, but it has shown considerable improvement in upgrading its overall asset management system.

### Key findings

Sydney Water demonstrated a high overall level of compliance with the Licence clauses during the 2022-23 audit period and was fully compliant with 21 of 31 audited Licence clauses.

However, Sydney Water was non-compliant (non-material) with 3 Licence clauses and had minor shortcomings with another 6 clauses. One audited clause was assigned a "no requirement" grade as Sydney Water was not required to comply with the licence obligation during the audit period.

During the 2022-23 audit, Sydney Water was:

- Non-compliant (non-material) with 3 clauses because it:
  - did not adequately maintain its recycled water management system by not having adequate processes to ensure cross-connections for recycled water supply were identified before water was supplied. This non-compliance is considered non-material, mitigated somewhat due to the high quality of recycled water supplied to domestic recycled water schemes and that there is no clear line of responsibility for water meter installations on these types of schemes.
  - did not fully implement its Recycled Water Quality Management System (RWQMS) with an excessive delay in undertaking a scheduled review of the plant risk assessment, and maintenance delays to key process plant. The delay is not considered to be a material issue as there was a risk assessment in place, however without the risk assessment review any changes to the risk profile of the site since the initial risk assessment may not have been picked up.

- did not fully implement its Asset Management Systems (AMS) because previously identified deficiencies in maintenance management were not fully addressed. We considered that Sydney Water is partway through implementing significant AMS improvements, but still has a backlog of maintenance works to complete. The finding of non-material is based on the improvements in asset management noted this year and Sydney Water's assessment that risks associated with the observed deficiencies are being effectively managed through increased monitoring.

While these non-compliances must be addressed to ensure ongoing delivery of safe recycled water, the auditor noted that other controls were in place to manage the risk and Sydney Water had maintained a high level of compliance with water quality standards.

- Compliant (minor shortcomings) with 6 clauses relating to:
  - The process for verifying that field contractors undertaking network repairs have undertaken training in hygienic practices and that such practices are being implemented.
  - Incident debriefs being undertaken in a timely manner.
  - Ensuring all aspects of its MoU with Fire and Rescue NSW are undertaken and a timeline provided to complete identified tasks.
  - Requirements for the customer centre to make copies of the customer contract, the current economic method used to calculate the economic level of water conservation, the Licence and complaints handling process information available free of charge to any person.

The auditor made 12 recommendations to address the deficiencies and shortcomings identified.<sup>1</sup> We have discussed the audit findings and recommendations in Chapter 2.

## Previous audit findings

This audit also followed up Sydney Water's progress in addressing 16 outstanding recommendations related to non-compliances or shortcomings identified in previous audits.

Sydney Water has:

- Fully addressed 14 recommendations.
- Partially addressed/is addressing the remaining 2 recommendations. One recommendation is overdue, and one is due for completion by 31 Dec 2023. Progress with addressing these recommendations is to be checked in the next audit.

Our discussion of Sydney Water's progress with previous recommendations, including the 2 ongoing recommendations, is presented in Chapter 3.

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<sup>1</sup> Auditors are only required to make recommendations for grades other than Compliant grades – i.e. for Compliant (minor shortcomings), Non-compliant (non-material) and Non-compliant (material) grades. This is consistent with our audit guideline for public water utilities ([Guideline – Public Water Utility Audit, July 2023](#)).

# 1. Introduction

Sydney Water is a publicly owned monopoly supplier of essential water and wastewater services to customers in NSW. It operates under the NSW Government issued Sydney Water 2019-2024<sup>2</sup> Operating Licence (Licence), which outlines obligations and standards for the provision of safe and reliable services.

We conduct annual audits of Sydney Water's compliance with its Licence to assess that Sydney Water is meeting its obligations.

This report summarises the findings and recommendations of the audit.

## 1.1 Annual Statement of Compliance

In preparing this report we have also considered Sydney Water's annual Statement of Compliance (Appendix B). The Statement of Compliance is an exception-based report<sup>3</sup> certified by Sydney Water's Managing Director and the Chair of the Board of Directors. It provides details of any identified non-compliances and explains any remedial action Sydney Water has taken, or is taking, to resolve outstanding non-compliances.

This year Sydney Water reported that it had no non-compliances with the Licence.

## 1.2 Audit scope

In 2023, we audited Sydney Water's compliance with 31 clauses of the Licence. We engaged a specialist auditing firm, Cobbitty Consulting Pty Ltd (Cobbitty), to audit 15 Licence clauses and we checked the other 16 clauses.

Sydney Water has also provided a report from GHD, an IPART approved auditor, assessing Sydney Water's compliance with clauses 9.1, 9.2 and 9.3 of the Licence regarding cyber security.<sup>4</sup>

The audit covered the period from 1 July 2022 to 30 June 2023. Appendix C describes the audit process and Appendix D includes the detailed audit scope.

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<sup>2</sup> On 5 October 2022 the Minister for Lands and Water extended the current licence to 30 June 2024.

<sup>3</sup> That is, Sydney Water is only required to report on clauses where it considers it is non-compliant.

<sup>4</sup> Section 7 of the Reporting Manual contains auditing and reporting obligations for Sydney Water – to provide an audit report from an independent auditor that assesses the adequacy of its Cyber Security Management System (CSMS).

## 2. Audit findings and recommendations

This chapter sets out the auditor's findings relating to non-compliances and minor shortcomings.






















Where we found Sydney Water non-compliant with a clause, we have made a recommendation as to how to address the non-compliance. The auditor also identified some opportunities for improvement in Sydney Water's operational audit report, provided in Appendix E.

Our assessment of the Licence clauses that we checked is in Appendix F.

Clause 8.1 of our Reporting Manual<sup>5</sup> requires Sydney Water to report on its progress in implementing these recommendations by 31 March each year. We may agree to receiving the progress report later than the date in the Reporting Manual.

The 2023 audit is the 4th operational audit of Sydney Water's compliance with the requirements of the current Licence. Table 1 provides a comparison of non-compliant and minor shortcomings audit findings across the audit years during the 2019-2024 Licence term. Table 1 does not include Licence clauses where Sydney Water has been fully compliant when audited during the Licence term.

Table 1 Comparative record of non-compliant findings and identified shortcomings for the 2019-2024 Licence

Licence clause	Requirement	Compliance grade			
		2019-20 <sup>a</sup>	2020-21 <sup>b</sup>	2021-22 <sup>c</sup>	2022-23 <sup>d</sup>
1.7.1	Licence context - pricing			-	-
3.1.1	Sydney Water must maintain a water conservation program consistent with the Current Economic Method.				-
3.1.2	Water Conservation and Planning – economic approach for water conservation				-
3.1.4	Water Conservation and Planning – Update economic level of water conservation using Current Economic Method	-	-		
3.2.4	Water Conservation and Planning – water planning				-
4.1.1	Performance Standards for Water Quality – drinking water – consistent with ADWG				
4.1.3	Performance Standards for Water Quality – drinking water – implementation				

<sup>5</sup> IPART, [Sydney Water Reporting Manual - Operating Licence 2019-2023](#), November 2019.

Licence clause	Requirement	Compliance grade			
		2019-20 <sup>a</sup>	2020-21 <sup>b</sup>	2021-22 <sup>c</sup>	2022-23 <sup>d</sup>
4.2.1	Performance Standards for Water Quality – recycled water – consistent with AGWR				
4.2.3	Performance Standards for Water Quality – recycled water – implementation				
5.1.1	Performance Standards for Service Interruptions – water continuity standard			-	-
5.2.5	Performance Standards for Service Interruptions – water pressure standard		-	-	
5.5.1	Performance standards for Service Interruptions – maintain AMS				
5.5.2	Performance Standards for Service Interruptions – implement AMS				
7.1.1	Stakeholder cooperation – Memoranda of Understanding with WAMC, NSW Health and EPA				
7.2.1	Stakeholder cooperation - Memorandum of understanding – FRNSW - maintain				
7.2.2	Stakeholder cooperation - Memorandum of understanding – FRNSW - comply				
7.2.4	Stakeholder cooperation - Memorandum of understanding – FRNSW – working group				
8.2.5	Information and services for competitors – publication and updating of servicing information				
9.1.1 <sup>d,e,f,g</sup>	Cyber Security Management System - maintain				
9.1.2 <sup>d,e,f,g</sup>	Cyber Security Management System - implement				
10.2.2	Performance Monitoring and Reporting - reporting			-	-
10.2.4	Performance Monitoring and Reporting – record systems			-	-

Sources:

- a) Sydney Water Corporation Operational Audit 2020 – Report to the Minister, March 2021
- b) Sydney Water Corporation Operational Audit 2021 – Report to the Minister, February 2022
- c) Sydney Water Corporation Operational Audit 2022 – Report to the Minister, February 2023
- d) Certitude Technology Risk Services, Cyber Security Audit for Sydney Water, December 2020
- e) Certitude Technology Risk Services, Licence Conditions Audit – Cyber Security Management System for Sydney Water, August 2021
- f) GHD Digital, Operating Licence Conditions Audit – Critical Infrastructure Security – Sydney Water Corporation, August 2022.
- g) GHD Digital, Operating Licence Conditions Audit – Critical Infrastructure Security – Sydney Water Corporation, August 2023.

Note: This table does not include clauses of the Licence where Sydney Water has been fully compliant.

Note: Each of Sydney Water's audit periods is for the period from 1 July to 30 June.

Note: = Compliant; = Compliant (minor shortcomings); = Non-Compliant (non-material); = Non-Compliant (material).



## 2.1 Audit findings and recommendations summary

Table 2 provides details of non-compliances and minor shortcomings identified in the audit. It also includes details of our recommendations to address these deficiencies. IPART will test the extent to which recommendations have been addressed in the next annual audit of Sydney Water's compliance with its Licence.

All non-compliances were found to be non-material. The risk in each case was mitigated by having processes in place that ensured high quality water was being provided for the specific end use (including regular monitoring). However, IPART will liaise with Sydney Water, Department of Fair Trading (DFT) and NSW Health to determine whether further compliance or enforcement action is required.

### Sydney Water's processes for ensuring cross-connection controls in dual reticulation networks was inadequate


During the compliance year Sydney Water identified two cross-connections that had resulted in customers drinking recycled water rather than drinking water for a period of time. No health impacts were detected. However, we will seek further information from Sydney Water, DFT and NSW Health before determining actions to be taken to minimise the risk of cross-connections.



### Vegetation in the St Mary's chlorine contact tank

The audit identified that the St Marys Water Resource Recovery Facility (WRRF) chlorine contact tank had a significant amount of vegetation in it, and this could potentially have an impact on the efficiency of the disinfection process. Sydney Water delayed the risk assessment review for the St Marys Water Resource Recovery Facility (WRRF) for approximately 3 years. A risk assessment was in place but the delay in the review meant that any changes to the risk profile within the 3 years may not have been identified.

The auditor noted that Sydney Water has a strategy in place to replace the chlorine contact tank. The risk of inadequate disinfection is mitigated in that the recycled water from this site is used exclusively by either the adjacent golf course for irrigation (with appropriate site controls) or as inflow to the Advanced Water Treatment Plant next door for further treatment. The risk is further mitigated by weekly and daily monitoring that indicated a suitable level of chlorine was maintained in the delivered recycled water. These observations indicate that existing concerns with effective asset maintenance continue and agreed asset management improvements have not yet been fully embedded across Sydney Water's operations.

Table 2 2023 compliance with Sydney Water 's operating licence – grades other than fully compliant

Licence clause	Requirement	Compliance grade	Audit finding	Recommendations
4.1.3	Sydney Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Drinking Water Quality Management System and to the satisfaction of NSW Health.	 Compliant (minor shortcomings)	<p>We have assigned Sydney Water a Compliant (minor shortcomings) grade for clause 4.1.3. This agrees with the auditor's findings.</p> <p>Sydney Water has largely implemented its Drinking Water Quality Management System. Minor shortcomings were noted for Elements 3 and 6 and did not affect water quality during the audit period.</p> <p>Shortcomings identified for this clause included:</p> <ul style="list-style-type: none"> <li>Contractors are utilised on occasions for leak and break repair works to supplement Sydney Water resources. There was no evidence of contractor-provided training during the audit period. There was evidence of internal training for contractor field crews in October-November 2021. Whilst there has been training delivered in 2021, a review of the process on verifying that contractors undertaking network repairs are implementing hygienic practices in line with Sydney Water's procedures is needed to ensure verifiable audit evidence is maintained.</li> <li>Sydney Water undertook investigations of an incident on the Prospect Water Filtration Plant Clear Water Tank No. 1 cover failure. However, this is not the same as conducting a debrief as required by its procedures. The incident date was 5 July 2022, and the incident close date was 26 May 2023. The timeframe to undertake an incident debrief has not been implemented as per Sydney Water's Incident Management Plan and Incident Debrief and Investigation Procedure. A debrief (multi-agency) for relevant incidents such as this one should be completed while the response and management actions taken are still fresh.</li> </ul>	<p><b>REC-SWC-2023-01:</b> By 31 December 2024, Sydney Water is to ensure that there is a process in place to provide contractors performing network repairs with adequate training to undertake works to the specified hygienic requirements and protect water quality (e.g. hygienic storage and repairs, adequate flushing, testing etc). In addition, a process must be in place to verify that these practices are being implemented by contractors (relates to Element 3).</p> <p><b>REC-SWC-2023-02:</b> By 31 December 2024, review implementation of the process for closing incidents and undertaking incident debriefs (internal and multi-agency) as per Sydney Water's Incident Management Procedure and Incident Debrief and Investigation Procedure and undertake an awareness session with all relevant staff to enable the procedures to be fully implemented (Element 6).</p>

4.2.1	Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling and any requirements relating to water recycling specified by NSW Health (the Recycled Water Quality Management System)	 Non-Compliant (Non-Material)	<p>We have assigned Sydney Water a Non-compliant (non-material) grade for clause 4.2.1. This agrees with the auditor's finding.</p> <p>Shortcomings identified for this clause were that Sydney Water's processes for ensuring cross-connection controls between the potable and recycled water services in dual reticulation networks was inadequate. This was not considered to be a material non-compliance due to the high quality of recycled water supplied to domestic recycled water schemes. There were two cross-connections identified in the audit period and in both incidents Sydney Water's potable water meter was installed on the wrong main to meter connection, i.e. the potable water meter was on a recycled water supply. In both cases the mains to meter connections and water meters were installed by a third-party. Whilst the mains to meter connections are owned by the property owner, the water meters that were installed incorrectly are Sydney Water's assets, and in both cases resulted in residential customers consuming recycled water. It is still unclear if procedures have been fully followed and if they should identify this type of cross-connection. However, it is considered that Sydney Water's current process is inadequate in identifying cross-connections prior to the water supply commencing.</p>	<p><b>REC-SWC-2023-03:</b> By 31 December 2024, Sydney Water must amend its existing process for connecting properties to the recycled water network to ensure that avoidable cross-connections are eliminated. Sydney Water should also quantify the public health risk of existing properties and put appropriate controls in place, which may include the auditing of existing connections. This review must be undertaken in collaboration with NSW Health and the Department of Fair Trading (relates to Element 3).</p>
4.2.3	Sydney Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Recycled Water Quality Management System and to the satisfaction of NSW Health.	 Non-Compliant (Non-Material)	<p>We have assigned Sydney Water a Non-compliant (non-material) grade for clause 4.2.3. This agrees with the auditor's finding.</p> <p>Shortcomings identified for this clause include 2 specific issues:</p> <ul style="list-style-type: none"> <li>The risk assessment for the St Marys Water Resource Recovery Facility (WRRF) was delayed for approximately 3 years. By delaying the risk assessment, this also results in the detailed verification, validation and reassessment of the log reduction values, review of long term data and the system analysis being delayed (Element 2).</li> </ul>	<p><b>REC-SWC-2023-04:</b> By 30 June 2024, ensure stakeholder meetings are held at the required frequencies, especially those where an MoU has been developed (relates to Element 1).</p> <p><b>REC-SWC-2023-05:</b> By 30 June 2024, revise the risk assessment process to include a requirement to review the potential risk of overruns in the four yearly major risk assessment reviews. Overruns should be minimised, but where they are unavoidable the reasons for the delay should be documented, as well as the potential risk to Sydney Water in not thoroughly assessing the scheme within the four year period and an estimated date that the risk assessment will be undertaken (Element 2).</p> <p><b>REC-SWC-2023-06:</b> By 30 June 2024, ensure that the Recycled Water Risk Assessment Workshop Procedure is followed, and risk assessment briefing</p>

The delay in the risk assessment was attributed to COVID impacts and a delay in the plant upgrade works being undertaken at the St Marys WRRF. The revised timelines were communicated to NSW Health. However, the risk assessment was significantly delayed. This was not considered to be a material issue, as there was a risk assessment in place. However, changes to the risk profile may not have been picked up.

- The St Marys WRRF Chlorine Contact Tank was full of vegetation, and it was considered that there could potentially be issues with the performance of the disinfection process (Element 3). This issue was not mentioned in the risk assessment that was undertaken after the audit period finished. Sydney Water provided evidence that weekly monitoring was undertaken and showed the recycled water being produced met the required water quality specification. There is potential uncertainty on how the vegetation growth may affect the flow in the chlorine contact tank and thus affect the disinfection process. The response onsite was that it was unsafe to remove the growth and that once the plant upgrade was complete, the contact tank could be emptied and cleaned. The growth represented a number of years of build up as it included established trees. There is some uncertainty how this may impact the chlorine disinfection CCP. This issue was considered to be non-material as the water is used on a golf course, which has onsite controls in place and the water quality monitoring indicated that all microbiological monitoring was within specification during the audit period.

There were also some minor shortcomings in relation to:

- MoU meetings with Department of Fair Trading not undertaken at the required frequency (Element 1)
- Historical water quality data was not trended and charted, as required by the AGWR and Sydney Water Risk Workshop Procedure (Element 2).

papers include the review of data for problems using trends and charts (Element 2).



**REC-SWC-2023-07:** By 31 December 2024, Remove the vegetation from the St Marys WRRF CCT. Review the maintenance planning process and prioritise maintenance for CCPs; ensure that the reason for any delays is recorded and assess the potential impacts on treatment performance (Element 3).


**REC-SWC-2023-08:** By 30 June 2024, ensure that all monitoring instruments, including handheld, are calibrated as required and appropriate records are maintained (Element 4).

**REC-SWC-2023-09:** By 30 June 2024, ensure that the management of incidents, including the completion of thorough investigations, is undertaken in a timely manner. Review incident management documentation with NSW Health to ensure a balance is struck between timelines and practicality, whilst managing risks to public health appropriately. In doing so, ensure that the agreed timelines are met for the notification, reporting and investigation of recycled water incidents (Element 6).

**REC-SWC-2023-12:** Move the St Marys WRRF filtration CCP turbidity meter to the outlet of the filters. (replaces Rec 2022-07)



			<ul style="list-style-type: none"> <li>Based on the evidence it could not be determined if the handheld pH meter at the St Marys WRRF was calibrated at the required frequency (Element 4).</li> <li>There was an issue raised by NSW Health regarding the timeliness of undertaking incident investigations and debriefs. It was also noted that notification to NSW Health of the initial incident (cross-connection) was delayed (Element 6). The MoU with NSW Health requires immediate reporting but does not specify a timeframe. Sydney Water reported the incident within 18 hours and this may have been appropriate in the circumstances.</li> </ul>	
5.5.2	<p>Sydney Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the Asset Management System.</p>	 <p>Non-Compliant (Non-Material)</p>	<p>We have assigned Sydney Water a Non-compliant (non-material) grade for clause 5.5.2. This agrees with the auditor's finding.</p> <p>Shortcomings identified for this clause were based on existing concerns in respect of the effective management of asset maintenance. Observations made at the St Marys WRRF suggest that previously identified maintenance management deficiencies may not yet have been fully addressed. Furthermore, these observations were made at a site randomly selected for audit and may still be reflective of wider spread shortcomings.</p> <p>Given the progress made to date in implementing the improvements in accordance with the approved Service Excellence Roadmap, and Sydney Water's assessment (using its internal risk management processes) that the risks associated with the observed deficiencies have been effectively managed, the non-compliance is considered non-material.</p>	<p><b>REC SWC-2023-10:</b> By 31 December 2024, Sydney Water must take action to ensure that its maintenance management processes, including the management of associated records, are fully embedded (understood and implemented) across the organisation. This should be demonstrated by (for example): evidence that focussed training of relevant personnel has been undertaken; and/or records of internal audits across a representative sample of facilities and maintenance groups.</p>
7.2.2	<p>Sydney Water must use its best endeavours to comply with the memorandum of understanding with Fire and Rescue NSW (FRNSW).</p>	 <p>Non-Compliant (Non-Material)</p>	<p>We have assigned Sydney Water a Compliant (minor shortcomings) grade for clause 7.2.2. This agrees with the auditor's findings.</p> <p>There was a minor shortcoming identified:</p> <ul style="list-style-type: none"> <li>Sydney Water has not agreed the format and timing for a report detailing its water network performance as required by the MoU with FRNSW.</li> </ul>	<p><b>REC SWC-2023-11:</b> It is recommended that Sydney Water takes action to:</p> <ul style="list-style-type: none"> <li>Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least six supply zones, as indicated in the <i>2023 24 - Water Network Model Rebuild (BAU) &amp; FRNSW Model Pressure/Flows program</i>, by 30 June 2024.</li> <li>Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least another six supply zones by 30 June 2025.</li> </ul>

<p>9.1.2</p>	<p>From the Commencement Date (or another date approved by IPART in writing), Sydney Water must ensure that the Cyber Security Management System is fully implemented and that all relevant activities are carried out in accordance with the Cyber Security Management System.</p>	 <p>Compliant (minor shortcomings)</p>	<p>Progress has been made despite resource constraints, but it is considered appropriate to propose a timeline that can be monitored and updated. FRNSW raised concerns with this issue in recent years.</p> <p>The Auditor did not raise any new recommendations for Sydney Water. The auditor noted that the ongoing actions in progress from the previous Cyber Security Audit in 2020 and 2021 are expected to address the minor shortcomings identified in the Cyber Security Management System:</p>	<ul style="list-style-type: none"> <li>Agree with FRNSW, a timeline for provision of the remaining pressure information to FRNSW by 30 June 2025 (or other date agreed by IPART)</li> </ul> <p><b>Confidential</b></p>
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Sources: Cobbitty Consulting Pty Ltd, 2023 Operational Audit of Sydney Water, December 2023.  
 GHD Digital, Operating Licence Conditions Audit, Critical Infrastructure Security, Sydney Water, August 2023.

### 3. Progress on previous audit findings

The previous audits identified areas where Sydney Water did not achieve compliance with its Licence obligations. We made recommendations to address these issues.<sup>1</sup> Table 3 outlines Sydney Water's progress in implementing the recommended actions.

Of the 16 recommendations to be completed by Sydney Water, 15 were required to be completed within the audit period. Sydney Water:

- addressed 14 out of the 15 outstanding recommendations
- made progress in addressing the outstanding recommendation for this audit period but did not complete the work by the target date.

The overdue recommendation requires Sydney Water to develop a procedure to track and respond to exceptions identified by its reservoir roof inspection program; however, the arrangements have not yet been agreed to by NSW Health. We acknowledge that significant work has been undertaken by Sydney Water and that the recommended actions are close to completion.

The recommendation due to be completed outside the audit period (by 31 December 2023) requires Sydney Water to move the turbidity meter at the Richmond Water Resource Recovery Facility (WRRF); however, this had not yet been undertaken at the time of the audit. Discussions regarding consistent location of turbidity meters across all WRRFs remain ongoing.







The overdue recommendation will be audited in the 2024 audit period.






Table 3 Sydney Water 's progress in 2023 to address our recommendations from the previous audits<sup>6</sup>



Licence clause	Compliance Grade	Recommendation	Progress
3.1.4 Economic approach for water conservation (updates)	 Non-Compliant (Non-Material)	<b>2022-01:</b> By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.	Complete
4.1.3 Water Quality Management System (Drinking water)		<b>2022-02:</b> By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.	Complete
4.1.3 Water Quality Management System (Drinking water)		<b>2022-03:</b> By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.	Ongoing Sydney Water has developed a procedure to track and respond to exceptions identified by the reservoir roof inspection program; however, the arrangements have not yet been agreed to by NSW Health.

<sup>6</sup> Note that this table does not address progress on Recommendations from the Cyber Security Management System audit conducted in 2020.



Licence clause	Compliance Grade	Recommendation	Progress
4.1.3 Water Quality Management System (Drinking water)		<b>2022-04:</b> By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.	Complete
4.2.1 Water Quality Management System (Recycled water)		<b>2021-09:</b> By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water process flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one process flow diagram.	Complete
4.2.1 Water Quality Management System (Recycled water)		<b>2022-12:</b> By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP.	Complete
4.2.1 Water Quality Management System (Recycled water)		<b>2020-13:</b> By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.	Complete
4.2.3 Water Quality Management System (Recycled water)		<b>2022-05:</b> By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.	Complete
4.2.3 Water Quality Management System (Recycled water)		<b>2022-06:</b> By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment	Complete

Licence clause	Compliance Grade	Recommendation	Progress
		of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.	
4.2.3 Water Quality Management System (Recycled water)		<b>2022-07:</b> By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.	Ongoing Sydney Water has agreed to move the turbidity meter at Richmond WRRF; however, this work has not yet been undertaken. Discussions regarding consistent location of turbidity meters across all WRRFs remain ongoing. A new recommendation REC-SWC-2023-12 has been made (see Table 2).
4.2.3 Water Quality Management System (Recycled water)		<b>2022-08:</b> By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.	Complete
5.5.2 Asset management		<b>2021-14:</b> By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.	Complete
5.5.2 Asset management		<b>2022-09:</b> By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.	Complete
5.5.2 Asset management		<b>2022-10:</b> By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk, any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.	Complete

Licence clause	Compliance Grade	Recommendation	Progress
6.5.2 Family violence policy		<b>2022-11:</b> By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of "processes that minimise the reliance on individuals to disclose their family violence" in its Family Violence Policy.	Complete
10.2.4 Reporting		<b>2022-13:</b> By 30 June 2023, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents.	Complete

Sources:

- a) Sydney Water Corporation *Operational Audit 2020 – Report to the Minister – Compliance Report*, March 2021.
- b) Sydney Water Corporation *Operational Audit 2021 – Report to the Minister – Compliance Report*, March 2022.
- c) Sydney Water Corporation *Operational Audit 2022 – Report to the Minister – Compliance Report*, February 2023.


# Appendices





## A. Compliance grades

Table A.1 Current compliance grades

Compliance grade	Description
 Compliant	The auditor has established compliance and identified no shortcomings.
 Compliant (minor shortcomings)	The auditor has established compliance but has identified minor shortcomings that must be addressed. Minor shortcomings are unlikely to have an impact on Sydney Water meeting the objectives of the licence obligation.
 Non-compliant (non-material)	The auditor has established non-compliance and has identified inconsistencies, inadequacies or deficiencies that pose a low or non-material risk to Sydney Water meeting the objectives of the licence obligation.
 Non-compliant (material)	The auditor has established non-compliance and has identified inconsistencies, inadequacies or deficiencies that pose a high or material risk to Sydney Water meeting the objectives of the licence obligation.
 No Requirement	There is no requirement for Sydney Water to comply with the licence obligation during the audit period.

Source: IPART Audit Guideline Public Water Utilities, July 2023, Figure 4.1.

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## B. Sydney Water's Statement of Compliance

Statement of Compliance 2023

For 2022/23

Submitted by Sydney Water Corporation

**To:** The Chief Executive Officer  
Independent Pricing and Regulatory Tribunal of NSW  
PO Box K35  
Haymarket Post Shop NSW 1240

Sydney Water Corporation reports as follows:

1. This statement documents compliance during 2022-23 with all obligations to which Sydney Water Corporation is subject by virtue of its Operating Licence.
2. This report has been prepared by Sydney Water Corporation with all due care and skill, including to ensure that all information provided is true and correct, in full knowledge of conditions to which Sydney Water Corporation is subject under the *Sydney Water Act 1994*.
3. Schedule A provides information on all obligations with which Sydney Water Corporation did not comply during 2022-23.
4. Other than the information provided in Schedule A, Sydney Water Corporation has complied with all conditions to which it is subject.
5. This compliance report has been approved by the Managing Director and the Chairman of the Board of Directors of Sydney Water Corporation.

DATE: 31 August 2023

Signed:



Name: Roch Cheroux

Designation: Managing Director

DATE: 31 August 2023

Signed:



Name: Grant King

Designation: Chairman

**Schedule A - Non Compliances 2022-23**

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<b>Nil return for 2022-23</b>	
<b>i. Date or period of non-compliance</b>	Not applicable
<b>ii. Nature and extent of non-compliance (including whether and how many customers have been affected)</b>	Not applicable
<b>iii. Results of any monitoring (where applicable)</b>	Not applicable
<b>iv. Reasons for non-compliance</b>	Not applicable
<b>v. Remedial action taken</b>	Not applicable
<b>vi. Actual/anticipated date of achieving compliance</b>	Not applicable

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## C. Audit process

We apply our Compliance and Enforcement Policy in developing the annual audit scopes.<sup>ii</sup> The policy explains our risk-based regulatory model. Under the policy, we can:

- focus on allocating resources to areas of higher risk
- increase our efficiency in undertaking audits
- tailor our enforcement response.

Our risk-based approach centres around evaluating the risk that each part of our regulatory function aims to reduce. We evaluate risks by considering the likelihood of harm occurring in the absence of our regulatory controls and the potential consequence of that harm. We then consider how likely it is that a regulated entity will not properly implement a regulatory control.

We identify and document historical, current and emerging risks. This allows us to allocate resources proportionately to the risk and complexity of a regulated entity and its behaviours.

The audit process involves receiving and reviewing reports, undertaking and attending audit interviews with Sydney Water staff, and undertaking field verification to investigate how effectively the requirements of the licence are met in practice. This year, we undertook these interviews by a combination of in-person and remote interviews, while field verification visits were undertaken in person.

### C.1 2023 audit scope

We do not audit all licence clauses annually. Instead, we adopt a risk-based audit approach, which means we audit 'high risk' clauses more frequently and 'low risk' clauses less frequently. We conduct audits in accordance with our Public Water Utility Audit Guideline.<sup>iii</sup>

The audit scope for Sydney Water's 2023 audit included obligations on:

- Licence context (Part 1) – requirements on area of operations and licence availability.
- Water conservation and planning (Part 3) – requirements on the economic level of water conservation, and water planning.
- Performance standards for water quality (Part 4) – requirements on drinking water and recycled water.
- Performance standards for service interruptions (Part 5) – requirements on system performance standards, and asset management systems.
- Customers and consumers (Part 6) – requirements on internal complaints handling, and external dispute resolution.
- Stakeholder cooperation (Part 7) – having and maintaining memoranda of understanding with relevant agencies.
- Information and services for competitors (Part 8) – requirements on negotiating with potential competitors, and publishing servicing information.
- Performance monitoring and reporting (Part 10) – requirements on operational audits, information provision and reporting.

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We did not audit clauses from Part 2 (Licence Authorisation) of the Licence this year.

The audit scope is in Appendix D.

We also consulted with NSW Health, NSW Environment Protection Authority (EPA), Fire and Rescue NSW (FRNSW), and Department of Planning and Environment (DPE) to determine the scope of the audit. We received submissions from NSW Health, FRNSW, and DPE.

- NSW Health suggested the following be considered:
  - Review procedures to ensure timely and appropriate debrief of incidents
  - Review the installation and operation of emergency pre-treatments at Warragamba and Orchard Hills, and progress on permanent upgrades
  - Review Sydney Water's control of recycled water cross-connections, including engagement with NSW Fair Trading, and actions to reduce cross-connection risk
  - Review the progress on consistency of controls for critical processes
  - Review the progress on prioritisation of maintenance and renewal of assets.
- DPE noted the following:
  - Sydney Water maintains an MoU with WAMC. It also complies with its data sharing obligations but notes that this may need to be expanded to include daily flow and discharge data reporting to DPE and Water NSW in order to implement the Greater Metropolitan Water Sharing Plan and Greater Sydney Water Strategy.
  - DPE considers that Sydney Water has met its obligations in developing its Long Term Capital and Operational Plan (LTCOP), noting it was adequately consulted and that the LTCOP generally aligns with DPE's expectations. Similarly it is satisfied that Sydney Water has collaborated well with DPE regarding development of the Greater Sydney Water Strategy, and related issues.
  - DPE requested that IPART maintains a focus on auditing Sydney Water's water efficiency program, noting that improvements could be made to make reporting more transparent.
- FRNSW noted that:
  - Sydney Water has only provided pressure and flow performance data for 25% of hydrants within their network in the last 12 months. FRNSW has been requesting network performance data from Sydney Water since 2015. This ad-hoc approach has hampered any attempt to develop strategic solutions for the provision of water for firefighting. Furthermore, the extent of the problem is difficult to determine.
  - Similarly Sydney Water has not committed sufficient resources to projects to upgrade infrastructure and FRNSW has advised it is unaware of any works by Sydney Water to upgrade their network to improve flows for firefighting water.

## C.2 2023 audit plan

We engaged Cobbitty Consulting Pty Ltd in partnership with Viridis Consultants to undertake the 2023 Sydney Water audit.

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We held a project start-up meeting with the auditor on 27 July 2023 to agree on the project milestones, audit timing, and outline our expectations. We participated in the audit inception meeting with Sydney Water and the auditor on the first day of the audit interviews, on 12 September 2023. At this meeting, we agreed on expectations and protocols for the conduct of the audit. All parties adhered to the agreed protocols throughout the audit.

We required the auditor to undertake the following tasks:

1. Review stakeholder submissions
2. Prepare an information request (questionnaire) setting out all the requirements for information and evidence, at least 4 weeks prior to the commencement of audit interviews (for this audit, the auditor issued the questionnaire before the audit interviews commenced)
3. Review reports and documents provided by Sydney Water in response to the questionnaire
4. Conduct interviews with Sydney Water staff as appropriate<sup>v</sup>
5. Conduct field verification to assess the implementation of Sydney Water's systems and procedures
6. Assess the level of compliance (in line with our compliance grades) Sydney Water achieved for each of the identified Licence obligations, and provide supporting evidence for this assessment
7. Assess and report on progress by Sydney Water in addressing any comments made by the relevant Minister and/or our recommendations from previous audits, providing supporting evidence for these assessments
8. Verify the calculation of performance indicators associated with requirements of the relevant licence and assess trends in performance arising from these indicators
9. Provide a summary of audit findings and a draft audit report to us and address comments from Sydney Water and us regarding draft audit findings
10. Prepare and submit a final report outlining audit findings (Appendix E).

The auditor adopted a methodology consistent with IPART's *Public Water Utility's Audit Guideline* (July 2023). This guideline sets out IPART's requirements for an audit, ensuring that it is conducted in accordance with an established and recognised audit protocol. The auditor can make recommendations or suggest opportunities for improvement under the guideline.

Where appropriate, the auditor also sought guidance from *ISO 19011:2018 Guidelines for Auditing Management Systems* and from *ISO 55001:2014 Asset management - management systems - Requirements*.

Where we support an auditor's recommendation, we make a recommendation based on the auditor's recommendation. Our recommendations are summarised in section Table 2 of this report.

Where the auditor suggests opportunities for improvement, Sydney Water can decide whether to implement these suggestions. This approach aims to balance improved performance with the investment required to achieve it. That is, we want Sydney Water to first consider the pricing implications and value for money of continued improvement. Therefore, while we encourage Sydney Water to consider the auditor's suggestions, we do not follow these up. The auditor's suggested opportunities for improvement are included in the auditor's report in Appendix E.



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The auditor conducted in-person audit interviews from 12 September 2023 to 14 September 2023. On 13 September 2023 the auditor also undertook a site visit to the following locations:

- Prospect Water Filtration Plant
- St Marys Water Recycling Plant
- Rouse Hill Reservoir
- Field maintenance (planned) – 81 Lyle St Girraween.

The auditor assessed Sydney Water's compliance with the relevant requirements of the Licence per the compliance grades outlined in Appendix A.

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## D. 2023 audit scope

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# 2023 operational audit scope Sydney Water Corporation

## 2023 audit scope

This document sets out the 2023 operational audit scope for Sydney Water Corporation (Sydney Water). Auditors should note any directions in the comment's column of Table 2.

## Audit period

The audit period is 1 July 2022 to 30 June 2023. Sydney Water will be audited for the full period against the 2019-2023 operating licence. We expect that interviews for the audit will be held in September 2023. However, this is subject to change depending on auditor availability.

## Outstanding audit recommendations

Table 3 outlines outstanding audit recommendations. The auditor is required to review these recommendations to determine progress. We report on outstanding audit recommendations separately within IPART's operational audit report to the Minister.

## Statement of compliance

The utility is required to provide a Statement of Compliance (SC), signed by the CEO and a Board Member, by 1 September. The SC is an exception-based report that outlines any non-compliance with licence clauses during the previous financial year. It also identifies what remedial action has been, or is being taken, with respect to these non-compliances.

The SC covers all licence clauses regardless of whether they are scheduled to be audited in that year. The SC may cause a late variation to the audit scope to allow non-compliances to be reviewed if necessary.

## Interpretation

In the case of any discrepancies between the Sydney Water Operating Licence 2019-2023 (licence) and the audit scope, the licence will prevail.

## Field verification locations

Table 4 lists the locations that we have visited in previous audits. Together with Sydney Water, we will determine the locations that we will visit in the 2023 audit and advise the auditor before the field verification visits are scheduled to commence.

Table 3.2 Key

Requirement	Meaning
Audit/Internal IPART check	Audit/check clause in 2023 audit
SC	Audit of this clause not required in the 2023 audit unless the utility's Statement of Compliance identifies a non-compliance, or we become aware of other reasons to audit the clause.
NR	No requirement for audit.

Table 3.3 2023 Audit scope for Sydney Water Corporation

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
1	Licence and licence authorisation		
1.1	Objectives of this licence		
1.1.1	<p>The objectives of this Licence are to:</p> <ul style="list-style-type: none"> <li>a) authorise and require Sydney Water, within its Area of Operations, to: <ul style="list-style-type: none"> <li>i. store or supply water</li> <li>ii. provide sewerage services</li> <li>iii. provide Stormwater Drainage Systems; and</li> <li>iv. dispose of Wastewater; and</li> </ul> </li> <li>b) set efficient and effective terms and conditions, including quality and performance standards, that require Sydney Water to provide services in a way that: <ul style="list-style-type: none"> <li>i. supports its principal objectives under the Act to protect public health and the environment;</li> <li>ii. supports its principal objective under the Act to be a successful business, including by having regard to the interest of the community; and</li> <li>iii. does not prevent or hinder competition.</li> </ul> </li> </ul>	NR	Information clause – does not require audit.
1.2	Area of operations		
1.2.1	This Licence applies to the Area of Operations specified in Schedule A.	NR	Information clause – does not require audit.
1.2.2	Sydney Water must publish on its website a map of its Area of Operations by 31 December 2019 (or another date approved by IPART in writing). Sydney Water must update the map within 30 days of any change to its Area of Operations.	Internal IPART check	This clause is not included in the auditor's scope.
1.3	Term of this licence		
1.3.1	<p>The term of this Licence is four years from the Commencement Date.</p> <p>[Note: On and from the Commencement Date, this Licence replaces any previous version of the operating licence granted to Sydney Water under section 12 of the Act.]</p>	NR	Information clause – does not require audit.
1.4	Licence amendment		
1.4.1	Subject to the Act and clause 14.2, the Governor may amend or substitute this Licence by notice in the New South Wales Government Gazette.	NR	Information clause – does not require audit.
1.4.2	<p>Before notice of a proposed amendment to this Licence is tabled in Parliament under section 16 of the Act, the Minister must provide Sydney Water with reasonable notice of the proposed amendment to enable it to comply with the amendment if it takes effect.</p> <p><i>[Note: The Customer Contract may be varied in accordance with section 59 of the Act and clause 14.2 of the Customer Contract. Such a variation is not an amendment to this Licence for the purpose of section 16 of the Act.]</i></p>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor									
1.5	Non-exclusive licence											
1.5.1	This Licence does not prohibit any other person from providing services in the Area of Operations that are the same as, or similar to, the Services, if the person is lawfully entitled to do so.	NR	Information clause – does not require audit.									
1.6	Availability of licence											
1.6.1	Sydney Water must make a copy of this Licence available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.									
1.7	Pricing											
1.7.1	Sydney Water must set the level of fees, charges, and other amounts payable for its Services in accordance with: <ul style="list-style-type: none"> <li>a) the terms of the Licence;</li> <li>b) the Act; and</li> <li>c) any applicable maximum prices or methodologies for fixing maximum prices determined under the IPART Act.</li> </ul>	SC	No audit required this year. Technical non-compliance being addressed through the pricing determination.									
1.8	End of Term Review											
1.8.1	IPART intends to review this Licence in its final year to investigate: <ul style="list-style-type: none"> <li>a) whether this Licence is fulfilling its objectives; and</li> <li>b) any issues that have arisen during the term of this Licence that may impact its effectiveness,</li> </ul> (the End of Term Review).	NR	Information clause – does not require audit.									
1.8.2	To assist IPART with the End of Term Review, Sydney Water must provide IPART with such information as IPART reasonably requires. Sydney Water must provide IPART with such information as IPART requests within a reasonable time.	NR	Information clause – does not require audit.									
1.9	Notices											
1.9.1	Any notice or other communication given under this Licence must be: <ul style="list-style-type: none"> <li>a) in writing addressed to the intended recipient; and</li> <li>b) delivered or sent to one of the addresses specified below (or the last address notified by the recipient), unless otherwise specified in the Reporting Manual.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sydney Water</th> <th>Minister</th> <th>IPART</th> </tr> </thead> <tbody> <tr> <td>Sydney Water The Managing Director</td> <td>The Hon. Melinda Pavey MP GPO Box 5341</td> <td>The Chief Executive Officer Independent</td> </tr> <tr> <td>Sydney Water 1 Smith Street Parramatta NSW 2150</td> <td>Sydney NSW 2001</td> <td>Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000</td> </tr> </tbody> </table>	Sydney Water	Minister	IPART	Sydney Water The Managing Director	The Hon. Melinda Pavey MP GPO Box 5341	The Chief Executive Officer Independent	Sydney Water 1 Smith Street Parramatta NSW 2150	Sydney NSW 2001	Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000	NR	Information clause – does not require audit.
Sydney Water	Minister	IPART										
Sydney Water The Managing Director	The Hon. Melinda Pavey MP GPO Box 5341	The Chief Executive Officer Independent										
Sydney Water 1 Smith Street Parramatta NSW 2150	Sydney NSW 2001	Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000										
1.9.2	Any requests for approval under the following clauses must be made by Sydney Water's Managing Director: 1.2.2, 3.1.7, 3.2.1, 3.2.6, 6.5.1, 6.6.6, 8.2.2, 8.2.3, 8.2.5, 8.2.6, 9.1.1, 8 or 9.3.1.	NR	Information clause – does not require audit.									

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
2.1	Licence authorisations		
2.11	<p>This Licence authorises and requires Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems and services for providing the following Services within the Area of Operations:</p> <ul style="list-style-type: none"> <li>a) storing and supplying water;</li> <li>b) providing sewerage services; and</li> <li>c) disposing of Wastewater.</li> </ul>	NR	Licence authorisation clause – does not require audit.
2.12	<p>This Licence authorises and requires Sydney Water to provide, operate, manage and maintain a Stormwater Drainage System as described in section 14(1)(b) of the Act, except to the extent that the Minister is satisfied under sections 14(4) and 14(5) of the Act that satisfactory arrangements have been made for the applicable Service to be provided by another appropriate body.</p>	NR	Licence authorisation clause– does not require audit.
2.13	<p>This Licence authorises (but does not require) Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable Stormwater Drainage Systems (and Services for providing those Stormwater Drainage Systems) within the Area of Operations in excess of the Stormwater Drainage System it is required to provide, operate, manage and maintain under clause 2.12. This includes increasing the capacity of the Stormwater Drainage System included in the business undertaking transferred under Part 3 of the Act from the Water Board to Sydney Water as at the date of the transfer of the business undertaking.</p> <p><i>[Note: For the avoidance of doubt, the provision, management and maintenance of Stormwater Drainage Systems (and Services for providing those Stormwater Drainage Systems) under clause 2.1 may include stormwater quality management and other measures as necessary to manage impacts of stormwater on waterway health.]</i></p>	NR	Licence authorisation clause – does not require audit.
2.2	Obligation to make services available		
2.21	<p>Sydney Water must ensure that Services for the supply of Drinking Water and disposal of Wastewater are available on request for connection to any Property situated in the Area of Operations for which a connection is available.</p>	SC	
2.22	<p>Sydney Water must provide Services for the supply of Drinking Water and disposal of Wastewater on request to any licensee under the WIC Act, where that licensee is connected to (or where a connection is available in respect of that licensee to) Sydney Water's water supply system or sewerage system.</p>	SC	
2.23	<p>Connection to Sydney Water's systems for the provision of Services for the supply of Drinking Water and disposal of Wastewater is subject to any reasonable conditions that Sydney Water may determine to ensure the safe, reliable and financially viable supply of Drinking Water and disposal of Wastewater to Properties.</p>	NR	Authorisation clause – does not require audit.
3.1	Economic approach for water conservation		
3.11	<p>Sydney Water must maintain a water conservation program consistent with the Current Economic Method.</p>	SC	
3.12	<p>Sydney Water must implement water conservation measures that have been assessed as economic as determined by the Current Economic Method.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
3.1.3	<p>Sydney Water must make:</p> <ul style="list-style-type: none"> <li>a) a copy of the Current Economic Method;</li> <li>b) a plain English summary of the Current Economic Method; and</li> <li>c) the economic level of water conservation (expressed as the value of water in dollars per kilolitre and as the quantity of savings in megalitres per day) determined in accordance with the Current Economic Method, available:</li> <li>d) to any person, free of charge upon request made to the Contact Centre; and</li> <li>e) on Sydney Water's website.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
3.1.4	<p>Sydney Water must update the economic level of water conservation using the Current Economic Method:</p> <ul style="list-style-type: none"> <li>a) for the purposes of clause 3.1.1 and 3.1.2—annually; and</li> <li>b) or the purposes of clause 3.1.3(c)—monthly.</li> </ul>	Audit	Audit. Minor shortcomings found in 2022 audit. Auditor to refer to recommendation REC-2022-01.
3.1.5	<p>The Minister may, at any time during the term of this Licence and in writing, direct Sydney Water to revise the Current Economic Method in any way the Minister requires.</p> <p>[Note: The Minister may request IPART to undertake a review of the Current Economic Method during the term of this Licence. Such review may precede a direction given under clause 3.1.5.]</p>	NR	Information clause – does not require audit.
3.1.6	<p>Sydney Water must submit to the Minister the Current Economic Method revised in accordance with the written direction within:</p> <ul style="list-style-type: none"> <li>a) 30 days of receipt of that direction; or</li> <li>b) any other timeframe agreed by the Minister.</li> </ul>	SC	
3.1.7	<p>If the Minister approves the revised Current Economic Method, he or she will give written notice of the approval to Sydney Water.</p>	NR	Information clause – does not require audit.
3.2	Water Planning		
3.2.1	<p>By 1 December 2020 (or another date approved by the Minister in writing), Sydney Water must develop, and submit to the Minister:</p> <ul style="list-style-type: none"> <li>a) a long-term capital and operational plan; and</li> <li>b) an emergency drought response plan.</li> </ul>	Internal IPART check	Fixed deadline requirement. Part (a) audited in 2021. Part (b) to be checked this year – Ministerial approval to defer completion to 1 June 2023.
3.2.2	<p>The plans referred to in clause 3.2.1 must address any written guidance that the Minister provides to Sydney Water</p>	NR	Information clause – does not require audit.
3.2.3	<p>Sydney Water must use its best endeavours to develop the plans referred to in clause 3.2.1 in cooperation with Water NSW.</p>	NR	Information clause – does not require audit.
3.2.4	<p>Sydney Water must implement any action that:</p> <ul style="list-style-type: none"> <li>a) Sydney Water is responsible for delivering under the Metropolitan Water Plan; or</li> <li>b) the Minister directs, in writing, Sydney Water to implement.</li> </ul>	SC	



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
3.2.5	Sydney Water must participate cooperatively in any review of the Metropolitan Water Plan.	SC	
3.2.6	Sydney Water must develop and enter into a data sharing agreement with DPE by the Commencement Date (or another date approved by the Minister in writing) to assist in the development and review of the Metropolitan Water Plan (the Data Sharing Agreement)	SC	
3.2.7	In addition to any other matters agreed by Sydney Water and DPE, the Data Sharing Agreement must: <ul style="list-style-type: none"> <li>a) set out the roles and responsibilities of Sydney Water and DPE under the Data Sharing Agreement;</li> <li>b) set out the types of data that are covered by the Data Sharing Agreement;</li> <li>c) set out the purposes for the sharing of data and information;</li> <li>d) set out the requirements that shared data and information must meet;</li> <li>e) identify agreed timelines and the format for sharing data and information; and</li> <li>f) identify procedures for resolving matters of conflict in providing data and information.</li> </ul>	SC	
3.2.8	Once Sydney Water has entered into the Data Sharing Agreement it must comply with the Data Sharing Agreement.	SC	
3.2.9	Sydney Water must provide any data or information requested by the Minister in writing: <ul style="list-style-type: none"> <li>a) by the date specified by the Minister; and</li> <li>b) to the Minister or, if the Minister so directs, to DPE.</li> </ul>	NR	Information clause – does not require audit.
3.3	Priority Sewerage Program		
3.3.1	Sydney Water must participate cooperatively in any NSW Government review of the Priority Sewerage Program.	SC	
3.3.2	If required by the Minister, Sydney Water must implement and comply with any outcomes (including timeframes) of any NSW Government review of the Priority Sewerage Program.  <i>[Note: The areas to which the Priority Sewerage Program applies are Austral, Menangle, Menangle Park, Nattai, Scotland Island and Yanderra as listed in Schedule B of this Licence.]</i>	SC	
4.1	Drinking Water		
4.1.1	Sydney Water must maintain a Management System that is consistent with the Australian Drinking Water Guidelines and any requirements relating to Drinking Water specified by NSW Health (the Drinking Water Quality Management System)	Audit	In the 2022 audit, we assigned Sydney Water a Compliant grade for this clause. We audited elements 2-7, 11 and 12. <b>This year we will audit elements 1-6, 8, 9 and 10.</b> The auditor will check the WQMS for adequacy against the ADWG.  We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the ADWG that should be audited.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
4.1.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.1.1 and the Australian Drinking Water Guidelines, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.
4.1.3	<p>Sydney Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Drinking Water Quality Management System and to the satisfaction of NSW Health.</p> <p><i>[Note: Sydney Water is to apply the Drinking Water Quality Management System to the Drinking Water system under its control, having regard to the entire Drinking Water supply system – from the water catchment to the Consumer.]</i></p>	Audit	<p>In the 2021 audit, we assigned Sydney Water a Non-compliant (non-material) grade for this clause. We audited elements 2, 3, 4, 5, 6, 7, 10,11 and 12.</p> <p><b>This year we will audit implementation of Sydney Water's DWQMS consistent with elements 1-6, 8, 9 and 10.</b></p> <p>The auditor will check completion of non-compliances found in the WQMS against some of these elements in previous audits.</p> <p>We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the ADWG that should be audited.</p> <p><b>Auditor</b> to refer to Recommendations 2022-02 to 2022-04.</p>
4.2	Recycled Water		
4.2.1	Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling and any requirements relating to water recycling specified by NSW Health (the Recycled Water Quality Management System).	Audit	<p>In the 2022 audit, we assigned Sydney Water a Compliant grade for this clause. We audited elements 2 to 9.</p> <p><b>This year we will audit elements 1-6, 10, 11 and 12.</b></p> <p>The auditor will check the WQMS against the AGWR.</p> <p>We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the AGWR that should be audited.</p>
4.2.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.2.1 and the Australian Guidelines for Water Recycling, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
4.2.3	Sydney Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Recycled Water Quality Management System and to the satisfaction of NSW Health.	Audit	<p>In the 2021 audit, we assigned Sydney Water a Non-compliant (non-material) grade for this clause. We audited elements 2 to 9.</p> <p><b>This year we will audit implementation of Sydney Water's RWQMS consistent with elements 1-6, 10, 11 and 12.</b></p> <p>The auditor will check completion of shortcomings found in the WQMS against some of these elements in previous audits.</p> <p>We sought comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the AGWR that should be audited. Refer to the submission from NSW Health for further information.</p> <p><b>Auditor</b> should refer to Recommendations 2022-05 to 2022-08</p>
4.3	Fluoridation Code		
4.3.1	Sydney Water must comply with the Fluoridation Code and any requirements for fluoridation specified by NSW Health.	SC	
4.3.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.3.1 and the Fluoridation Code, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.
5.1	Water Continuity Standard		
5.1.1	Sydney Water must ensure that, in each financial year, at least 9,800 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) receive a Drinking Water supply service unaffected by an Unplanned Water Interruption (the Water Continuity Standard).	SC	
5.1.2	<p>Sydney Water must use:</p> <ul style="list-style-type: none"> <li>a) the Water Continuity Optimal Level; and</li> <li>b) the Water Continuity Tolerance Band,</li> </ul> <p>as inputs to decisions regarding the design, construction, operation and maintenance of its water supply system.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.1.3	<p>For the purposes of clause 5.1.2:</p> <p>a) the Water Continuity Optimal Level is 9,840 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) in each financial year receiving a Drinking Water supply service unaffected by an Unplanned Water Interruption; and</p> <p>b) the Water Continuity Tolerance Band is the band of deviations from the Water Continuity Optimal Level between:</p> <p>i. the mandatory Water Continuity Standard (specified in clause 5.1.1 above); and</p> <p>ii. an upper bound of 9,880 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) in each financial year receiving a Drinking Water supply service unaffected by an Unplanned Water Interruption.</p> <p>[Note: Clause 5.1.2 requires Sydney Water to use the Water Continuity Optimum Level and Water Continuity Tolerance Band as inputs into certain decisions. If Sydney Water complies with clause 5.1.2, it will be compliant with this clause 5.1 even if the number of Properties unaffected by an Unplanned Water Interruption exceeds the upper bound of the Water Continuity Tolerance Band. However, IPART may consider the prudence and efficiency of any expenditure related to this level of performance at the next review of Sydney Water's prices.]</p>	NR	Information clause – does not require audit.
5.1.4	Sydney Water must use the best available data (taking account of water pressure data, where available) to determine whether a Property has experienced an Unplanned Water Interruption.	SC	
5.1.5	If a Property experiences an Unplanned Water Interruption that was caused by a Third Party or a power failure, the Property is taken not to have experienced an Unplanned Water Interruption for the purposes of this clause 5.	NR	Information clause – does not require audit.
5.1.6	<p>For the purpose of the Water Continuity Standard, Water Continuity Optimal Level and Water Continuity Tolerance Band:</p> <p>a) each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property; and</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as five separate Properties. However, a block of five flats that only receives one Bill from Sydney Water is to be counted as a single Property.]</p> <p>b) each separate instance, in a financial year, of a single Property experiencing an Unplanned Water Interruption is to be counted as a separate Property that has experienced an Unplanned Water Interruption.</p>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.2	Water Pressure Standard		
5.2.1	Sydney Water must ensure that, in each financial year, at least 9,999 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) receive a Drinking Water supply service affected by fewer than 12 Water Pressure Failures (the Water Pressure Standard).	SC	
5.2.2	A Property is taken to have experienced a Water Pressure Failure when: <ul style="list-style-type: none"> <li>a) a person notifies Sydney Water that the Property has experienced a Water Pressure Failure and Sydney Water confirms that the Property has experienced a Water Pressure Failure; or</li> <li>b) Sydney Water identifies that the Property has experienced a Water Pressure Failure (including through its data collection systems and hydraulic analysis).</li> </ul>	NR	Information clause – does not require audit.
5.2.3	A Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of: <ul style="list-style-type: none"> <li>a) water usage in the case of a fire or other abnormal demand; or</li> <li>b) a short term or temporary operational problem (such as a main break), including where caused by a Third Party, that is remedied within four days of its commencement.</li> </ul>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.2.4	<p>For the purpose of the Water Pressure Standard:</p> <ul style="list-style-type: none"> <li>a) where a Property experiences multiple Water Pressure Failures in a day, only one of those Water Pressure Failures is to count as a Water Pressure Failure experienced by that Property;</li> <li>b) where a Property experiences a Water Pressure Failure that affects more than one day, each day affected is to be counted as a separate Water Pressure Failure;</li> <li>c) each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property;</li> </ul> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as five separate Properties. However a block of five flats that only receives one Bill from Sydney Water is to be counted as a single Property.]</p> <ul style="list-style-type: none"> <li>a) each Property that is affected by 12 or more Water Pressure Failures in a financial year is to be counted once only as a Property that has been affected by 12 or more Water Pressure Failures in that financial year; and</li> <li>b) after 30 June 2020, where a Property in, or in the vicinity of, a Property Cluster, is connected for the first time to Sydney Water's Drinking Water supply system and Sydney Water has informed the owner (at the time of connection) of: <ul style="list-style-type: none"> <li>i. the risk of recurring Water Pressure Failures should the Property be connected to that system; and</li> <li>ii. options to reduce that risk;</li> </ul> </li> </ul> <p>that Property is not to be counted for the purposes of the Water Pressure Standard.</p>	NR	Information clause – does not require audit.
5.2.5	<p>For each Property Cluster, Sydney Water must:</p> <ul style="list-style-type: none"> <li>a) by 30 June 2020, review its business processes to ensure that no Property at risk of being affected by recurring Water Pressure Failures from the same cause is connected to Sydney Water's Drinking Water supply system, unless the owner (at the time of connection) is: <ul style="list-style-type: none"> <li>i. informed of that risk; and</li> <li>ii. provided with options to reduce that risk; and</li> </ul> </li> <li>b) by 31 October 2022, take steps to minimise or eliminate the risk of recurring Water Pressure Failures from that cause, in a manner that takes into account its Customers' willingness to pay for Drinking Water supply services.</li> </ul>	Audit	Auditor to check completion of part (b).

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.3	Dry Weather Wastewater Overflow Standard		
5.3.1	<p>Sydney Water must ensure that, in each financial year, at least:</p> <p>a) 9,928 Properties per 10,000 Properties (in respect of which Sydney Water provides a sewerage service but excluding Public Properties) receive a sewerage service unaffected by an Uncontrolled Wastewater Overflow; and</p> <p>b) 9,999 Properties per 10,000 Properties (in respect of which Sydney Water provides a sewerage service but excluding Public Properties) receive a sewerage service affected by fewer than three Uncontrolled Wastewater Overflows,</p> <p>(the Dry Weather Wastewater Overflow Standard).</p>	SC	
5.3.2	<p>A Property is taken to have experienced an Uncontrolled Wastewater Overflow when:</p> <p>a) a person notifies Sydney Water that a Property has experienced a sewage overflow, where Sydney Water later confirms that the sewage overflow is an Uncontrolled Wastewater Overflow; or</p> <p>b) Sydney Water's systems identify that a Property has experienced an Uncontrolled Wastewater Overflow.</p>	NR	Information clause – does not require audit.
5.3.3	<p>For the purpose of the Dry Weather Wastewater Overflow Standard:</p> <p>a) each Multiple Occupancy Property is to be counted as a single Property;</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as a single Property.]</p> <p>b) for the purpose of clause 5.3.1(a), each separate instance, in a financial year, of a single Property experiencing an Uncontrolled Wastewater Overflow is to be counted as a separate Property that has experienced, in that financial year, an Uncontrolled Wastewater Overflow; and</p> <p>c) for the purpose of clause 5.3.1(b), each Property that experiences three or more Uncontrolled Wastewater Overflows in a financial year is to be counted once only as a Property that has experienced three or more Uncontrolled Wastewater Overflows in that financial year.</p>	NR	Information clause – does not require audit.
5.4	Interpretation of standards		
5.4.1	In the case of any ambiguity in the interpretation or application of the Water Continuity Standard, the Water Pressure Standard, the Dry Weather Wastewater Overflow Standard or clause 5.2.5, IPART's interpretation or assessment of the standard or clause will prevail.	NR	Information clause – does not require audit.
5.5	Asset Management		
5.5.1	Sydney Water must maintain a Management System in relation to Sydney Water's Assets that is consistent with the Australian Standard AS ISO 55001:2014 Asset management – Management systems – Requirements (the Asset Management System).	Audit	The auditor will check the AMS for adequacy against ISO 55001, and against the Service Excellence Roadmap provided by Sydney Water.



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.5.2	Sydney Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the Asset Management System.	Audit	In the 2022 audit, we assigned Sydney Water a Non-Compliant (Material) grade for this clause.  Auditor to check for progress against Recommendations 2022-09 to 2022-10.
6.1	Customer contract		
6.1.1	The Customer Contract sets out the rights and obligations of Customers and Sydney Water in relation to the Services provided in accordance with this Licence. The Customer Contract is set out in Schedule C of this Licence.	NR	Information clause – does not require audit.
6.1.2	Sydney Water must make a copy of the Customer Contract available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
6.2	Providing information to Customers		
6.2.1	Sydney Water must prepare one or more communications that: <ul style="list-style-type: none"> <li>a) provide a brief explanation of the Customer Contract;</li> <li>b) summarise the key rights and obligations of Customers under the Customer Contract;</li> <li>c) refer to the types of account relief available for Customers experiencing financial hardship;</li> <li>d) outline the rights of Customers to claim a rebate and the conditions that apply to those rights;</li> <li>e) contain information regarding how to contact Sydney Water by telephone, email or post; and</li> <li>f) contain information regarding the ability of a Customer to enter into agreements with Sydney Water separate to the Customer Contract for the provision of Services by Sydney Water to the Customer.</li> </ul>	SC	
6.2.2	Sydney Water must update the communication or communications to reflect any variations made to the Customer Contract.	SC	
6.2.3	Sydney Water must: <ul style="list-style-type: none"> <li>a) provide the communication or communications and any updates, free of charge to: <ul style="list-style-type: none"> <li>i. Customers at least annually with their Bills; and</li> <li>ii. any person upon request made to the Contact Centre; and</li> </ul> </li> <li>b) make the communication or communications and any updates publicly available on its website, free of charge, within 60 days of the commencement of the Customer Contract or any communication update.</li> </ul>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.2.4	<p>Sydney Water must publish on its website and advertise at least annually in a manner that Sydney Water is satisfied is likely to come to the attention of members of the public, information as to:</p> <ul style="list-style-type: none"> <li>a) the types of account relief available for Customers experiencing payment difficulty; and</li> <li>b) rights of Customers to claim rebates and the conditions that apply to those rights</li> </ul>	SC	
6.3	Consumers		
6.3.1	<p>Sydney Water's obligations under the following clauses of the Customer Contract are extended to Consumers as though the Consumers were parties to the Customer Contract:</p> <ul style="list-style-type: none"> <li>a) clause 5.1 (Payment difficulties and assistance options for all customers);</li> <li>b) clause 6.5 (Occupiers (tenants) may pay charges to avoid restriction or disconnection);</li> <li>c) clause 12 (If I am unhappy with the service provided by Sydney Water what can I do?);</li> <li>d) clause 13 (Consultation, information and privacy); and</li> <li>e) clause 14 (When does this contract with Sydney Water terminate?).</li> </ul>	SC	
6.4	Assistance Options for Payment Difficulties and Actions for Non-Payment		
6.4.1	<p>Sydney Water must maintain and fully implement:</p> <ul style="list-style-type: none"> <li>a) a payment difficulty policy that assists residential Customers experiencing payment difficulty to better manage their current and future Bills;</li> <li>b) procedures relating to a payment plan for residential Customers who are responsible for paying their Bills and who are, in Sydney Water's reasonable opinion, experiencing payment difficulty;</li> <li>c) procedures for identifying the circumstances under which Sydney Water may disconnect or restrict the supply of water to a Customer's Property; and</li> <li>d) provisions for self-identification, identification by community welfare organisations and identification by Sydney Water of residential Customers experiencing payment difficulty,</li> </ul> <p>(the Assistance Options for Payment Difficulties and Actions for Non-Payment).</p>	SC	
6.4.2	<p>Sydney Water must provide, free of charge, an explanation of the Assistance Options for Payment Difficulties and Actions for Non-Payment on its website and to:</p> <ul style="list-style-type: none"> <li>a) all residential Customers, at least annually with their Bills;</li> <li>b) residential Customers who Sydney Water identifies as experiencing payment difficulty on the date that Sydney Water first identifies that the Customer is experiencing payment difficulty; and</li> </ul> <p>any other person upon request made to the Contact Centre.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.5	Family Violence		
6.5.1	Sydney Water must develop and implement a family violence policy by 1 July 2020 (or another date approved by IPART in writing).	SC	
6.5.2	The family violence policy must, at a minimum, provide for: <ul style="list-style-type: none"> <li>a) the protection of private and confidential information;</li> <li>b) access to payment difficulty programs;</li> <li>c) processes that minimise the reliance on individuals to disclose their family violence; and</li> <li>d) processes for referrals to specialist services.</li> </ul>	SC	In the 2022 audit this clause was assigned a Compliant (minor shortcomings) grade. The auditor to refer to recommendation 2022-11..
6.6	Customer engagement		
6.6.1	Sydney Water must undertake customer engagement to understand its customers' preferences and willingness to pay for service levels. The customer engagement must be relevant, representative, proportionate, objective, clearly communicated and accurate.	SC	
6.6.2	Sydney Water must establish and regularly consult with its Customer Council.	SC	
6.6.3	Sydney Water must provide the Customer Council with information in Sydney Water's possession or under its custody or control necessary to enable the Customer Council to discharge the tasks assigned to it, other than information or documents that are confidential or privileged.	SC	
6.6.4	Sydney Water must keep minutes of proceedings of the Customer Council and make a copy of the minutes available to any person, free of charge, upon request made to the Contact Centre.	SC	
6.6.5	Sydney Water must undertake a review of the operation of the Customer Council. The review must include an assessment of the Customer Council's role, objectives, outcomes and membership, including whether the Customer Council could be used to better support customer engagement, as required by clause 6.6.1.	SC	
6.6.6	Sydney Water must report to IPART on the completed review and its outcomes by 30 June 2020 (or another date approved by IPART in writing).	NR	Fixed deadline requirement (only required to be audited in year of deadline).
6.7	Internal complaints handling		
6.7.1	Sydney Water must maintain a procedure for receiving, responding to and resolving Complaints. The procedure must be consistent with Australian Standard AS/NZS 10002:2014 – Guidelines for complaint management in organizations (the Internal Complaints Handling Procedure).	SC	
6.7.2	Sydney Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the Internal Complaints Handling Procedure	SC	
6.7.3	Sydney Water must provide to Customers, at least annually with their Bills, information concerning internal Complaints handling. The information must explain how to make a Complaint and how Sydney Water will receive, respond to and resolve Complaints.	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.7.4	Sydney Water must make the information concerning internal Complaints handling referred to in clause 6.7.3 available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
6.8	External dispute resolution scheme		
6.8.1	Sydney Water must be a member of the Energy & Water Ombudsman NSW to facilitate the resolution of disputes between Sydney Water and its Customers and Consumers.	Internal IPART check	This clause is not included in the auditor's scope.
6.8.2	Sydney Water must: <ul style="list-style-type: none"> <li>a) prepare a communication that: <ul style="list-style-type: none"> <li>i. lists the dispute resolution services provided by the Energy &amp; Water Ombudsman NSW, including any right to have a Complaint or dispute referred to the Energy &amp; Water Ombudsman NSW; and</li> <li>ii. explains how a Consumer can contact the Energy &amp; Water Ombudsman NSW;</li> </ul> </li> <li>b) provide a copy of that communication, free of charge to Customers at least once a year with their Bills; and</li> <li>c) make a copy of that communication available to any person, free of charge: <ul style="list-style-type: none"> <li>i. on its website; and</li> <li>ii. upon request made to the Contact Centre.</li> </ul> </li> </ul>	SC	
7.1	Memoranda of Understanding with WAMC, NSW Health and EPA		
7.1.1	Sydney Water must maintain the memoranda of understanding entered into under section 35 of the Act with: <ul style="list-style-type: none"> <li>a) the Water Administration Ministerial Corporation (WAMC);</li> <li>b) the Secretary of the Ministry of Health (NSW Health); and</li> <li>c) the Environment Protection Authority (EPA).</li> </ul>	Audit	IPART will contact WAMC, NSW Health and the EPA to comment on Sydney Water's performance against this clause. Auditor to check currency of agreements.
7.1.2	The purpose of the memoranda of understanding referred to in clause 7.1.1 is to form the basis for cooperative relationships between the parties. In particular: <ul style="list-style-type: none"> <li>a) the purpose of the memorandum of understanding with WAMC is to recognise the role of WAMC in regulating water access, use and management and Sydney Water's right to use water vested in WAMC;</li> <li>b) the purpose of the memorandum of understanding with NSW Health is to recognise the role of NSW Health in providing advice to the NSW Government in relation to Drinking Water quality standards and the supply of water which is safe to drink; and</li> <li>c) the purpose of the memorandum of understanding with EPA is to recognise the role of EPA as the environment regulator of New South Wales and to commit Sydney Water to environmental obligations.</li> </ul>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
7.2	Memorandum of Understanding with FRNSW		
7.2.1	Sydney Water must use its best endeavours to maintain a memorandum of understanding with Fire and Rescue NSW (FRNSW).	Audit	
7.2.2	Sydney Water must use its best endeavours to comply with the memorandum of understanding with FRNSW.	Audit	FRNSW notes that Sydney Water has not provided sufficient resource commitment to provide a comprehensive data set detailing the performance of the entire Sydney Water network (as per cl 7.2.4 (b)(ii).
7.2.3	The purpose of the memorandum of understanding with FRNSW is to form the basis for cooperative relationships between the parties. In particular, the purpose is to: <ul style="list-style-type: none"> <li>a) develop the roles and responsibilities of the parties as they relate to each other;</li> <li>b) identify the needs and constraints of the parties as they relate to each other; and</li> <li>c) identify and develop strategies for efficient and effective provision of firefighting water consistent with the goals of each party.</li> </ul>	NR	Information clause – does not require audit.
7.2.4	The memorandum of understanding with FRNSW must require the maintenance of a working group and must provide that: <ul style="list-style-type: none"> <li>a) the working group must include representatives from Sydney Water and FRNSW and may include representatives from other organisations such as the NSW Rural Fire Service; and</li> <li>b) the working group is to consider the following matters (at a minimum): <ul style="list-style-type: none"> <li>i. information sharing arrangements between Sydney Water and FRNSW;</li> <li>ii. agreed timelines and a format for Sydney Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network);</li> <li>iii. arrangements for Sydney Water to consult with FRNSW in the design of new assets and planning of system maintenance, where planning indicates that minimum available flow and pressure may unduly impact firefighting in the network section under consideration; and</li> <li>iv. other matters as agreed by both Sydney Water and FRNSW</li> </ul> </li> </ul>	Audit	
8.1	Negotiations with WIC Act licensees and Potential Competitors		
8.1.1	Sydney Water must negotiate the provision of Services to WIC Act licensees and Potential Competitors in Good Faith.	Audit	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
8.2	Publications of servicing information		
8.2.1	<p>Sydney Water must, by the dates specified in this clause 8.2, publish electronically (in a form accessible from its website) at least ten years of servicing information for each major water system and wastewater system. The servicing information for each major water system and wastewater system must, at a minimum, include information on:</p> <ul style="list-style-type: none"> <li>a) current and projected demand;</li> <li>b) current and projected capacity constraints;</li> <li>c) indicative costs of alleviating or deferring capacity constraints;</li> <li>d) locations where further investigation is needed; and</li> <li>e) key sources of information used to develop the servicing information where those sources are publicly available,</li> </ul> <p>(the Servicing Information).</p>	NR	Information clause – does not require audit.
8.2.2	Sydney Water must, by 30 September 2020 (or another date approved by IPART in writing), publish electronically the Servicing Information for each major water system and wastewater system that it has available by that date that is in a form suitable for publication.	NR	Fixed deadline requirement. Completed.
8.2.3	Sydney Water must continue to publish Servicing Information for each major water system and wastewater system as it becomes available. Sydney Water must publish all Servicing Information by 30 June 2021 (or another date approved by IPART in writing).	Internal IPART check	This clause is not included in the auditor's scope.
8.2.4	Sydney Water must publish updated Servicing Information for each major water system and wastewater system as soon as practicable after any such updated Servicing Information becomes available in a form suitable for publication.	SC	
8.2.5	<p>Sydney Water must review and update the Servicing Information for each major water system and wastewater system at least once between:</p> <ul style="list-style-type: none"> <li>a) The date that is 12 months after the initial publication of the Servicing Information for that major water system or wastewater system under clause 8.2.2; and</li> <li>b) 30 June 2023 (or another date approved by IPART in writing).</li> </ul>	Audit	Fixed deadline requirement. Due to be reviewed and updated by 30 June 2023.
8.2.6	Sydney Water is not required to comply with clauses 8.2.1 to 8.2.5 in relation to a particular major water system or wastewater system to the extent approved by IPART in writing. Sydney Water may apply to IPART for approval under this clause only where there are critical infrastructure security concerns in relation to a particular major water system or wastewater system.	NR	Information clause – does not require audit.
8.3	Code of Conduct		
8.3.1	Sydney Water must use its best endeavours to cooperate with each WIC Act licensee to establish a code of conduct required by a WIC Act licence where Sydney Water has received a written request from the WIC Act licensee to establish such a code.	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
8.3.2	Where the Minister administering the WIC Act has established a code of conduct under clause 25 of the WIC Regulation, Sydney Water will be taken to have satisfied its obligation under clause 8.3.1 by applying the code of conduct to the relevant licensee under the WIC Act.	NR	
9.1	<b>Cyber Security Management System</b>		
9.1.1	From the Commencement Date (or another date approved by IPART in writing), Sydney Water must maintain a Management System for cyber security of Sydney Water's Assets (the Cyber Security Management System) that covers: <ul style="list-style-type: none"> <li>a) information technology environments, hardware and systems; and</li> <li>b) operational technology environments, hardware and systems</li> </ul>	NR	Audited separately by Cyber Security specialist auditor.
9.1.2	From the Commencement Date (or another date approved by IPART in writing), Sydney Water must ensure that the Cyber Security Management System is fully implemented and that all relevant activities are carried out in accordance with the Cyber Security Management System.	NR	Audited separately by Cyber Security specialist auditor.
9.2	<b>Critical infrastructure Compliance manager</b>		
9.2.1	Sydney Water must nominate, by notice in writing to IPART and the Commonwealth Representative, an executive level employee as Critical Infrastructure Compliance Manager.  [Note: The reference to an executive level employee is a reference to a Level 3 employee or above under Sydney Water's structure at the Commencement Date.]	NR	Audited separately by Cyber Security specialist auditor.
9.2.2	Sydney Water's Critical Infrastructure Compliance Manager must be responsible for compliance with clause 9 of the Licence and Sydney Water's obligations under the <i>Security of Critical Infrastructure Act 2018</i> (Cth), and must act as the contact person for the Commonwealth Representative.	NR	Audited separately by Cyber Security specialist auditor.
9.3	<b>National Security Clearances</b>		
9.3.1	From 1 January 2020 (or another date approved by IPART in writing), Sydney Water must ensure that National Security Clearances are held by its Critical Infrastructure Compliance Manager, two board members and the executive level employees responsible for each of the following matters: <ul style="list-style-type: none"> <li>a) operational technology security (including cyber security strategy, managing remote access to Assets and delivery of SCADA capability);</li> <li>b) network operations security (including operation, maintenance and physical security of Assets); and c) Personnel security operations (including security of Personnel and security risks posed by Personnel).</li> </ul> [Note: The responsibilities at (a) to (c) above may be held by a single employee or shared between multiple employees. To ensure compliance with this clause when employees resign or are on leave, Sydney Water should ensure that National Security Clearances are held by alternates with relevant experience.]	NR	Audited separately by Cyber Security specialist auditor.



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
10.1	Operational Audits		
10.1.1	<p>Sydney Water must cooperate with an audit undertaken by IPART or an Auditor of Sydney Water's compliance with any of the following:</p> <ul style="list-style-type: none"> <li>a) this Licence (including the Customer Contract);</li> <li>b) the Reporting Manual; and</li> </ul> <p>any matters specified by the Minister, (the Operational Audit).</p>	Internal IPART check	This clause is not included in the auditor's scope.
10.1.2	<p>For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must, within a reasonable period of receiving a request from IPART or an Auditor, provide IPART or the Auditor with all the information in Sydney Water's possession, custody or control that is necessary to conduct the Operational Audit, including any information that is reasonably requested by IPART or an Auditor.</p>	Internal IPART check	This clause is not included in the auditor's scope.
10.1.3	<p>For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must permit IPART or the Auditor to:</p> <ul style="list-style-type: none"> <li>a) access any works, premises or offices occupied by Sydney Water;</li> <li>b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;</li> <li>c) take on to any such premises or offices any person or equipment necessary for the purpose of performing the Operational Audit or verifying any report on the Operational Audit;</li> <li>d) inspect and make copies of, and take extracts from, any books and records of Sydney Water that are maintained in relation to the performance of Sydney Water's obligations under this Licence (including the Reporting Manual); and</li> <li>e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Sydney Water, including Sydney Water's officers and employees.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
10.2	Reporting		
10.2.1	<p>IPART has the function of determining Sydney Water's reporting and auditing obligations and publishing these obligations in a reporting manual (the Reporting Manual).</p>	NR	Information clause – does not require audit.
10.2.2	<p>Sydney Water must comply with all of its reporting and auditing obligations set out in the Reporting Manual, including in relation to:</p> <ul style="list-style-type: none"> <li>a) water conservation and planning;</li> <li>b) performance standards for water quality; 10 Performance Monitoring and Reporting 26 Operating Licence 2019-2023</li> <li>c) performance standards for service interruptions;</li> <li>d) Customers and Consumers;</li> <li>e) information and services for competitors;</li> <li>f) critical infrastructure security; and</li> <li>g) performance monitoring and reporting.</li> </ul>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
10.2.3	<p>Sydney Water must:</p> <ul style="list-style-type: none"> <li>a) compile indicators of the direct impact on the environment of Sydney Water's activities (the Environment Performance Indicators). The Environment Performance Indicators must be consistent with the performance indicators specified in the Reporting Manual with an indicator number starting with 'E';</li> <li>b) monitor and compile data on the Environment Performance Indicators, including data that allows a year to year comparison of the Environment Performance Indicators; and</li> <li>c) report on the Environment Performance Indicators in accordance with the Reporting Manual.</li> </ul>	SC	
10.2.4	Sydney Water must maintain sufficient record systems to enable Sydney Water to report accurately in accordance with this clause 10.2.	Audit	Auditor should check progress against recommendation 2022-13.
10.2.5	In the case of any disagreement between IPART and Sydney Water regarding the interpretation or application of any requirements of the Reporting Manual, IPART's interpretation or assessment of the application of the requirements will prevail.	NR	Information clause – does not require audit.
10.3	Provision of information for performance monitoring		
10.3.1	Sydney Water must provide IPART information relating to the performance of any of Sydney Water's obligations under clause 10.2 (including providing IPART physical and electronic access to the records required to be kept under clause 10.2) within a reasonable time of Sydney Water's receiving a request from IPART for that information.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.2	Sydney Water must provide IPART such information as is reasonably required to enable IPART to conduct any review or investigation of Sydney Water's obligations under this Licence within a reasonable time of Sydney Water receiving a request from IPART for that information.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.3	If Sydney Water engages any person (including a subsidiary) to undertake any activities on its behalf, it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such persons provide information and do the things specified in clause 10.1 as if that person were Sydney Water.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.4	If IPART or an Auditor requests information that is confidential, the information must be provided to IPART or the Auditor, subject to IPART or the Auditor entering into reasonable arrangements to ensure that the information remains confidential.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.5	<p>Sydney Water must provide NSW Health with information relating to water quality in the manner and form specified by NSW Health within a reasonable time of receiving NSW Health's request.</p> <p>[Note: Under section 19 of the Public Health Act 2010 (NSW), the Secretary of NSW Health may require Sydney Water to produce certain information.]</p>	Internal IPART check	This clause is not included in the auditor's scope.

**Source:** IPART, Sydney Water Corporation five year audit program.

Table 3.4 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2020-11:	Recycled water Clause 4.2.1	By 30 September 2021, Sydney Water must update critical control point documentation for the audited WRP to document the basis for the CCT low flow critical control point.	Completed Sydney Water advised that the CCT low flow setpoint is to protect pumps and should not be a critical control point (CCP). It is not related to recycled water quality and Sydney Water has removed it as a CCP. However, it remains in the Recycled Water Product Specification. <b>Replaced by Rec-2022-12</b>	Auditor to check for completion.
2020-13:	Recycled water Clause 4.2.1	By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.	On track <ul style="list-style-type: none"> <li>Criteria for prioritising recycled water schemes based on risk have been developed</li> <li>All recycled water schemes have been ranked based on the prioritisation criteria and an audit schedule has been developed</li> <li>The proposed audit schedule was presented at the Joint Operational Group (JOG) in May 2021 to engage with NSW Health and seek their agreement to the risk-based schedule.</li> <li>Audit of Rouse Hill and Castle Hill completed Sept 2021.</li> <li>Assurance procedure v7(619010) has been updated to include how the criteria are applied for Water and Recycled Water.</li> </ul>	Auditor to check for completion.
2020-23:	Reporting Clause 10.2.4	By 30 June 2021, Sydney Water must improve document control of the records held in its systems by ensuring that information such as the version date, version number, change history and document author are included in all records.	Completed <b>Replaced by Rec-2022-13</b>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2021-09	Recycled water Clause 4.2.1	By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one flow diagram.	On track An updated version of D0000685 has been loaded to BMIS. Rouse Hill PFD update is complete and will be stored in BMIS. Liverpool PFD will be completed by the end of June 2023. Richmond PDF is currently being verified and will be uploaded to BMIS in June 2023. The remaining PFDs are being updated in line with the scheduled reviews of the RWQMPs.	Auditor to check for progress
2021-14	Asset management Clause 5.5.2	By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.	Complete Sydney Water completed a review of project risk registers associated with the Water program to verify that management of these risks is in accordance with the Risk Management Framework as well as for reporting and escalation per Sydney Water's Risk Matrix response and escalation table. This is being transferred to a BAU activity.	Auditor to check for completion.
2022-01	Water Conservation clause 3.1.4	By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.	On track Sydney Water has commenced drafting the procedure. On track to finalise by 30 June 2023.	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-02	Drinking water clause 4.1.3	By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.	<p>On track</p> <p>Sydney Water has conducted a review of the risk assessment register template and the Hazard and Risk Library document. The Drinking Water Quality Risk and Hazard Library (document D0001199) will be archived and the list of hazards will be transferred to the risk register from the 2022-23 financial year's risk review to better link the risk / hazardous events with hazards. This will provide greater efficiencies and more clarity during the risk reviews.</p> <p>The document D0000799 Operational Risk Assessment Workshop Procedure will be updated to reflect the change with reference to the 'Risk and Hazard Library'.</p> <p>This action was discussed and agreed with NSW Health on 17 March 2023. This change will be in place for all the 2022-23 operational risk reviews, which includes all the water filtration plants and the networks.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-03	Drinking water clause 4.1.3	By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.	<p>On track</p> <p>A deep dive is being undertaken into the processes to manage of reservoir roof inspections and corrective maintenance activities including tracking of delayed work tasks and the reasons why.</p> <p>Due to be completed 30 June, including consultation with NSW Health, and updated performance reporting.</p>	Auditor to check for completion.
2022-04	Drinking water clause 4.1.3	By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.	<p>On track</p> <p>A deep dive is being undertaken into management of reservoir roof condition. The review is in progress and covers the process to program inspections and arrange corrective maintenance through the MAXIMO (maintenance management / work order) system. The description of the priorities (P1-P6) is included in the review and how prioritisation for managing defects found during routine inspections is undertaken.</p>	Auditor to check for completion.
2022-05	Drinking water clause 4.1.3	By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.	<p>Complete</p> <p>The Richmond PFD has been updated to include the changes identified by the auditor. The PFDs for all remaining plants are being reviewed as part of the scheme Recycled Water Quality Management Plan review process.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-06	Drinking water clause 4.1.3	By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.	<p>On track</p> <p>The Richmond Water Resource Recovery Facility (WRRF) risk assessment has been reviewed and updated to include the supernatant and first flush returns. The Recycled Water Risk Assessment Workshop SOP is in the process of being updated to ensure this type of hazard is captured and reviewed across all recycled water schemes. The Recycled Water Hazard Library is part of this review.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-07	Drinking water clause 4.1.3	By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.	<p>On track</p> <p>A discussion paper on providing sufficient assurance to NSW Health on the monitoring of key treatment barriers such as turbidity out of media filters was sent to NSW Health in early April 2023. An online meeting was held on 4 May to further understand NSW Health's suggested improvements to monitoring and claiming microorganism log reductions.</p> <p>Sydney Water is planning a winter log reduction monitoring plan for Penrith Water Resources Recovery Facility to implement agreed changes, including those necessary to provide assurance about the performance of media filters. A discussion of the planned monitoring program will be held with NSW Health in late May 2023.</p>	Auditor to check for completion.
2022-08	Drinking water clause 4.1.3	By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.	<p>On track</p> <p>Water Futures has been engaged to review recycled water quality management processes, including the verification monitoring program. The Recycled Water Treatment Detailed Verification Monitoring program for St Marys Advanced Water Treatment Plant and feeder plants will be developed in May 2023 for discussion with NSW Health and will include improved wet weather monitoring within the specified operating window for delivering recycled water.</p>	Auditor to check for completion.



Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-09	Asset management clause 5.5.2	By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.	<p>On track</p> <p>Corrective maintenance decisions are made in the multi-function ROMP (reliability, operations, maintenance, process) or equivalent forum, including prioritisation of works based on asset performance metrics.</p> <p>Work is also underway to ensure an appropriate budget is allocated for future years.</p> <p>Processes have been implemented to ensure all corrective maintenance (CM) work is managed through the maintenance work order system in Maximo. Process reviews are underway to validate the implementation of these processes in the critical stream. A system review to look across asset classes is also underway. Linked with Rec 2022-03, this review is to be completed by 30 June 2023</p>	Auditor to check for completion.
2022-10	Asset management clause 5.5.2	By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk, any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.	<p>On track</p> <p>A new process for MPM (major periodic maintenance) has been developed and is being implemented for the 2023/24 period. This process enables improved planning and prioritisation of MPM work at the start of the year. A dashboard has been created that tracks performance. The process requires deferrals to be based on the assessed risk and the reasons documented.</p>	Auditor to check for completion.
2022-11	Customers Clause 6.5.2	By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of "processes that minimise the reliance on individuals to disclose their family violence" in its Family Violence Policy.	<p>Complete</p> <p>The revised Family Violence Policy (dated 12/12/22) has been published and is available on our website. Refer to section 2.5 of the policy for details.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-12	Recycled water Clause 4.2.1	By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP	On track  The table of scheme Critical Control Points (CCPs) and critical limits will be removed from the Recycled Water Product Specification to remove version control issues with the individual scheme plans.	Auditor to check for completion.
2022-13	Reporting clause 10.2.4	By 30 June, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents	On track  A Document Management Working Group is reviewing the definition of what constitutes critical/ key controlled documents as well as KPIs that support the business.	Auditor to check for completion.

**a** Sydney Water is required to provide a report on progress by 31 March 2023 or a later date agreed by IPART. Due to the timing of the audit, the Tribunal has agreed to a later date of 31 May 2023 for Sydney Water to report on its progress with the audit recommendations

**Source:** IPART, *Report to the Minister - Sydney Water Corporation Operational audit 2020-21, February 2023*

Table 3.5 Previous field verification locations for Sydney Water Corporation

<b>Audit year</b>	<b>Location</b>	<b>Facility</b>
<b>2023</b>	TBA	Water Recycling Plant
		Water Filtration Plant
		Water Reservoir
		Maintenance Issue
<b>2022</b>	Richmond	Water Recycling Plant
	North Richmond	Water Filtration Plant
	South Windsor	Water Reservoir
	St Mary's	Maintenance Depot
<b>2021</b>	NA	Pipe repair
	Macarthur	Water Filtration Plant
	Liverpool	Water Recycling Plant
<b>2020</b>	Nepean	Water Filtration Plant
	West Camden	Water Recycling Plant
	Prospect	Water and sewer pump stations - maintenance
	Camellia	Sewer pump station - maintenance
<b>2019</b>	Oak Flats	Re-chlorination Plant
	Wollongong	Water Recycling Plant
	Helensburgh	Reservoir
	Woronora	Water Filtration Plant
<b>2018</b>	Cascade	Water Filtration Plant
	Parklea	Drinking and Recycled Water Reservoirs, and rechlorination station
	Rouse Hill	Water Recycling Plant and network
<b>2017</b>	Nepean	Water Filtration Plant
	Prospect	Water Filtration Plant
	Campbelltown	Reservoir
	Liverpool	Water Recycling Plant
	Guildford	Water main renewal - maintenance
<b>2016</b>	Orchard Hill	Water Filtration Plant
	Prestons	Maintenance Depot
	Cronulla	Wastewater Treatment Plant
<b>2015</b>	Parklea	Reservoir
	Box Hill	Pumping Station
	North Richmond	Water Filtration Plant

<b>Audit year</b>	<b>Location</b>	<b>Facility</b>
	Rouse Hill	Water Recycling Plant
<b>2014</b>	West Camden	Water Recycling Plant
	Warragamba	Water Filtration Plant
		South West Growth Area
<b>2013</b>	Macarthur	Water Filtration Plant
	Liverpool	Customer Service Centre
	Liverpool	Water Recycling Plant
	West Hoxton	Priority Sewage Project
<b>2012</b>	Wollongong	Water Recycling Plant
	Woronora	Water Filtration Plant
	Heathcote	Reservoir
<b>2011</b>	N/A	Three treated water reservoirs
	Orchard Hills	Water Filtration Plant
	Drummoyne	Mains flushing

## E. Auditor's report



# 2023 Operational Audit of Sydney Water

## **Final Audit Report**

#20041-10-001 Version 2.0

Independent Pricing and Regulatory Tribunal

December 2023



## Document History

### 2023 Operational Audit of Sydney Water

Final Audit Report

### Independent Pricing and Regulatory Tribunal

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**Cobbitty Consulting Pty Ltd**  
ABN: 45 164 692 488

14 Cobbitty Court, Boronia VIC 3155  
Telephone: +61 (0) 423 326 693  
Email: [jim.sly@cobbittyconsulting.com.au](mailto:jim.sly@cobbittyconsulting.com.au)

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## Glossary

Acronym/Term	Description
ADWG	<i>Australian Drinking Water Guidelines</i>
AMS	Asset Management System
AGWR	<i>Australian Guidelines for Water Recycling</i>
AWTP	Advanced Water Treatment Plant
BMIS	Business Management Information System ( <i>Records management system</i> )
BNR	Biological Nutrient Removal
C2C	Catchment to Customer ( <i>relates to the scope of risk assessments</i> )
CAG	Condition Assessment Grade ( <i>score assigned to assets</i> )
CAR	Compliance Accountability Register
CCP	Critical Control Point
CCT	Chlorine Contact Tank
CoF	Consequence of Failure ( <i>score assigned to assets, processes and subprocesses</i> ).
CRM	Customer Relationship Management system
CWT	Clear Water Tank
DPE	NSW Department of Planning and Environment
DWQEMP	Drinking Water Quality Event Management Plan
DWQMP	Drinking Water Quality Management Plan
DWQMS	Drinking Water Quality Management System
EPA	Environment Protection Authority
EPL	Environment Protection Licence
FFWG	Fire Fighting Working Group
FRNSW	Fire and Rescue NSW
HBT	Health-based Target
IMP	Incident Management Plan
IPART	The Independent Pricing and Regulatory Tribunal (NSW)
JOG	Joint Operational Group
LRV	Log Reduction Value
KPI	Key Performance Indicator
Maximo	Enterprise Computerised Asset/Maintenance Management System used by Sydney Water
MoU	Memorandum of Understanding
MPM	Major Periodic Maintenance
NOCTSO	Notification of Change to System Operation
NPV	Net Present Value ( <i>of a future cost or investment</i> )
NSW Health	Secretary of the Ministry of Health
OFI	Opportunity for Improvement
PAMF	Product and Asset Management Forum

Acronym/Term	Description
PLC	Programmable Logic Controller
PM	Programmed Maintenance ( <i>type of maintenance activity</i> )
PRV	Pressure Reducing Valve
QCP	Quality Control Point
REC	Recommendation
ROM	Reliability Operation and Maintenance ( <i>group within Sydney Water</i> )
ROV	Remotely Operated Vehicle ( <i>used for underwater internal inspection of reservoirs</i> )
SCADA	Supervisory Control and Data Acquisition
SITREP	Situation Report
SLG	Strategic Liaison Group
SOP	Standard Operating Procedure
SWIM	Sydney Water Information Management ( <i>Records management system</i> )
SWIRL	Sydney Water Incident Recording and Learnings
TIBCO	Application used by Sydney Water to manage its renewals program
THM	Trihalomethane
WAMC	Water Administration Ministerial Corporation
WFP	Water Filtration Plant
WQRMP	Water Quality Risk Management Plan
WRP <sup>1</sup>	Water Recycling Plant
WRRF <sup>1</sup>	Water Resource Recovery Facility

<sup>1</sup> The terms ‘Water Resource Recovery Facility’ and ‘Water Recycling Plant’ are both used in respect of facilities for the production of recycled water from wastewater.

## Executive Summary

### Auditor Declaration

This report presents the findings of an Operational Audit of Sydney Water's compliance with the requirements of its Operating Licence during the period 1 July 2022 to 30 June 2023. The audit was undertaken by Cobbitty Consulting, in association with Viridis Consultants, for the Independent Pricing and Regulatory Tribunal (IPART).

The audit team confirms that:

- the auditors have seen sufficient evidence on which to base their conclusions;
- the audit findings accurately reflect the professional opinion of the auditors;
- the lead auditor and team members have conducted the audit, determined audit findings and prepared this report in accordance with the requirements of the *Audit Guideline – Public Water Utilities*<sup>2</sup> and IPART's *Contract Proposal*.<sup>3</sup>
- the audit findings have not been unduly influenced by the utility and/or any of its associates.

### Major Findings

The audit team found that Sydney Water had performed well against the audited obligations over the audit period. Fourteen (14) clauses of the Operating Licence were audited, the findings in respect of which can be summarised as follows:

- It was found that there was no requirement for compliance in respect of one (1) of the audited clauses during the audit period;
- Non-compliant (non-material) has been assigned in respect of three (3) clauses;
- Compliant (minor shortcomings) has been assigned in respect of two (2) clauses; and
- Compliant has been awarded to the remaining eight (8) audited clauses.

The identified non-compliances relate to maintenance and implementation of the Recycled Water Quality Management Plan and implementation of the Asset Management System. The minor shortcomings relate to implementation of the Drinking Water Quality Management System and compliance with the Memorandum of Understanding with Fire and Rescue NSW.

The findings of the audit of performance against the audited Licence obligations are summarised in **Table E.1**.

The assessment of progress in respect of previous audit recommendations is summarised in **Table E.2**. Two (2) of the sixteen recommendations remain ongoing; the remaining fourteen (14) have been effectively addressed.






Twenty-seven (27) opportunities for improvement have been identified for consideration by Sydney Water.

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<sup>2</sup> IPART, *Public Water Utility Audit Guideline (Guideline – Water)*, July 2023..

<sup>3</sup> IPART, *Contract Proposal* (Contract Proposal No: Cobbitty\_2023\_01) in respect of the *Scope of Work: 2023 Public Water Utility Audits* (Document: *Cobbitty – PWU Audit scope – pricing.pdf*) as issued via email correspondence on 7 July 2023.

**Table E.1 Summary of Audit Findings**





Licence Part	Sub-clause /Obligation	Compliance Grade/Comment <sup>4</sup>
<b>3. Water Conservation and Planning</b>		
3.1 Economic approach to water conservation	3.1.4	 Compliant Refer section 2.2.1.1.
<b>4. Performance Standards for Water Quality</b>		
4.1 Drinking Water	4.1.1	 Compliant Refer section 2.3.1.1.
	4.1.3	 Compliant (minor shortcomings) <i>The process for verifying that field contractors undertaking network repairs have undertaken training in hygienic practices and that such practices are being implemented needs to be reviewed and documented.</i> <i>The documented process for closing incidents and conducting incident debriefs has not always been fully implemented; the debrief for the clear water tank cover failure at Prospect Water filtration Plant has not been completed within the required timeframe.</i> Refer section 2.3.1.2. Recommendations <b>REC-SWC-2022-01 &amp; 02</b> (refer Table E.3 for details) are made.
4.2 Recycled Water	4.2.1	 Non-compliant (non-material) <i>Sydney Water's current process is inadequate in ensuring that cross-connections are identified prior to water supply commencing.</i> Refer section 2.3.2.1. Recommendation <b>REC-SWC-2023-03</b> (refer Table E.3 for details) is made.
	4.2.3	 Non-compliant (non-material) <i>There was an excessive delay of more than 3 years in reviewing the St Marys WRRF risk assessment.</i> <i>There is significant vegetation growing the chlorine contacts tank at the St Marys WRRF, which may be impacting performance of the disinfection process.</i> Refer section 2.3.2.2. Recommendations <b>REC-SWC-2023-04 to 09</b> (refer Table E.3 for details) are made.

<sup>4</sup> Comment provided where shortcomings were identified, or non-compliance was assessed.

Licence Part	Sub-clause /Obligation	Compliance Grade/Comment <sup>4</sup>
<b>5. Performance Standards for Service Interruptions</b>		
5.2 Water Pressure Standard	5.2.5(b)	 Compliant Refer section 2.4.1.1.
5.5 Asset Management	5.5.1	 Compliant Refer section 2.4.2.1.
	5.5.2	 Non-compliant (non-material) <i>Previously identified deficiencies in respect of the implementation of maintenance management practices have not yet been fully addressed.</i> Refer section 2.4.2.2. Recommendation <b>REC-SWC-2023-10</b> (refer Table E.3 for details) is made.
<b>7. Stakeholder Cooperation</b>		
7.1 Memoranda of understanding with WAMC, NSW Health and EPA	7.1.1	 Compliant Refer section 2.5.1.1.
7.2 Memorandum of understanding with FRNSW	7.2.1	 Compliant Refer section 2.5.2.1
	7.2.2	 Compliant (minor shortcomings) <i>Sydney Water demonstrated that, in most respects, it has used its best endeavours to comply with the requirements set out in the Memorandum of Understanding (MoU) with FRNSW. It has not, however, agreed "... the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting".</i> Refer section 2.5.2.2. Recommendation <b>REC-SWC-2023-11</b> (refer Table E.3 for details) is made.
	7.2.4	 Compliant Refer section 2.5.2.3.
<b>8. Information and Services for Competitors</b>		
8.1 Negotiations with WIC Act licensees and Potential Competitors	8.1.1	 No requirement Refer section 2.6.1.1.
8.2 Publications of Servicing Information	8.2.5	 Compliant Refer section 2.6.2.1.







**Table E.2 Summary of Assessed Progress in Respect of Previous Audit Recommendations**







Recommendation <sup>5</sup>	Licence Reference <sup>6</sup> and Operational Issue	Status/Comment <sup>7</sup>
2022-01	<p><i>Economic approach to water conservation (clause 3.1.4):</i></p> <p>By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.</p>	<p> Completed                      Refer section 3.2.1.1.</p>
2022-02	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.</p>	<p> Completed                      Refer section 3.2.2.1.</p>
2022-03	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.</p>	<p> Ongoing                      Sydney Water has developed a procedure to track and respond to exceptions identified by the reservoir roof inspection program; however, the arrangements have not yet been agreed to by NSW Health.                      Refer section 3.2.2.2.</p>
2022-04	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.</p>	<p> Completed                      Refer section 3.2.2.3.</p>



<sup>5</sup> Recommendations are listed in order by the applicable *Operating Licence* clause, and then numerically.

<sup>6</sup> Refer to the relevant section of this report and associated appendix for full details of previous recommendations.

<sup>7</sup> Comment provided where recommendation has not been fully addressed (i.e. completed).

Recommendation <sup>5</sup>	Licence Reference <sup>6</sup> and Operational Issue	Status/Comment <sup>7</sup>
2020-13	<p><i>Recycled Water (clause 4.2.1):</i>                      By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.</p>	<p> Completed                      Refer section 3.2.3.1.</p>
2021-09	<p><i>Recycled Water (clause 4.2.1):</i>                      By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one flow diagram.</p>	<p> Completed                      Refer section 3.2.3.2.</p>
2022-05	<p><i>Recycled Water (clause 4.2.3):</i>                      By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.</p>	<p> Completed                      Refer section 3.2.3.3.</p>
2022-06	<p><i>Recycled Water (clause 4.2.3):</i>                      By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.</p>	<p> Completed                      Refer section 3.2.3.4.</p>

Recommendation <sup>5</sup>	Licence Reference <sup>6</sup> and Operational Issue	Status/Comment <sup>7</sup>
2022-07	<p><i>Recycled Water (clause 4.2.3):</i>                      By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.</p>	<p> Ongoing                      Sydney Water has agreed to move the turbidity meter at Richmond WRRF; however, it has not yet been undertaken. Discussions regarding consistent location of turbidity meters across all WRRFs remain ongoing.                      Refer section 3.2.3.5.                      A new recommendation <b>REC-SWC-2023-12</b> (refer Table E.3 for details) is made.</p>
2022-08	<p><i>Recycled Water (clause 4.2.3):</i>                      By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.</p>	<p> Completed                      Refer section 3.2.3.6.</p>
2022-12	<p><i>Recycled Water (clause 4.2.1):</i>                      By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP.</p>	<p> Completed                      Refer section 3.2.3.7.</p>
2021-14	<p><i>Asset management (clause 5.5.2):</i>                      By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.</p>	<p> Completed                      Refer section 3.2.4.1.</p>
2022-09	<p><i>Asset management (clause 5.5.2):</i>                      By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.</p>	<p> Completed                      Refer section 3.2.4.2.</p>
2022-10	<p><i>Asset management (clause 5.5.2):</i>                      By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk; any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.</p>	<p> Completed                      Refer section 3.2.4.3.</p>

Recommendation <sup>5</sup>	Licence Reference <sup>6</sup> and Operational Issue	Status/Comment <sup>7</sup>
2022-11	<i>Family violence policy (clause 6.5.2):</i> By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of “processes that minimise the reliance on individuals to disclose their family violence” in its Family Violence Policy.	 Completed Refer section 3.2.5.1.
2022-13	<i>Reporting (clause 10.2.4):</i> By 30 June, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents.	 Completed Refer section 3.2.6.1.

## Recommendations

Recommendations arising from the audit are presented in **Table E.3**.

**Table E.3 Audit Recommendations**

Licence Part	Clause /Obligation	Recommendation
4. Performance Standards for Water Quality	4.1.3	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-01:</b> By 31 December 2024, Sydney Water is to ensure that there is a process in place to provide contractors performing network repairs with adequate training to undertake works to the specified hygienic requirements and protect water quality (e.g. hygienic storage and repairs, adequate flushing, testing etc). In addition, a process must be in place to verify that these practices are being implemented by contractors (relates to Element 3).</li> <li>▪ <b>REC-SWC-2023-02:</b> By 31 December 2024, review implementation of the process for closing incidents and undertaking incident debriefs (internal and multi-agency) as per Sydney Water’s Incident Management Procedure and Incident Debrief and Investigation Procedure and undertake an awareness session with all relevant staff to enable the procedures to be fully implemented (Element 6).</li> </ul>
	4.2.1	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-03:</b> By 31 December 2024, Sydney Water must amend its existing process for connecting properties to the recycled water network to ensure that avoidable cross-connections are eliminated. Sydney Water should also quantify the public health risk of existing properties and put appropriate controls in place, which may include the auditing of existing connections. This review must be undertaken in collaboration with NSW Health and the Department of Fair Trading (relates to Element 3).</li> </ul>

Licence Part	Clause /Obligation	Recommendation
	4.2.3	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-04:</b> By 30 June 2024, ensure stakeholder meetings are held at the required frequencies, especially those where an MoU has been developed (relates to Element 1).</li> <li>▪ <b>REC-SWC-2023-05:</b> By 30 June 2024, revise the risk assessment process to include a requirement to review the potential risk of overruns in the four yearly major risk assessment reviews. Overruns should be minimised, but where they are unavoidable the reasons for the delay should be documented, as well as the potential risk to Sydney Water in not thoroughly assessing the scheme within the four-year period and an estimated date that the risk assessment will be undertaken (Element 2).</li> <li>▪ <b>REC-SWC-2023-06:</b> By 30 June 2024, ensure that the Recycled Water Risk Assessment Workshop Procedure is followed, and risk assessment briefing papers include the review of data for problems using trends and charts (Element 2).</li> <li>▪ <b>REC-SWC-2023-07:</b> By 31 December 2024, Remove the vegetation from the St Marys WRRF CCT. Review the maintenance planning process and prioritise maintenance for CCPs; ensure that the reason for any delays is recorded and assess the potential impacts on treatment performance (Element 3).</li> <li>▪ <b>REC-SWC-2023-08:</b> By 30 June 2024, ensure that all monitoring instruments, including handheld, are calibrated as required and appropriate records are maintained (Element 4).</li> <li>▪ <b>REC-SWC-2023-09:</b> By 30 June 2024, ensure that the management of incidents, including the completion of thorough investigations, is undertaken in a timely manner. Review incident management documentation with NSW Health to ensure a balance is struck between timelines and practicality, whilst managing risks to public health appropriately. In doing so, ensure that the agreed timelines are met for the notification, reporting and investigation of recycled water incidents (Element 6).</li> </ul>
	4.2.3 (Rec. 2022-07)	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-12:</b> Move the St Marys WRRF filtration CCP turbidity meter to the outlet of the filters.</li> </ul>
5. Performance Standards for Service Interruptions	5.5.2	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-10:</b> By 31 December 2024, Sydney Water must take action to ensure that its maintenance management processes, including the management of associated records, are fully embedded (understood and implemented) across the organisation. This should be demonstrated by (for example): evidence that focussed training of relevant personnel has been undertaken; and/or records of internal audits across a representative sample of facilities and maintenance groups.</li> </ul>

Licence Part	Clause /Obligation	Recommendation
7. Stakeholder Cooperation	7.2.2	<ul style="list-style-type: none"> <li>▪ <b>REC-SWC-2023-11:</b> It is recommended that Sydney Water takes action to:                             <ul style="list-style-type: none"> <li>○ Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least six supply zones, as indicated in the <i>2023 24 - Water Network Model Rebuild (BAU) &amp; FRNSW Model Pressure/Flows program</i>, by 30 June 2024.</li> <li>○ Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least another six supply zones by 30 June 2025.</li> <li>○ Agree with FRNSW, a timeline for provision of the remaining pressure information to FRNSW by 30 June 2025 (or other date agreed by IPART).</li> </ul> </li> </ul>

## Opportunities for Improvement

Opportunities for improvement arising from the audit are presented in **Table E.4**.

**Table E.4 Identified Opportunities for Improvement**

Licence Part	Clause /Obligation	Opportunities for Improvement
4. Performance Standards for Water Quality	4.1.1	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-01:</b> Assign an appropriate review cycle for the <i>Stakeholder Engagement Map</i> in the document management system (relates to Element 1).</li> <li>▪ <b>OFI-SWC-2023-02:</b> Include operator representatives during the Prospect WFP annual risk review workshops to obtain first-hand input on operational practices, challenges and process improvements needed from an operator-level perspective. Strongly consider this for all WFP risk review workshops going forward, both for Sydney Water and BOOT risk workshops, where not the case already (Element 2).</li> <li>▪ <b>OFI-SWC-2023-03:</b> In the Prospect WFP WQRMP, reference the requirement to use Sydney Water's SOP D0000799 as guidance to comply with Elements 2 and 3 of the ADWG Framework to meet Sydney Water's expectations (Element 2).</li> <li>▪ <b>OFI-SWC-2023-04:</b> Consider revising section 2.3 of the DWQMP to align with SOP D0000799 on the assessment of risk uncertainty (Element 2).</li> <li>▪ <b>OFI-SWC-2023-05:</b> Consider maintaining the sampling locations on a map/s of the zones (overlaid on the network pipes/assets) to visually assess the spread of the sampling locations across the zone. This will also ensure/justify representativeness of the sampling sites and will be useful during annual reviews of the monitoring plan and to demonstrate the sampling coverage during audits (Element 5).</li> <li>▪ <b>OFI-SWC-2023-06:</b> For Table 4-5 in the <i>Compliance Monitoring Plan</i>, include the criteria on what constitutes a small, mid-sized and large system (Element 5).</li> </ul>

Licence Part	Clause /Obligation	Opportunities for Improvement
		<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-07:</b> Outline in further detail in the DWQMP (or reference to a separate document) how communications related to a water quality incident that could result in a 'boil water alert' or 'do not drink advice' would be managed, including public and media notifications, predeveloped templates/key messages, timelines to ensure public health impact is minimised from when a decision is made, and reference to key documents that will be used (Element 6).</li> <li>▪ <b>OFI-SWC-2023-08:</b> Strongly consider undertaking periodic water quality event/incident exercises between Sydney Water and BOOT contractors. This will ensure that there is a consistent understanding of the roles and responsibilities in relation to reporting and incident management. NSW Health should be involved as well (Element 6).</li> <li>▪ <b>OFI-SWC-2023-09:</b> Outline in further detail in the DWQMP (or reference to a separate document) how water quality related investigative studies and research monitoring are identified, how these are considered for funding, the funding pot/s, how the research project is tracked, how the outcomes are used to improve the system, and what happens to the identified investigations that do not get funded. Include programs with BOOT plants as well (Element 9).</li> </ul>
	4.1.3	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-10:</b> Ensure that the work procedure on 'Operations of Orchard Hills WFP Stage 1 Sedimentation tank' is a controlled document with an appropriate review frequency assigned (relates to Element 3).</li> <li>▪ <b>OFI-SWC-2023-11:</b> For the Prospect WFP - Review and update IMP-800 <i>Incident Response Options Table</i> to ensure that there is alignment between the procedure, SCADA and the CCPs, accepting that operational alarms may be tighter than the critical limits to prevent a breach (Element 3).</li> <li>▪ <b>OFI-SWC-2023-12:</b> For the Prospect WFP - Review and update IMP-600 <i>Water Quantity &amp; Quality Failure – Incident Notification</i> to ensure that CCPs/QCPs are current (Element 3).</li> <li>▪ <b>OFI-SWC-2023-13:</b> Consider assessing the risk of elevated chlorate concentrations from onsite hypochlorite solution storage, and ensure that appropriate practices are implemented consistently across all locations to maintain the risk as low (Element 4).</li> <li>▪ <b>OFI-SWC-2023-14:</b> For the Prospect WFP - Review and update the Field Equipment List document in relation to the turbidity analysers. All meters are now HACH Ultratub, with calibration intervals of 1/month internally and 1/year service externally (Element 4).</li> <li>▪ <b>OFI-SWC-2023-15:</b> Correct the table/s in the website quarterly reports which mentions that the ADWG health guideline is 5 mg/L for free chlorine. The 5 mg/L value is for total chlorine in the ADWG (Element 10).</li> </ul>



Licence Part	Clause /Obligation	Opportunities for Improvement
	4.2.1	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-16:</b> The DFT MoU is not included in the Sydney Water Operating Licence or listed on the Sydney Water website. Consider adding the DFT MoU to the Sydney Water website (relates to Element 1).</li> <li>▪ <b>OFI-SWC-2023-17:</b> Consider referencing the Recycled Water Risk Assessment Workshop Procedure in Section 2.4 of the RWQMP for the methodology of conducting a risk assessment (Element 2).</li> <li>▪ <b>OFI-SWC-2023-18:</b> Consider providing end users more information on the potential risks to soils and plant from the prolonged use of recycled water and advice on the groundwater and soil monitoring that should be undertaken by the end user (Element 5).</li> <li>▪ <b>OFI-SWC-2023-19:</b> Consider differentiating recycled water and drinking water complaints in the <i>Managing Water Quality Customer Complaints</i> procedure. Based on this, consider reporting recycled water complaints separately to drinking water (Element 5).</li> </ul>
	4.2.1 (Rec. 2020-13)	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-25:</b> Consider including the implementation of the recycled water internal audit program as a standing item in the NSW Health JOG meetings.</li> </ul>
	4.2.3	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-20:</b> Consider reviewing the External Stakeholder Engagement Map annually as this document contains many personal contact details that can quickly be outdated (relates to Element 1).</li> <li>▪ <b>OFI-SWC-2023-21:</b> Consider providing recycled water quality monitoring results for dual reticulation schemes on the Sydney Water website. Currently the EPL reports available only provide information that is representative of water released to the environment (Element 10).</li> </ul>
5. Performance Standards for Service Interruptions	5.5.2 (Rec. 2022-10)	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-26:</b> It is suggested that Sydney Water considers adopting a rolling 5-year approach to its MPM (major periodic maintenance) programming, which would potentially provide better visibility (and management) of the forward program, including deferrals.</li> </ul>
	5.5.2	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-22:</b> It is suggested that Sydney Water considers developing and implementing a regular program of oversight audits of SUEZ's implementation of its Asset Maintenance Management System for the Prospect Water Filtration Plant (subject to the relevant contractual arrangements).</li> </ul>
7. Stakeholder Cooperation	7.1.1	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-23:</b> It is suggested that Sydney Water considers implementing a process to ensure that:                             <ul style="list-style-type: none"> <li>○ where required by a Memorandum of Understanding, the Memorandum of Understanding is reviewed and if necessary</li> </ul> </li> </ul>



Licence Part	Clause /Obligation	Opportunities for Improvement
	7.2.1	<p>revised following the issue of a new Sydney Water Operating Licence, and</p> <ul style="list-style-type: none"> <li>○ the completion of such review is documented/recorded.</li> </ul> <p><i>[Note: this opportunity for improvement has been identified in respect of both sub clauses 7.1.1 &amp; 7.2.1.]</i></p>
8. Information and Services for Competitors	8.2.5	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-24:</b> It is suggested that Sydney Water considers implementing more robust processes for ensuring the quality of Servicing Information published on its website. Such processes should address both the content (in comparison with the specified requirements) and accuracy of the information provided.</li> </ul>
10. Performance Monitoring and Reporting	10.2.4 (Rec. 2022-13)	<ul style="list-style-type: none"> <li>▪ <b>OFI-SWC-2023-27:</b> It is suggested that Sydney Water considers adopting a metric or other mechanism for continually monitoring the currency of its portfolio of controlled documents.</li> </ul>

# 1. Introduction

## 1.1 Objectives

The objective of this audit was to assess, for the period from 1 July 2022 to 30 June 2023, Sydney Water’s performance against the terms and conditions (obligations) of:

- the *Sydney Water Operating Licence 2019-2023* (Operating Licence); and
- any other Ministerially-imposed requirements.

## 1.2 Audit Method

### 1.2.1 Audit Scope

The scope of the 2023 Operational Audit of Sydney Water is specified in detail in IPART’s *Contract Proposal*,<sup>8</sup> it comprised:

- audit of Sydney Water’s compliance with the obligations and requirements set out in its *Operating Licence*,<sup>9</sup> and
- assessment of Sydney Water’s progress in addressing outstanding recommendations arising from previous audits.

As outlined in its *Public Water Utility Audit Guideline*,<sup>10</sup> IPART adopts a risk-based approach in setting the scope of public water utility operational audits. The clauses/obligations against which Sydney Water’s compliance has been assessed are identified in **Table 1.1**. Full details of the audit scope, as defined by IPART, are presented in **Appendix A**.

**Table 1.1 Scope of 2023 Operational Audit of Sydney Water**

Licence Part	Sub-clause/Obligation
3 Water Conservation and Planning:	
3.1 Economic approach to water conservation	3.1.4
4 Performance Standards for Water Quality:	
4.1 Drinking Water	4.1.1; 4.1.3 (Elements 1-6, 8, 9 & 10)
4.2 Recycled Water	4.2.1; 4.2.3 (Elements 1-6, 10, 11 & 12)
5 Performance Standards for Service Interruptions:	
5.2 Water Pressure Standard	5.2.5(b)
5.5 Asset management	5.5.1; 5.5.2
7 Stakeholder Cooperation:	
7.1 Memoranda of understanding with WAMC, NSW Health and EPA	7.1.1
7.2 Memorandum of understanding with FRNSW	7.2.1; 7.2.2; 7.2.4
8 Information and Services for Competitors:	
8.1 Negotiations with WIC Act licensees and Potential Competitors	8.1.1
8.2 Publications of Servicing Information	8.2.5

<sup>8</sup> IPART, *Contract Proposal* (Contract Proposal No: Cobbitty\_2023\_01) in respect of the *Scope of Work: 2023 Public Water Utility Audits* (Document: *Cobbitty – PWU Audit scope – pricing.pdf*) as issued via email correspondence on 7 July 2023.

<sup>9</sup> Refer to **Section 1.3** for details of the regulatory regime under which Sydney Water operates, including its *Operating Licence*.

<sup>10</sup> IPART, *Public Water Utility Audit Guideline (Guideline – Water)*, July 2023.

Sydney Water's progress in addressing recommendations from previous audits was also considered as part of the audit. Those recommendations are identified in **Table 1.2**.

**Table 1.2 Recommendations/Outstanding Items from Previous Audits included in the Audit Scope**

Recommendation <sup>11</sup>	Licence Reference <sup>12</sup> and Operational Issue
2022-01	<i>Economic approach to water conservation (clause 3.1.4):</i> By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.
2022-02	<i>Drinking Water (clause 4.1.3):</i> By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.
2022-03	<i>Drinking Water (clause 4.1.3):</i> By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.
2022-04	<i>Drinking Water (clause 4.1.3):</i> By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.
2020-13	<i>Recycled Water (clause 4.2.1):</i> By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.
2021-09	<i>Recycled Water (clause 4.2.1):</i> By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one flow diagram.
2022-05	<i>Recycled Water (clause 4.2.3):</i> By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.

<sup>11</sup> Recommendations are listed in order by the applicable *Operating Licence* clause, and then numerically.

<sup>12</sup> Refer to the relevant section of this report and associated appendix for full details of previous recommendations.

Recommendation <sup>11</sup>	Licence Reference <sup>12</sup> and Operational Issue
2022-06	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.</p>
2022-07	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.</p>
2022-08	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.</p>
2022-12	<p><i>Recycled Water (clause 4.2.1):</i></p> <p>By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP.</p>
2021-14	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.</p>
2022-09	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.</p>
2022-10	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk; any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.</p>
2022-11	<p><i>Family violence policy (clause 6.5.2):</i></p> <p>By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of “processes that minimise the reliance on individuals to disclose their family violence” in its Family Violence Policy.</p>
2022-13	<p><i>Reporting (clause 10.2.4):</i></p> <p>By 30 June, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents.</p>

## 1.2.2 Audit Standard

The auditing principles/guidance presented in ISO 19011:2018 *Guidelines for auditing management systems* have been applied in conducting this audit. Guidance presented in the following standards was also considered where appropriate:

- ASAE 3100 (2008) *Compliance Engagements*;
- Auditing and Assurance Standard AUS 110 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*; and
- International Standard on Quality Control ISQC 2009.

### 1.2.3 Audit Steps

The audit was undertaken in accordance with the methodology outlined in IPART’s *Public Water Utility Audit Guideline*.<sup>13</sup> The audit steps are identified in **Table 1.3**.

**Table 1.3 Audit Steps**<sup>14</sup>

Step	Description	Responsibility
Step 1	Audit kick-off meeting	IPART (Auditor/Utility participate)
Step 2	A – Preparation of audit questionnaire B – Response to questionnaire/provision of evidence	Auditor Utility
Step 3	Audit interviews and Field verification site visits	Auditor/Utility (IPART observe)
Step 4	A – Provision of Summary of Audit Findings Report B – Preliminary findings meeting C – Provision of Draft Audit Report D – Provision of Final Audit Report	Auditor IPART (Auditor/Utility participate) Auditor Auditor
Step 5	Audit close out meeting	IPART (Auditor/Utility participate)

Audit interviews and field verification site visits were undertaken during the three (3) day period 12 September 2023 to 14 September 2023. Interviews were conducted with Sydney Water representatives at Sydney Water’s Parramatta offices. Field verification site visits were made to:

- Rouse Hill Water Reservoir;
- a field maintenance activity (repair of a leaking water main);
- Prospect Water Filtration Plant; and
- St Marys Water Resource Recovery Facility.

An overview in respect of the field verification visits/briefing sessions is presented in **Appendix B**.

### 1.2.4 Audit Team

The audit team comprised of the following:

- Jim Sly – team lead and Lead Auditor;
- James Howey – Lead Auditor;
- Asoka Wijeratne – Lead Auditor providing audit support
- Tasleem Hasan – Lead Auditor providing audit support.

<sup>13</sup> IPART, *Public Water Utility Audit Guideline (Guideline – Water)*, July 2023.

<sup>14</sup> IPART, *Public Water Utility Audit Guideline (Guideline – Water)*, July 2023, section 2.3 and figure 2.1.

The allocation of responsibility for the various components of the audit (clauses audited by each auditor) was as nominated in **Table 1.4**.

**Table 1.4 Allocation of Audit Responsibilities**






Licence Part	Clause/Obligation	Lead Auditor
3 Water Conservation and Planning:		
3.1 Economic approach to water conservation	3.1.4	Jim Sly
4 Performance Standards for Water Quality:		
4.1 Drinking Water	4.1.1; 4.1.3 (Elements 1-6, 8, 9 & 10)	James Howey
4.2 Recycled Water	4.2.1; 4.2.3(Elements 1-6, 10, 11 & 12)	James Howey
5 Performance Standards for Service Interruptions:		
5.2 Water Pressure Standard	5.2.5(b)	Jim Sly
5.5 Asset management	5.5.1; 5.5.2	Jim Sly
7 Stakeholder Cooperation:		
7.1 Memoranda of understanding with WAMC, NSW Health and EPA	7.1.1	Jim Sly
7.2 Memorandum of understanding with FRNSW	7.2.1; 7.2.2; 7.2.4	Jim Sly
8 Information and Services for Competitors:		
8.1 Negotiations with WIC Act licensees and Potential Competitors	8.1.1	Jim Sly
8.2 Publications of Servicing Information	8.2.5	Jim Sly
Recommendations/Outstanding Items from Previous Audits:		
3.1 Economic approach to water conservation	2022-01	Jim Sly
4.1 Drinking Water	2022-02, 03 & 04	James Howey
4.2 Recycled Water	2020-13; 2021-09; 2022-05, 06, 07, 08 & 12	James Howey
5.5 Asset management	2021-14; 2022-09 & 10	Jim Sly
6.5 Family violence policy	2022-11	Jim Sly
10.2 Reporting	2022-13	Jim Sly

IPART representatives Robert Aposhian, Sachin Singh and Alex Jenkins attended throughout the audit as observers. A list of Sydney Water representatives that attended audit interviews and/or field verification presentations is provided in **Appendix D**; Sydney Water’s Audit Coordination Team members Sandra Spargo, Gus Garbers, Jignesh Chudasama and Bibiana Agudelo attended throughout the audit.

### 1.2.5 Audit Grades

Audit grades have been awarded in accordance with the guidance presented in the *Audit Guideline – Public Water Utilities*. The compliance grades used in this report are as identified in **Table 1.5**.

**Table 1.5 Compliance Grades for Public Utilities<sup>15</sup>**

Grades of compliance	Description
 <b>Compliant</b>	The auditor has established compliance and identified no shortcomings.
 <b>Compliant (minor shortcomings)</b>	The auditor has established compliance but has identified <b>minor shortcomings</b> that must be addressed. Minor shortcomings are unlikely to have an impact on the Public Water Utility meeting the objectives of the licence obligation.
 <b>Non-compliant (non-material)</b>	The auditor has established non-compliance and has identified <b>inconsistencies, inadequacies or deficiencies that pose a low or non-material risk</b> to the Public Water Utility meeting the objectives of the licence obligation.
 <b>Non-compliant (material)</b>	The auditor has established non-compliance and has identified <b>inconsistencies, inadequacies or deficiencies that pose a high or material risk</b> to the Public Water Utility meeting the objectives of the licence obligation.
 <b>No Requirement</b>	There was no requirement for the Public Water Utility to comply with the licence obligation during the audit period.

## 1.3 Regulatory Regime

Sydney Water Corporation is constituted under the *Sydney Water Act 1994* and is a statutory State-owned corporation pursuant to the *State Owned Corporations Act 1989*. It supplies water, wastewater, recycled water and some stormwater services to over 4.6 million people in Sydney, the Illawarra and the Blue Mountains.

Pursuant to Section 12 of the *Sydney Water Act 1994*, Sydney Water can be granted one or more operating licences to authorise it to carry out its specified and other functions. For the purposes of this audit (which addresses the audit period 1 July 2022 to 30 June 2023), Sydney Water has been granted and has been operating under the provisions of the *Sydney Water Operating Licence 2019-2023*.

## 1.4 Quality Assurance Process

The quality assurance processes implemented in undertaking this audit have included:

- Peer review of the audit questionnaires prior to submission to IPART;
- Processes to control all documents used in the audit;
- Accuracy checks of reported data and the completeness of audit trails;
- Peer review of preliminary findings and audit assessments included in the Draft Reports;
- Quality review of the Draft Reports (both independently and by the Audit Team Leader);

<sup>15</sup> IPART, *Public Water Utility Audit Guideline (Guideline – Water)*, July 2023, figure 2.1.

- Peer review of the Revised Draft Reports, specifically the treatment of comments received on the Draft Report and the feasibility of recommendations and opportunities for continuous improvement; and
- Quality review of the Final Report (both independently and by the Audit Team Leader).

An independent peer review has been undertaken to ensure that the accuracy of each section of the report is checked through quality control steps and all audit judgements, conclusions and recommendations are validated. The independent review was undertaken primarily by the Lead Auditors (Jim Sly and James Howey) reviewing each other's work, with additional input from Karen Pither, who holds Exemplar Global lead auditor accreditation in respect of Drinking Water and Recycled Water Quality Management Systems.

As Audit Team Leader, Jim Sly has reviewed all aspects of the Audit Report prior to release.



## 2. Detailed Audit Findings

### 2.1 Overview

This section sets out the detailed findings of the audit for each audited clause of the *Operating Licence*. In each case the following is provided:


- the Licence requirement is defined;
- the risk that non-compliance with the requirement presents;
- the assessed level of compliance (compliance grade);
- a summary of the reason for the assessed compliance grade;
- a list of the evidence reviewed in assessing compliance;
- discussion of the evidence reviewed and how it demonstrates/supports the assessed level of compliance;
- any recommendations (in the event that full compliance is not assessed); and
- any identified opportunities for improvement.

A list of the evidence reviewed in assessing compliance for each clause is presented in **Appendix C**.

## 2.2 Water Conservation and Planning (Licence Part 3)

### 2.2.1 Economic approach to water conservation (clause 3.1)

#### 2.2.1.1 Economic approach to water conservation (sub-clause 3.1.4)

Sub-clause	Requirement	Compliance Grade
3.1.4	Sydney Water must update the economic level of water conservation using the Current Economic Method: a) for the purposes of clause 3.1.1 and 3.1.2 – annually; and b) or the purposes of clause 3.1.3(c) – monthly.	 <b>Compliant</b>

#### Risk if non-compliant

Failure to update the economic level of water conservation presents a moderate level of risk that the economic value of conservation measures may not be correctly determined.

#### Evidence sighted

Refer Appendix C (C.2.1).

#### Summary of audit findings/reasons for grade

Sydney Water demonstrated that the economic level of water conservation was updated once (annually) during the audit period for the purposes of maintaining and implementing the water conservation program (clauses 3.1.1 and 3.1.2) and monthly for the purposes of public reporting (clause 3.1.3(c)). The economic level of water conservation is updated based on calculations performed using established spreadsheet models that replicate the Current Economic Method.

On this basis, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. No specific areas of good practice have been identified.

#### Discussion and notes

Sydney Water demonstrated that it had updated the economic level of water conservation using the Current Economic Method:

- for the purposes of clauses 3.1.1 and 3.1.2 (i.e., for the purposes of maintaining a water conservation program and implementing water conservation measures that have been assessed as economic) by providing the *Economic Level of Water Conservation - Value of Water* spreadsheet model<sup>16</sup> used to determine the monthly value of water and a completed ELWC template (MS Excel workbook model) for the “WaterFix®” program (as an example),<sup>17</sup> which is used to assess water conservation programs in accordance with the *Current Economic Method*<sup>18</sup> (ELWC methodology).

<sup>16</sup> MS Excel workbook: 3034668.xlsx.

<sup>17</sup> MS Excel workbook: ELWC template v1.9 - FINAL DRAFT - WaterFix Res.xlsx.

<sup>18</sup> Sydney Water, *Determining Sydney Water’s Economic Level of Water Conservation; Part A: The ELWC Methodology*, undated (file: *determining-sydney-water’s-economic-level-of-water-conservation.pdf*).

- for the purposes of clause 3.1.3(c) (i.e., for the purposes of making the economic level of water conservation (expressed as the value of water in dollars per kilolitre and as the quality of savings in megalitres per day available on Sydney Water’s website) by providing the *ELWC Register* (spreadsheet model)<sup>19</sup> in which the monthly value of water and resultant economic level of savings are determined and summarised.

Annual update of the economic level of water conservation for the purposes of clauses 3.1.1 and 3.1.2 is not further discussed in this assessment. Details of the water conservation program and its implementation during the audit period are reported by Sydney Water in the *2022/23 Water Conservation Report*.<sup>20</sup>

Monthly values for the economic level of water conservation have been published to the Sydney Water website throughout the reporting period, as required by clause 3.1.3(c); update and reporting of the economic level of water conservation for this purpose is undertaken in accordance with the recently documented procedure<sup>21</sup> (refer **section 3.2.1.1**).

Sydney Water provided copies of internal email correspondence requesting and providing details for monthly updates, including (for example) August 2022 (dated 9 August 2022), October 2022 (dated 28 October 2022), November 2022 (dated 28 November 2022), January 2023 (dated 15 February 2023, and May 2023 (dated 16 May 2023),<sup>22</sup> as evidence that information published on the website had been updated as required.

Sydney Water noted that: “*For consistency with our allocated funding in the 2020-2024 IPART price determination, the economic level of savings is reported as the greater of 8.1 ML/day and the economic level of water savings from the current year’s water conservation program.*”

Comparison of the information published on the website as of 9 September 2023 for August 2023 (refer extract below) with that in the *ELWC Register* shows dam level at 92.3% (correlates with spreadsheet); value of water at \$1.26/kL (which appears to compare with \$1.25/kL in short-run value in spreadsheet); and economic level of savings at 14.8 ML/day (correlates with spreadsheet).

### The current value of water under ELWC

	August 2023	September 2023
Dam level at start of month	92.3%	91.1%
The value of water*	\$1.26 / kL	\$1.26 / kL
Economic level of savings	14.8 ML / day	14.8 ML / day

\* Note that ‘the value of water’ is NOT the price. The value reflects the worth of water depending on storage levels.

In response to the auditor’s query, Sydney Water advised that the published \$1.26/kL value of water was correct; the value recorded in the *ELWC Register* (\$1.25/kL) provided as evidence had not been updated to reflect the change in bulk water pricing in the new financial year. The *ELWC Register* has subsequently been corrected and Sydney Water advised that it is considering

<sup>19</sup> MS Excel workbook: 3034667.xlsx.

<sup>20</sup> Sydney Water, *Annual Water Conservation Report 2022-2023*, August 2023 (file: *Water Conservation Report 2022-23\_Preliminary Draft.pdf*).

<sup>21</sup> Sydney Water, *Monthly update and reporting of the value of water and economic level of water savings* (Version 1), 30 June 2023.

<sup>22</sup> Documents (internal email correspondence):

*New request submitted\_ Monthly update of ELWC data on our website – 0076\_22-23.msg*,  
*New request submitted\_ Monthly update of ELWC - value of water – 0253\_22-23.msg*,  
*New request submitted\_ Value of Water - Monthly Website Data Update – 0306\_22-23.msg*,  
*New request submitted\_ Monthly update of ELWC - value of water – 0403\_22-23.msg*, and  
*New request submitted\_ Value of Water - Monthly Website Data Update – 0560\_22-23.msg*.

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merging the *ELWC Register* with the detailed value of water calculation spreadsheet to reduce the risk of transposition errors.<sup>23</sup>

Based on the preceding observations, it is apparent that Sydney Water has updated the economic level of water conservation as required during that audit period.

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### **Recommendations**

There are no recommendations in respect of this obligation.

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### **Opportunities for improvement**

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

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<sup>23</sup> Document: *OL RFI 03 Oct23\_Water Conservation.pdf*.

## 2.3 Performance Standards for Water Quality (Licence Part 4)

### 2.3.1 Drinking Water (clause 4.1)

#### 2.3.1.1 Drinking Water – Maintenance of DWQMS (sub-clause 4.1.1)

Sub-clause	Requirement	Compliance Grade
4.1.1	<p>Sydney Water must maintain a Management System that is consistent with the Australian Drinking Water Guidelines and any requirements relating to Drinking Water specified by NSW Health (the <b>Drinking Water Quality Management System</b>).</p> <p><i><u>Note:</u> ADWG elements 1-6, 8, 9 and 10 only nominated for audit.</i></p>	 <b>Compliant</b>
<p><b>Risk if non-compliant</b></p> <p>Without a comprehensive and effectively implemented Drinking Water Quality Management System, there is a high risk that Sydney Water may not be able to effectively manage risks to drinking water quality and protect public health.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.2.2).</p>		
<p><b>Summary of audit findings/reasons for grade</b></p> <p>Sydney Water demonstrated that it has maintained a management Drinking Water Quality Management System that is consistent with the <i>Australian Drinking Water Guidelines</i> and any requirements relating to Drinking Water specified by NSW Health.</p> <p>There were several opportunities for improvement identified which can further enhance or strengthen the Drinking Water Quality Management System documentation.</p>		
<p><b>Areas of good practice observed</b></p> <ul style="list-style-type: none"> <li>▪ Commitment by the team to providing and maintaining an appropriate Drinking Water Quality Management System.</li> <li>▪ Practice of continual improvement.</li> <li>▪ Staff interviewed were knowledgeable and aware of their roles and responsibilities.</li> <li>▪ The Drinking Water Quality Management Plan provides a good overview of the DWQMS, with references to other documents and processes in place.</li> </ul>		
<p><b>Discussion and notes</b></p> <p>Consistency of the Drinking Water Quality Management System (DWQMS) with each audited element of the <i>Australian Drinking Water Guidelines</i> (ADWG) is discussed below.</p>		

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***Element 1:***

Sydney Water demonstrated that its DWQMS conforms to the requirements of this element.

*Drinking water quality policy:*

There is a drinking water management policy,<sup>24</sup> endorsed by the Managing Director. The policy is reviewed every 2 years, with the review triggered via BMIS. An email is sent to the document owner three months prior to the review date, with a reminder sent.

Section 1.1 of the Drinking Water Quality Management Plan (DWQMP)<sup>25</sup> describes the process for communicating the policy.

*Regulatory and formal requirements:*

Key regulatory and formal requirements are included in section 1.2 of the DWQMP.

There is a *Compliance Accountability Register (CAR)*,<sup>26</sup> which records relevant acts and accountabilities. The process for reviewing and maintaining currency of the CAR is mentioned in section 1.2 of the DWQMP. The current process is very manual using track changes. Small updates are being made regularly, however, the last major review was undertaken in 2021. As part of the Wingara (Digital Uplift) Program, the CAR will be made digital to address these challenges.

The *Corporate Monthly Performance Report Compliance Update* is used to update requirements in the CAR. The June 2023 report<sup>27</sup> has been provided as evidence.

*Engaging stakeholders:*

Stakeholders are listed in Section 1.3 of the DWQMP.

Mechanisms for stakeholders' engagement are mentioned in section 1.3 of the DWQMP and in the *Stakeholder Engagement Map*,<sup>28</sup> which details the relationship with stakeholders and how and who in Sydney Water is responsible for the relationship.

There is also the *Enterprise Government, Stakeholder & Community Engagement Plan*,<sup>29</sup> and the *Stakeholder Relationship Accountabilities Matrix*.<sup>30</sup> These are very high-level and map stakeholders to Sydney Water areas of accountability.

The *Stakeholder Engagement Map*<sup>31</sup> was last updated in May 2022, but it appears to be not scheduled in a review cycle, which may be due to an error during uploading.

**OFI-SWC-2023-01:** Assign an appropriate review cycle for the *Stakeholder Engagement Map* in the document management system.

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<sup>24</sup> Drinking Water Management – Policy.

<sup>25</sup> Drinking Water Quality Management Plan.

<sup>26</sup> Compliance Accountability Register 2022.

<sup>27</sup> Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.

<sup>28</sup> External Stakeholder Engagement Map – Masterfile.

<sup>29</sup> Enterprise Government, Stakeholder & Community Engagement Plan 2023-25.

<sup>30</sup> Stakeholder Accountabilities Matrix.

<sup>31</sup> External Stakeholder Engagement Map – Masterfile.

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***Element 2:***

Sydney Water demonstrated that its DWQMS conforms to the requirements of this element.

*Water supply system analysis:*

The risk workshop attendance records for Prospect Water Delivery System<sup>32</sup> and the Prospect Water Filtration Plant (WFP)<sup>33</sup> showed that a knowledgeable team was assembled for the workshops. It was noted that the Prospect WFP risk workshop did not include operator level inputs. This is important as they bring knowledge of operational challenges that may not be evident from data alone.

A water quality scientist attended the SUEZ Prospect WFP risk assessment and they provided the information to feed into the Prospect delivery network risk assessments.

**OFI-SWC-2023-02:** Include operator representatives during the Prospect WFP annual risk review workshops to obtain first-hand input on operational practices, challenges and process improvements needed from an operator-level perspective. Strongly consider this for all WFP risk review workshops going forward, both for Sydney Water and BOOT risk workshops, where not the case already.

Process flow diagrams<sup>34</sup> have been provided. Relevant system information has been included in the Briefing papers.<sup>35</sup> These are prepared using the *Operational Risk Assessment Workshop SOP for Drinking Water*<sup>36</sup> and the *Creation of Process Flow Diagram - Work Instruction*<sup>37</sup> respectively.

HBT (health-based target) assessments for the supply systems are in progress. It will be useful to see log reduction values (LRVs) being achieved, any shortfalls and plans on addressing these in the long-term.

Triggers for the review of the water systems are mentioned in Table 4 of the DWQMP.

*Assessment of water quality data:*

The assessment of water quality data is mentioned in Section 2.2 of the DWQMP and further explained for the annual risk operational risk assessment in the Standard Operating Procedure (SOP) D0000799.<sup>38</sup>

*Hazard identification and risk assessment:*

The approach and methodology for the risk assessments (Catchment to Consumer (C2C) and annual reviews) are explained in the DWQMP. The methodology for the Prospect WFP is mentioned in the respective *Water Quality Risk Management Plan (WQRMP)*.<sup>39</sup> The *Operational Risk Assessment workshop SOP (D0000799)*<sup>40</sup> includes guidance for BOOT contractors on key inputs and outputs for the risk reviews. Whilst this has been followed and the SOP was referenced in the Prospect WFP Briefing Paper<sup>41</sup> and Workshop Report,<sup>42</sup> it is not mentioned in the WQRMP.

**OFI-SWC-2023-03:** In the Prospect WFP WQRMP, reference the requirement to use Sydney Water's SOP D0000799 as guidance to comply with Elements 2 and 3 of the ADWG Framework to meet Sydney Water's expectations.

The hazard sources/events are included in the risk registers.<sup>43</sup> Water quality hazards are linked through a 'hazard library' tab in the risk register.

For the Prospect WFP risk register,<sup>44</sup> the water quality hazards associated with a particular event can be easily seen in the relevant row being assessed.

The risk matrix and risk assessment are included in the risk register. The risk re-alignment work between Sydney Water and BOOT contractors (different matrix, consequence and likelihood descriptors used) is due to be completed in 2023-24.

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The risk evaluation with and without controls is included in the risk register. It is stated in section 2.3 of the DWQMP<sup>45</sup> that uncertainty is assessed inherently. However, the risk workshop procedure and risk registers include an assessment of uncertainty.

**OFI-SWC-2023-04:** Consider revising section 2.3 of the DWQMP to align with SOP D0000799 on the assessment of risk uncertainty.

The review requirement for the risk assessments is mentioned in the DWQMP, Table 4.

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### ***Element 3:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

#### ***Preventive measures and multiple barriers:***

Preventive measures and multiple barriers are detailed in section 3.1 of the DWQMP. Figure 5 summarises the barriers from catchment to consumer. The *Drinking Water Product Specification*<sup>46</sup> contains further details on important control points, including key performance indicators. Controls/preventive measures in place at each of the control points are assessed and documented in the water quality risk assessment.<sup>47</sup>

The effectiveness of control measures is assessed as per the criteria in the corporate Risk Matrix document.<sup>48</sup> The control effectiveness is not explicitly assessed by the BOOT contractor for the Prospect WFP. However, Sydney Water undertakes internal audits to verify effectiveness in addition to water quality performance.

Additional preventive measures are identified when a risk is out of appetite, and these are documented in the risk register. These improvements are then transferred to and monitored via the Improvement Plan.<sup>49</sup>

#### ***Critical control points:***

Details of the Critical Control Points (CCPs) are included in *IMS0152.01 – Drinking Water Product Specification*.<sup>50</sup> There were no changes to the CCPs in the audit period.

CCP performance is in general discussed with NSW Health in the Joint Operational Group (JOG) meetings.<sup>51</sup> Reviews of the Drinking Water Product Specification are communicated

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<sup>32</sup> Annual Water Quality Risk Review Summary Report 2023 - Prospect North Delivery System.

<sup>33</sup> PWF - Drinking Water Quality Joint Risk Assessment Workshop & Induction.

<sup>34</sup> Prospect WFP Process Flow Diagram; Process Flow Diagram - Orchard Hills WFP; Process Flow Diagram - Warragamba WFP.

<sup>35</sup> Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report; Prospect North Delivery System - Briefing Paper - Network Water Quality Risk Review 2023.

<sup>36</sup> Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.

<sup>37</sup> Creation of Process Flow Diagram - Work Instruction.

<sup>38</sup> Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.

<sup>39</sup> Water Quality Risk Management Plan - Prospect Water Filtration Plant.

<sup>40</sup> Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.

<sup>41</sup> Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.

<sup>42</sup> Prospect WFP - 2023 Water Quality Risk Assessment Workshop Report.

<sup>43</sup> North Richmond Risk Register 2023; Prospect North Risk Register 2023; C2C Risk Register.

<sup>44</sup> Water Quality Risk Assessment and CCPs – PWF.

<sup>45</sup> Drinking Water Quality Management Plan.

<sup>46</sup> IMS0152.01 - Drinking Water Product Specification.

<sup>47</sup> Water Quality Risk Assessment and CCPs – Prospect Water Filtration Plant, Prospect North Risk Register 2023, and C2C Risk Register.

<sup>48</sup> Risk Matrix.

<sup>49</sup> Sydney Water Drinking Water Quality Improvement Plan.

<sup>50</sup> Drinking Water Product Specification.

<sup>51</sup> Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes; Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.



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with NSW Health (evidence of recent update included Email-Updated Drinking Water Product Specification-11082023).<sup>52</sup>

The CCPs at the Prospect WFP are CCP1 Turbidity, CCP2 Fluoride concentration and CCP3 C.t. Response actions are included in the *Process Monitoring and Chemical Regimes* (PC-02) document<sup>53</sup> and the *Incident Response Options Table* (IMP-800).<sup>54</sup> Incident Response is as per IMP-600.<sup>55</sup>

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#### ***Element 4:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

##### *Operational procedures:*

Procedures are mentioned in the DWQMP, section 4.1 for Sydney Water. Controlled documents are maintained in BMIS, with review dates which are triggered via BMIS. Some documents are also in SWIM. iConnect is an interface used to easily retrieve documents. A review of the document management system is in progress.

##### *Operational monitoring:*

Sydney Water's operational monitoring plan, the *Drinking Water Quality Operational Monitoring Plan*,<sup>56</sup> was provided. On review of the plan, it was considered to adequately represent the drinking water scheme and be appropriate for the risks identified.

##### *Corrective action:*

Corrective actions are mentioned in section 4.3 of the DWQMP and detailed in D0001676 - *Triggers, Notifications and Actions for Adverse Water Quality Results*.<sup>57</sup> The overview of the SUEZ operational monitoring plan is included under Element 4, in Section 1.14 of QMP-P-100,<sup>58</sup> including operational envelopes in PC-02,<sup>59</sup> corrective actions to control excursions in ER-P-IMP-800.<sup>60</sup>

Sydney Water's procedures for rapid communication to manage unexpected events are explained in Section 4.3 of the DWQMP, as well as in the procedures WPIMS5228 - *Drinking Water Quality Event Management Plan*<sup>61</sup> and D0001676 - *Triggers, Notifications and Actions for Adverse Water Quality Results*,<sup>62</sup> which provide additional supporting information.

SUEZ procedures for rapid communication to manage unexpected events are explained in ER-P-IMP-600.<sup>63</sup>

##### *Equipment capability and maintenance:*

Calibration program is in place for water quality equipment used as part of the compliance and operational water quality monitoring plans.<sup>64</sup> *FS075 Determination of Chlorine Residuals in the*

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<sup>52</sup> Email: Updated Drinking Water Product Specification.

<sup>53</sup> Process Monitoring & Chemical Regimes.

<sup>54</sup> Incident Response Options Table.

<sup>55</sup> Water Quantity & Quality Failure - Incident Notification.

<sup>56</sup> Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.

<sup>57</sup> Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.

<sup>58</sup> Water Quality Risk Management Plan - Prospect Water Filtration Plant.

<sup>59</sup> Process Monitoring & Chemical Regimes.

<sup>60</sup> Incident Response Options Table.

<sup>61</sup> Drinking Water Quality Event Management Plan – Procedure.

<sup>62</sup> Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.

<sup>63</sup> Incident Management Contact List.

<sup>64</sup> Annual Drinking Water Quality Compliance Monitoring Plan 2022-23; Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.

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*Field*<sup>65</sup> and *FS067 Field Measurements of Dissolved Oxygen, pH, Conductivity and ORP*<sup>66</sup> are included as evidence of the procedures.

*Materials and chemicals:*

Sydney Water's *Chemical Specification Document*, a commercial-in-confidence document, was seen during the audit. The *Chemical Specification Document* contains details for the calcium hypochlorite tablets used in the drinking water reservoirs, a history of the quality of the chemicals, and a specification of the maximum level of contaminants.

The SUEZ Goods Specifications for bulk chemicals and Service Agreements with suppliers ensure quality requirements for ADWG Chapter 8 for chemicals are met (aqueous ammonia<sup>67</sup> and sodium silicofluoride<sup>68</sup> goods specifications were provided). *PC-06 Chemical Procurement*<sup>69</sup> describes the process used at the Prospect WFP.

The SUEZ process for evaluation of suppliers is described in *PRO-005 Evaluation of Suppliers*.<sup>70</sup>

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***Element 5:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

*Drinking water quality monitoring:*

There is an *Annual Drinking Water Quality Compliance Monitoring Plan 2022-23*<sup>71</sup> which includes details of the monitoring characteristics, locations and frequencies. The process for the selection of compliance sites, and selecting additional sites is included in Appendix 3 of this document. There is consideration to include dead-end mains (about 25%). The frequency of monitoring in some sections is based on population. Table 4-5 uses the terms small, medium and large, however there is no definition of these.

A map of the Prospect North Delivery System showing the sampling locations<sup>72</sup> was requested at the audit interviews and was provided afterwards. It appears that there is a good spread of the sampling locations in the system, but the northern part of the delivery system seems to have comparatively fewer sampling locations, which is likely due to the lower population numbers. It was considered the map would be more beneficial if sampling locations could be reviewed in relation to the distribution of assets.

**OFI-SWC-2023-05:** Consider maintaining the sampling locations on a map/s of the zones (overlaid on the network pipes/assets) to visually assess the spread of the sampling locations across the zone. This will also ensure/justify representativeness of the sampling sites and will be useful during annual reviews of the monitoring plan and to demonstrate the sampling coverage during audits.

**OFI-SWC-2023-06:** For Table 4-5 in the *Compliance Monitoring Plan*, include the criteria on what constitutes a small, mid-sized and large system.

*Consumer satisfaction:*

Customer complaints are covered in Section 5.2 of the DWQMP. There is a *Managing Customer Water Quality Complaints Procedure* (D0001661).<sup>73</sup> Complaint information is monitored daily and reviewed and reported weekly/monthly to verify drinking water quality. Water Quality Scientists are responsible for managing water quality complaints.

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<sup>65</sup> Determination of Chlorine Residuals in the Field - Test Method.

<sup>66</sup> WTW Instruments - Field Measurements of Dissolved Oxygen, pH, Conductivity and ORP Test Method.

<sup>67</sup> PWF Goods Specification - Chemical Specification - Aqueous Ammonia.

<sup>68</sup> PWF Goods Specification - Chemical Specification - Sodium Silicofluoride.

<sup>69</sup> PWF Technicians' Manual - Chemical Procurement.

<sup>70</sup> Evaluation of Suppliers.

<sup>71</sup> Annual Drinking Water Quality Compliance Monitoring Plan 2022-23.

<sup>72</sup> Prospect North Delivery System - compliance sampling points 2022-23.

<sup>73</sup> Managing Water Quality Customer Complaints – Procedure.

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Details of the customer satisfaction assessment processes are in Section 5.2 of the DWQMP.<sup>74</sup>

The CRM (Customer Relationship Management system) identifies if there are any real-time trends in complaints made, and where identified, it triggers a notification, e.g. >10 complaints in 24 hrs. There is water quality training for the Customer Hub and there are also predefined scripts.

Short-term evaluation of results:

The procedures for the daily review of water quality data include:

- Daily ‘Actions’ Application called Limnos<sup>75</sup> is run twice a day. This tool picks up any analyte results that are outside set limits and sends out emails to relevant teams.
- Drinking Water Product Specification module in Labware<sup>76</sup> where upper & lower limits are set up for Drinking Analytes per project type.

If any result is outside set limits an alert is triggered for the lab analyst to check results before authorisation. Once authorised an email is sent to the team.

Corrective action:

Water quality exceptions are recorded in daily action reports (LIMNOS Actions database)<sup>77</sup> distributed to internal stakeholders, with monthly and quarterly reports to NSW Health. Details of drinking water quality hazards and incidents, as relevant, are recorded in the Sydney Water Incident Reporting and Learnings (SWIRL) system and through event and incident management processes (the Noggin system is currently being rolled out and will eventually replace SWIRL).<sup>78</sup> This is linked to SMS and email notifications. Events are reported to NSW Health as documented in the *WPIMS5228 Drinking Water Quality Event Management Plan*.<sup>79</sup> The procedure for corrective actions in response to non-conformance is D0001676 - *Triggers, Notifications and Actions for Adverse Water Quality Results*,<sup>80</sup> which was provided.

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**Element 6:**

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

Communication:

Sydney Water’s incident and emergency management processes are referenced in Section 6.2 of the DWQMP. The IMS0089 - *Customer / Stakeholder Notification Procedure* sets out the approach for customer notifications relating to water supply continuity incidents.

The WPIMS5228 - *Drinking Water Quality Event Management Plan* (DWQEMP) briefly mentions the customer strategy and engagement.

**OFI-SWC-2023-07:** Outline in further detail in the DWQMP (or reference to a separate document) how communications related to a water quality incident that could result in a ‘boil water alert’ or ‘do not drink advice’ would be managed, including public and media notifications, predeveloped templates/key messages, timelines to ensure public health impact is minimised from when a decision is made, and reference to key documents that will be used.

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<sup>74</sup> Drinking Water Quality Management Plan.

<sup>75</sup> Use of Limnos Actions Database - Integrated Management System.

<sup>76</sup> IMS Work Instruction for Creating and Managing LabWare Product Specification.

<sup>77</sup> Use of Limnos Actions Database - Integrated Management System.

<sup>78</sup> Water Quality Hazards & Incidents (SWIRL) 2022-23.

<sup>79</sup> Drinking Water Quality Event Management Plan – Procedure.

<sup>80</sup> Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.

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Incident and emergency response protocols:

Sydney Water's incident and emergency management processes are referenced in Section 6.2 of the DWQMP. A key document is the WPIMS5228 - *Drinking Water Quality Event Management Plan* (DWQEMP). SUEZ's incident management is explained in IMP-100 *Incident Management Plan*.

Training on incident/event management is provided to staff by Sydney Water and SUEZ. Sydney Water undertakes training for its staff and participates in tripartite exercises. SUEZ delivers the training for its staff. For a chlorine gas leak response, both SUEZ and Sydney Water participate in the exercise.

**OFI-SWC-2023-08:** Strongly consider undertaking periodic water quality event/incident exercises between Sydney Water and BOOT contractors. This will ensure that there is a consistent understanding of the roles and responsibilities in relation to reporting and incident management. NSW Health should be involved as well.

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***Element 8:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

Community consultation:

Details of the community consultation program are included in Section 8.1 of the DWQMP.

Customers are consulted in the decision-making through the Customer and Community Reference Group, Section 8.1 of the DWQMP.

Sydney Water engages with customers as part of the Operating Licence process to set levels of service. The 'Our Water Our Voice' program is an example of customer engagement.

Communication:

Communication with customers is described in section 8.2 of the DWQMP. The website is used as a tool, as are newsletters, customer surveys, water literacy tracker and wonder of water van.

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***Element 9:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

Investigative studies and research monitoring:

Sydney Water is active in Research and Development R&D work, having been involved in numerous research projects.

There is a Science & Technology (S&T) program between Sydney Water and SUEZ, which outlines the agreed research priorities between the two organisations based on the risks. Research projects are identified for every 3 years.

**OFI-SWC-2023-09:** Outline in further detail in the DWQMP (or reference to a separate document) how water quality related investigative studies and research monitoring are identified, how these are considered for funding, the funding pot/s, how the research project is tracked, how the outcomes are used to improve the system, and what happens to the identified investigations that do not get funded. Include programs with BOOT plants as well.

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Validation of processes:

New treatments processes are validated by Sydney Water/contractor. Existing processes are actively monitored to ensure water quality targets are achieved and that the process unit is performing as intended. This is part of the day-to-day operation of the WFPs, as well as reviewed monthly in the internal reports, quarterly reports to NSW Health<sup>81</sup> and annual risk assessments<sup>82</sup> when the system control effectiveness is assessed, and performance of CCPs are validated.

The Health Based Target assessments are currently in progress.

Design of equipment:

Section 9.3 of the DWQMP briefly discusses the design of equipment. Basically, Sydney Water ensures that design of equipment is fit-for-purpose and have prepared a Functional Design Specification that equipment must meet.

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***Element 10:***

Sydney Water demonstrated that its DWQMS conforms to the requirement of this element.

Management of documentation and records:

Management of documents and records is described in section 10.1 of the DWQMP.

There is a *Controlled Documents Procedure*<sup>83</sup> which outlines the process for document review and there is a *Controlled Document Standard*<sup>84</sup> which outlines the review frequency according to controlled document type.

Documents are managed in BMIS and SWIM. These have a workflow for controlled documents. Email notifications are sent to document owners when document review dates are approaching. When there are changes which need to be reflected in a document, the document can be updated outside of the suggested timeframe.

It was noted during the interviews that BMIS operates on an old system (Lotus Notes), which is no longer supported. This will be phased out and completely replaced with SWIM. BMIS is used for controlled documents and SWIM for records. However, SWIM has all the functionality of BMIS. iConnect is an intranet site that is used internally to access documents and records. It provides staff with a single point of access and facilitates easy access to documents and records.

There is also a major project to integrate management systems across Sydney Water, One Management System (1MS).<sup>85</sup> This will integrate nine management systems, including drinking water and recycled water management. There have been no significant changes during the audit period, but this will continue to progress. A subcomponent of this in the Wingara (Digital Uplift) Program under which the corporate risk assessment tool is being changed; operationally the spreadsheets are still used for water quality risk management. Another aspect is the transfer to using Noggin instead of SWIRL for incident management.

Reporting:

A summary of internal and external drinking water reporting is included in section 10.2 of the DWQMP. Table 6 includes the details of reports supplied internally and externally. The following procedures that support preparation of key reports were provided as evidence:

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<sup>81</sup> Quarterly Drinking Water Quality Monitoring Report to NSW Health - Third Quarter 2022-23.

<sup>82</sup> Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.

<sup>83</sup> Controlled Documents – Procedure.

<sup>84</sup> Controlled Documents - Standard.

<sup>85</sup> 1MS Steering Group Meeting Presentation.

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- *Preparing Annual DWMS and RWMS reports for IPART which supports the Annual Compliance Report.*<sup>86</sup>
  - *Producing Quarterly Drinking Water Quality Monitoring Reports to NSW Health.*<sup>87</sup>
  - *Preparation of the Quarterly Drinking Water Quality Report.*<sup>88</sup>
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### Recommendations

There are no recommendations in respect of this obligation.

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### Opportunities for improvement

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

- **OFI-SWC-2023-01:** Assign an appropriate review cycle for the Stakeholder Engagement Map in the document management system (relates to Element 1).
  - **OFI-SWC-2023-02:** Include operator representatives during the Prospect WFP annual risk review workshops to obtain first-hand input on operational practices, challenges and process improvements needed from an operator-level perspective. Strongly consider this for all WFP risk review workshops going forward, both for Sydney Water and BOOT risk workshops, where not the case already (Element 2).
  - **OFI-SWC-2023-03:** In the Prospect WFP WQRMP, reference the requirement to use Sydney Water's SOP D0000799 as guidance to comply with Elements 2 and 3 of the ADWG Framework to meet Sydney Water's expectations (Element 2).
  - **OFI-SWC-2023-04:** Consider revising section 2.3 of the DWQMP to align with SOP D0000799 on the assessment of risk uncertainty (Element 2).
  - **OFI-SWC-2023-05:** Consider maintaining the sampling locations on a map/s of the zones (overlaid on the network pipes/assets) to visually assess the spread of the sampling locations across the zone. This will also ensure/justify representativeness of the sampling sites and will be useful to use during annual reviews of the monitoring plan and to demonstrate the sampling coverage during audits (Element 5).
  - **OFI-SWC-2023-06:** For Table 4-5 in the *Compliance Monitoring Plan*, include the criteria on what constitutes a small, mid-sized and large system (Element 5).
  - **OFI-SWC-2023-07:** Outline in further detail in the DWQMP (or reference to a separate document) how communications related to a water quality incident that could result in a 'boil water alert' or 'do not drink advice' would be managed, including public and media notifications, predeveloped templates/key messages, timelines to ensure public health impact is minimised from when a decision is made and reference to key documents that will be used (Element 6).
  - **OFI-SWC-2023-08:** Strongly consider undertaking periodic water quality event/incident exercises between Sydney Water and BOOT contractors. This will ensure that there is a consistent understanding of the roles and responsibilities in relation to reporting and incident management. NSW Health should be involved as well (Element 6).
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<sup>86</sup> D0000454 - Preparing Annual DWMS and RWMS reports for IPART which supports the Annual Compliance Report.


<sup>87</sup> MP0017 v6 - Producing Quarterly Drinking Water Quality Monitoring Reports to NSW Health.

<sup>88</sup> MP0023 Ver 5 - Preparation of the Quarterly Drinking Water Quality Report (Sydney Water website).



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- **OFI-SWC-2023-09:** Outline in further detail in the DWQMP (or reference to a separate document) how water quality related investigative studies and research monitoring are identified, how these are considered for funding, the funding pot/s, how the research project is tracked, how the outcomes are used to improve the system, and what happens to the identified investigations that do not get funded. Include programs with BOOT plants as well (Element 9).
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### 2.3.1.2 Drinking Water – Implementation of DWQMS (sub-clause 4.1.3)

Sub-clause	Requirement	Compliance Grade
4.1.3	<p>Sydney Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Drinking Water Quality Management System and to the satisfaction of NSW Health.</p> <p><i>[Note: Sydney Water is to apply the Drinking Water Quality Management System to the Drinking Water system under its control, having regard to the entire Drinking Water supply system – from the water catchment to the Consumer.]</i></p> <p><b>Note:</b> ADWG elements 1-6, 8, 9 and 10 only nominated for audit.</p>	 <b>Compliant</b> (minor shortcomings)

#### Risk if non-compliant

If the Drinking Water Quality Management System is not fully implemented, there is a high risk that Sydney Water may not be able to effectively manage risks to drinking water quality and protect public health.

#### Evidence sighted

Refer Appendix C (C.2.2).

#### Summary of audit findings/reasons for grade

Sydney Water has largely implemented its Drinking Water Quality Management System. Minor shortcomings were noted for Elements 3 and 6. These were considered minor and did not affect water quality during the audit period.

Contractors are utilised on occasions for leak and break repair works to supplement Sydney Water resources. There were no contractor training records during the audit period, as the contracts continued with the existing service providers/contractors. The Civil Delivery Contractor Induction Training contents were sighted. This is focussed on general practice and safety and does not include water quality protection considerations. In September 2021 (prior to this audit period), Sydney Water provided toolbox training on discoloured water to the contractors. Training records (via attendance records) were provided for this toolbox training completed in October-November 2021 by contractor field crews. It is not clear if there is a requirement for periodic refreshers on this toolbox training material and at what frequency. Sydney Water staff appear to check contractor activity; for example, a ‘dirty truck’ observed by a Sydney Water staff member for a contractor undertaking repair works (email from 2020) prompted action to investigate training for a contractor. Whilst there has been training delivered in 2021, a review of the process on verifying that contractors undertaking network repairs are implementing hygienic practices in line with Sydney Water’s procedures is needed to ensure verifiable audit evidence is maintained.

The evidence provided confirmed that Sydney Water undertook investigations, is progressing further with investigations and have kept NSW Health informed/updated of the July 2022 incident on the Prospect WFP Clear Water Tank No. 1 cover failure. However, this is not the same as conducting a debrief. The incident date was 5 July 2022, and the incident close date was 26 May 23. The timeframe to undertake an incident debrief has not been implemented as per Sydney Water’s *Incident Management Plan* and *Incident Debrief and Investigation Procedure*. A debrief (multi-agency) for relevant incidents such as this one should be completed while the



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response and management actions taken are still fresh. Undertaking a debrief after 1 year defeats the purpose of a debrief.

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### **Areas of good practice observed**

- Commitment by the team to implementing the DWQMS.
  - Practice of continual improvement.
  - Staff interviewed were knowledgeable and aware of their roles and responsibilities, including staff of the BOOT contractor interviewed.
  - The WFP visited was well operated and managed.
  - The re-chlorination plant at the Rouse Hill reservoir was well operated and managed.
  - There are good processes in place for monitoring water quality, reviewing results, assessing performance and compliance, notifications on out-of-specification water quality and undertaking corrective actions.
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### **Discussion and notes**

Implementation of the Drinking Water Quality Management System (DWQMS) for each audited element of the *Australian Drinking Water Guidelines* (ADWG) is discussed below.

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#### ***Element 1:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

#### ***Drinking water quality policy:***

The policy is available on Sydney Water's website. It is part of the corporate induction process. If it is updated, BMIS sends updates to the distribution list. The relevant position then emails the updated policy to the BOOT plants. Copies of the Sydney Water policy<sup>89</sup> and the SUEZ policy<sup>90</sup> were displayed at the entrance of the Prospect WFP.

An example of how SUEZ includes awareness of its policy as part of training was provided (Chris Shi assessment 31 January 2023).<sup>91</sup> Water quality awareness training is also delivered by Sydney Water for relevant positions with touch points on drinking water.<sup>92</sup>

#### ***Regulatory and formal requirements:***

An example of tracking of legislative updates was provided (iConnect-Legislative Updates, 3031700 – 19 June – 16 July 2023 Legislative update).<sup>93</sup>

The Corporate Performance Report (June 2023 example provided)<sup>94</sup> shows compliance being monitored for relevant guidelines (e.g. ADWG) and the Operating Licence.

#### ***Engaging stakeholders:***

A key water quality example of stakeholder engagement is the quarterly Joint Operational Group (JOG) meetings<sup>95</sup> and the Strategic Liaison Group (SLG)<sup>96</sup> meetings between Sydney Water, WaterNSW and NSW Health as set out in the Memorandum of Understanding

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<sup>89</sup> Drinking Water Management – Policy.

<sup>90</sup> SUEZ Drinking Water Quality Policy.

<sup>91</sup> Prospect WFP – Water Quality Risk Management Plan Awareness – Training Assessment (Chris Shi).

<sup>92</sup> Water Quality Awareness Drinking Water Quality Management. Drinking Water Quality Event Management Fluoride CoP.

<sup>93</sup> Sydney Water Legislative Update 19 June – 16 July 2023.

<sup>94</sup> Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.

<sup>95</sup> Joint Operational Group – Meeting Minutes.

<sup>96</sup> Sydney Water and Environment Protection Authority Strategic Liaison Group.

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with NSW Health, which forms the key mechanism of engagement for the DWQMS. The Q4 2022 JOG 14 November 2022 minutes<sup>97</sup> are included as evidence.

Engagement occurred through the operational risk reviews and incident management debriefs. For example, NSW Health participated in the risk workshops for Prospect Delivery System and the Prospect WFP.<sup>98</sup>

Consultation Manager is used to record conversations with stakeholders, including the SLG and the JOG.

There is a Prospect Water Filtration Agreement - Exhibit 13 - Prospect Operational Protocol of the Agreement, which was shared by Sydney Water.<sup>99</sup> This details the relationship between Sydney Water and contractor, operational responsibilities and requirement for notifications and communications.

The Sydney Water and Water NSW *Access Protocol* was also provided.<sup>100</sup> This provides a framework for the implementation of the *Raw Water Supply Agreement*, including notifications.

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### ***Element 2:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

#### *Water supply system analysis:*

Drinking water system assessments were completed: *WFP - QMP-P-100B PWFP Background Information Report – Issue 7*<sup>101</sup> and *Delivery Network - Prospect North Briefing Paper - 2023 Network Water Quality Risk Review*.<sup>102</sup>

The process flow diagrams have been kept updated; Prospect WFP last checked 31 May 2023<sup>103</sup> and Delivery System last revised 11 April 2023.<sup>104</sup>

Annual reviews were undertaken for both the WFP and Delivery Network during the audit period.

#### *Assessment of water quality data:*

Historical data was assembled, examined and analysed for the annual risk reviews for Prospect WFP and Prospect North Delivery Network.<sup>105,106</sup>

#### *Hazard identification and risk assessment:*

Risk assessments for the WFP and Delivery Network<sup>107</sup> were reviewed during the review period.

The risk registers appear to cover the general range of hazardous events expected, which was verified via the field visits.

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<sup>97</sup> Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.

<sup>98</sup> PWFP – Drinking Water Quality Joint Risk Assessment Workshop & Induction.

<sup>99</sup> Prospect Operational Protocol.

<sup>100</sup> Sydney Water and Water NSW Access Protocol.

<sup>101</sup> Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.

<sup>102</sup> Prospect North Delivery System - Briefing Paper - Network Water Quality Risk Review 2023.

<sup>103</sup> Prospect WFP Process Flow Diagram.

<sup>104</sup> Annual Water Quality Risk Review Summary Report 2023 - Prospect North Delivery System.

<sup>105</sup> Annual Water Quality Risk Review Summary Report 2023 - Prospect North Delivery System.

<sup>106</sup> Annual Water Quality Risk Review Summary Report 2023 – North Richmond Delivery System.

<sup>107</sup> Operational Risk Register for Sydney Water Plants.

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### ***Element 3:***

Sydney Water has not demonstrated that the requirements of this element of its DWQMS were fully implemented.

#### ***Preventive measures and multiple barriers:***

The preventive measures (a sample) were verified during the visit to the Prospect WFP. These included the following:

- Ability to blend raw water or divert it to Prospect Reservoir.
- Supernatant filtration with a target of 0.5 NTU.
- Online analysers as identified as current controls in the risk assessment.
- SCADA monitoring and alarms; these were reviewed on site and were consistent with the DWQMS.
- Flow paced chemical dosing is undertaken at various locations, as specified.
- Filter backwashing at 0.3 NTU and the filter isolating at 0.4 NTU.
- Reduction of plant flow to increase *C.t*, utilised when the Clear Water Tanks (CWT) are in bypass. This will be utilised during the scheduled CWT repairs.

The risk assessments identify additional improvement actions for preventive measures that were considered necessary to reduce risk to an acceptable level for the WFP<sup>108</sup> and Delivery Network.<sup>109</sup>

Based on the inspection of the Prospect WFP, the preventive measures in place were considered adequate to manage the risk. However, it was noted that there have been changes in water quality recently, resulting in higher turbidity and making the water harder to treat. This was reflected in the WFP Risk Assessment and a project is being considered to implement pre-treatment.

A sample of preventive measures for the protection of network integrity have also been reviewed. Backflow prevention, the use of standpipes, reservoir inspection and mains/pipe repairs are discussed below.

#### **Backflow Prevention**

The Backflow Device Register for Prospect<sup>110</sup> was provided as evidence along with templates used for communication with customers to demonstrate implementation of the program.<sup>111</sup> 79% compliance was noted; 80% is the target for backflow device testing. Sydney Water often do not go to the next step of disconnection, matter gets resolved. The high-risk customers have a relationship manager, the low-risk customer does not. There is a resourcing issue to follow up with the low-risk customers.

Copies of the annual reminder<sup>112</sup> and follow up<sup>113</sup> after that was provided for property 3101973.

In respect of comment from NSW Health regarding progress in making emergency pretreatment at Warragamba<sup>114</sup> and Orchard Hills<sup>115</sup> permanent, the pretreatments have been incorporated into the process flow diagrams; closed valves show that it is not the routine operating mode. There is a work procedure on Operations of Orchard Hills WFP Stage 1 Sedimentation tank (last updated February 2023).<sup>116</sup> This was a trial pretreatment, that provided rapid sedimentation prior to the conventional plant. The trial was successful, and it will likely be an ongoing process of pretreatment in times of high turbidity raw water. Now that the process will continue to be used, the procedure should be entered into the document management system.

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**OFI-SWC-2023-10:** Ensure that the work procedure on ‘Operations of Orchard Hills WFP Stage 1 Sedimentation tank’ is a controlled document with an appropriate review frequency assigned.

There is a work instruction for operation of the Actiflow Unit<sup>117</sup> at the Warragamba WFP. Risk assessments to recommission the sedimentation tank and use the Actiflow Unit have also been undertaken by Sydney Water.<sup>118</sup>

#### Standpipes

Sydney Water stated that standpipes have a medium hazard backflow containment device attached at the outlet. There are two approved suppliers of standpipes. When a standpipe is issued, it is allocated a property number, pre-tested and registered in the backflow database. The management of these devices is the same as for other containment devices installed on a property (e.g. an annual testing reminder letter one month before the due date).

#### Reservoir inspections

The six-monthly inspections (November 2022 and May 2023) were completed for the Rouse Hill reservoir visited during the audit.<sup>119</sup> Follow up of defects identified from the inspection undertaken in November 2022 are discussed in **sections 2.4.2.2** and **3.2.4.2**.

#### Mains/pipe repairs

Procedures and work method statements are in place for main pipes repairs.<sup>120</sup> Risk based water quality checks are undertaken on main repairs and recommissioning of trunk mains as required.

- CDCM0021 - SWMS - Civil repair-replace main-pipe fitting<sup>121</sup> – this is mainly for staff safety but there is a step on disinfection use.
- D0001688 Prevention of water quality contamination following water main breaks.<sup>122</sup>
- D0001667 Water Quality Management During Operational Activities p12-15.<sup>123</sup>

Evidence of implementation of the above was provided for Raglan Street, Waterloo<sup>124</sup> and Victoria Road, West Ryde.<sup>125</sup>

Contractors are used for mains to meter work routinely and can be utilised for leak and break repair work to supplement Sydney Water resources; however, they are not routinely utilised for this purpose with Sydney Water crews performing this work. There were no contractor training records during the audit period, as the contracts continued with the existing service providers/contractors to deliver the mains to meter maintenance repair work. The Civil Delivery Contractor Induction Training contents was seen.<sup>126</sup> This is more focussed on general

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<sup>108</sup> Prospect WFP - 2023 Water Quality Risk Assessment Workshop Report.

<sup>109</sup> Prospect North Risk Register 2023.

<sup>110</sup> Backflow device register – Prospect.

<sup>111</sup> Template - You need to install a backflow containment device letter.

<sup>112</sup> Annual testing reminder for backflow containment device.

<sup>113</sup> You haven't tested your backflow device.

<sup>114</sup> Process Flow Diagram – Warragamba WFP.

<sup>115</sup> Process Flow Diagram – Orchard Hills WFP.

<sup>116</sup> Operations of Orchard Hills WFP Stage 1 Sedimentation Tank Work Procedure.

<sup>117</sup> Temporary Work Instructions – Actiflo Unit.

<sup>118</sup> Warragamba Actiflow (high rate Clarifier) Risk Assessment.

<sup>119</sup> AIS Reservoir Inspection – Rouse Hill WS0476.

<sup>120</sup> Safe Work Method Statement - Network Maintenance - Repair Replace Main/Pipe Fittings.

<sup>121</sup> Safe Work Method Statement - Network Maintenance - Repair Replace Main/Pipe Fittings.

<sup>122</sup> Prevention of water quality contamination following water main breaks - Work Instruction.

<sup>123</sup> Water Quality Management During Operational Activities – Procedure.

<sup>124</sup> Managing WQ during Planned Isolation of Trunk Mains Certification - Raglan St, Waterloo.

<sup>125</sup> Managing WQ during Planned Isolation of Trunk Mains Certification - Victoria Rd, West Ryde.

<sup>126</sup> Civil Delivery Contractor Induction Training.

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practice and safety and does not include specific water quality protection considerations. There seem to be observations made regarding contractors, however, it was not clear if this is a formal process. For example, a ‘dirty truck’ observed by a Sydney Water staff for a contractor undertaking repair works (email from 2020)<sup>127</sup> prompted action to investigate training for a contractor. In September 2021, Sydney Water provided a presentation on discoloured water to contractors and uploaded it onto Beacon (software). This was delivered to contractor staff through toolbox talks; training records (via attendance records) were provided for training completed by field crews in October-November 2021.<sup>128</sup> This was a good initiative by Sydney Water on training contractors in relation to minimising incidents of discoloured water. Whilst there has been training undertaken (it is not clear if there is a requirement for periodic refreshers), a review of the process on verifying that contractors undertaking network repairs are implementing hygienic practices in line with Sydney Water’s procedures is needed to ensure verifiable audit evidence is maintained.

**REC-SWC-2023-01:** Sydney Water is to ensure that there is a process in place to provide contractors performing network repairs with adequate training to undertake works to the specified hygienic requirements and protect water quality (e.g. hygienic storage and repairs, adequate flushing, testing etc). In addition, a process must be in place to verify that these practices are being implemented by contractors.

*Critical control points:*

CCP monitoring, limits and alarms were checked on SCADA and a summary of the findings in relation to filtration and disinfection are below.

It is noted that SUEZ is transitioning to Clear SCADA and they currently have two SCADA systems operating. Control of the plant will not be transferred to Clear SCADA until it has been fully commissioned.

SCADA set points for individual filter turbidity were as follows:

- Warning at 0.09 NTU;
- Alert at 0.2 NTU;
- High alarm at 0.3 NTU (delay 15 mins); and
- High High Alarm at 0.4 NTU, at which the filter will isolate.

Actions to undertake for the alert and high alarm are stated in IMP-800. The plant is run to avoid 0.5 NTU and thus avoid a CCP critical limit breach. However, if the filter fails to isolate at 0.4 NTU, the operators will need to review SCADA trends to identify if the breach was >0.5 NTU for >15 mins, as there is no alarm to automatically identify this scenario.

SCADA set points for chlorine C.t were as follows:

- Low alarm at 30 mg.min/L; and
- Low Low alarm at 25 mg.min/L.

The alarms above are as such to avoid a breach of the 15 mg.min/L critical limit. IMP-800 has actions to take at the Low and Low Low alarm set points; however, the set points in the procedure and SCADA do not align. IMP-800 has the Low alarm at 20 mg.min/L and the Low Low at 15 mg.min/L. The thresholds and subsequent actions in the procedure should be aligned with what is implemented at the plant; however, it is acknowledged that the implemented thresholds are more conservative than IMP-800.

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<sup>127</sup> Dirty trucks.

<sup>128</sup> Water Quality Register.

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**OFI-SWC-2023-11:** For the Prospect WFP - Review and update IMP-800 *Incident Response Options Table* to ensure that there is alignment between the procedure, SCADA and the CCPs, accepting that operational alarms may be tighter than the critical limits to prevent a breach.

IMP-600 - Appendix A - has 6 CCPs instead of 3.

**OFI-SWC-2023-12:** For the Prospect WFP - Review and update IMP-600 *Water Quantity & Quality Failure – Incident Notification* to ensure that CCPs/QCPs are current.

It was mentioned that in 2022, due to raw water quality issues, the filters were having issues and undergoing constant backwash sequence. There was a need to change the 0.4 NTU limit (internal critical limit) used by the WFP to 0.5 NTU and have a potential scenario where it may be >0.5 NTU for >15 mins. SUEZ informed Sydney Water who obtained approval from NSW Health for this change. It was mentioned that the greater than 0.5 NTU was only for a short interval (<15 mins) to bring the filters back online successfully.

The plant does not have filter to waste capability. Filter to waste was assessed (evidence: *Prospect Options Assessment – Final document*).<sup>129</sup> The options analysis found it preferable from cost/benefit assessment to install pre-treatment instead.

Records for annual filter bed inspections undertaken were provided.

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#### ***Element 4:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

##### *Operational procedures:*

BMIS was seen onsite, including the working of iConnect. SUEZ operating procedures were provided (e.g. PC-02 *Process Monitoring and Chemical Regimes*).<sup>130</sup>

Sydney Water audits the SUEZ DWQMP. The most recent audit was undertaken in November 2022, the scope included operational procedures.

##### *Operational monitoring:*

The Sydney Water operators enter grab sample data into SCADA Central. This was viewed during the audit interviews. There is no data validation on data entry and sometimes operators enter data into the wrong fields, but this is picked up as part of ongoing data reviews. The data is collected on a hardcopy form that has the limits on it and then transferred by operators into SCADA Central. Some plants also have an electronic plant diary; a screenshot for the Orchard Hills WFP was provided.<sup>131</sup>

The Prospect WFP operational monitoring is mostly online. There are weekly grab sample calibration checks of the online analysers. The grab sample testing by operators (for raw and finished water) is undertaken every six hours, as per the *Water Filtration Plant Agreement*. Records for this were seen during the site visit.

There isn't a nitrification management plan per se. However, strategies to use for nitrification is mentioned in the document *Disinfection of reservoirs in drinking and recycled water networks*.<sup>132</sup>

Sydney Water uses hypochlorite solutions for rechlorination at selected site (e.g. Rouse Hill site visited). Chlorate can be generated by the dissociation of hypochlorite solutions. There is currently insufficient data to set a guideline value for chlorate in the ADWG. WHO has set a provisional guideline and there is an interim guideline in Queensland. Concentrations of chlorate increases in hypochlorite solutions upon storage at high ambient temperatures or when

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<sup>129</sup> Prospect WFP Upgrade Alternative Options Feasibility Assessment.

<sup>130</sup> Process Monitoring & Chemical Regimes.

<sup>131</sup> Process Flow Diagram – Orchard Hills WFP.

<sup>132</sup> Disinfection of reservoirs in drinking and recycled water networks.



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new hypochlorite is added to old hypochlorite, among other things. The storage and practices observed at Rouse Hill appeared to be adequate (in the absence of chlorate data). The Prospect North Delivery system<sup>133</sup> mentions chlorate but only in relation to poor reliability and quality of chemical.

**OFI-SWC-2023-13:** Consider assessing the risk of elevated chlorate concentrations from onsite hypochlorite solution storage, and ensure that appropriate practices are implemented consistently across all locations to maintain the risk as low.

Corrective action:

Sydney Water's procedure D0001676 - *Triggers, Notifications and Actions for Adverse Water Quality Results* was provided.<sup>134</sup> SUEZ's corrective actions to control excursions was provided as ER-P-IMP-800 *Incident Response Options Table* document.<sup>135</sup>

Sydney Water's WPIMS5228 - *Drinking Water Quality Event Management Plan* was provided.<sup>136</sup>

SUEZ's ER-P-IMP-600 *Water Quantity & Quality Failure – Incident Notification* was provided (which needs a revision as mentioned earlier).<sup>137</sup>

Equipment capability and maintenance:

Online analysers at the Prospect WFP are calibrated annually, records were provided as *Calibration Records for PWFP CCP*.<sup>138</sup> All filter analysers are now Ultratub.

**OFI-SWC-2023-14:** For the Prospect WFP - Review and update the Field Equipment List document in relation to the turbidity analysers. All meters are now HACH Ultratub, with calibration intervals of 1/month internally and 1/year service externally.

The total chlorine instrument calibration records from Rouse Hill (Onsite Analyser Records Rouse Hill WX015)<sup>139</sup> were also provided.

The calibration log for a HACH colorimeter<sup>140</sup> used by Water Quality Scientists was reviewed on site. It showed that the instruments were being calibrated.

Materials and chemicals:

The incoming chemical inspection sheets for ferric chloride were provided as evidence by SUEZ.<sup>141</sup>

For Sydney Water, the delivery dockets for Rouse Hill sodium hypochlorite delivery were provided as evidence.<sup>142</sup>

The analysis results of a batch (SW059) of the calcium hypochlorite tablets were provided for 17 February 2023.<sup>143</sup> Approval for use of this batch was seen in an email dated 2 March 2023.<sup>144</sup>

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**Element 5:**

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

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<sup>133</sup> Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.

<sup>134</sup> Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.

<sup>135</sup> Incident Response Options Table.

<sup>136</sup> Drinking Water Quality Event Management Plan – Procedure.

<sup>137</sup> Water Quantity & Quality Failure - Incident Notification.

<sup>138</sup> Calibration Records for PWFP CCP.

<sup>139</sup> Chemical Dosing Team - On-site Form for Calibration of ProMinent Dulcometer DIC - Total Cl2 - Rouse Hill.

<sup>140</sup> 2022 Chlorine Colorimeter – calibration records.

<sup>141</sup> PWFP Technicians Manual - Incoming Chemical Inspection Sheet – 17 Feb 23.

<sup>142</sup> Delivery Dockets Rouse Hill WX0158\_1.

<sup>143</sup> Analysis of Calcium Hypochlorite Tablets.

<sup>144</sup> Approval of Klorman Calcium Hypo batch SW0059 and SW0060.

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Drinking water quality monitoring:

Monitoring data is stored in Monitoring BI; it is transferred from Labware/LIMS to Monitoring BI via Limnos. Monitoring BI was seen onsite; it showed 48 results for Trihalomethanes (THMs) testing at Prospect North Delivery System<sup>145</sup> which matched the monitoring plan requirement of four per month. *E. coli* for the Prospect North system was tested 1,236 times, which also matched the monitoring plan. There was a detection of *E. coli* at 1 org/100mL for sample date 21 February 2023. The water quality incident record (email)<sup>146</sup> and investigation report<sup>147</sup> for this was seen.

Consumer satisfaction:

Customer complaints are recorded in Customer Relationship Management (CRM) system. An example was provided - CRM 8002198345 4 Agnew Cl Kellyville.<sup>148</sup>

Overall customer satisfaction is included in the quarterly internal corporate performance reporting. The *Corporate Performance Report* June 2023<sup>149</sup> (Slide 3 & 4) was provided as an example.

Short-term evaluation of results:

Examples of automated emails for out-of-specification results were provided for nitrate, pH, and total coliforms,<sup>150</sup> and for *E. coli*.<sup>151</sup> The emails were sent to persons on the contact list.

Corrective action:

Non-conformances will result in automated notifications being sent from the Actions Database that is monitored daily. Following a non-conformance, NSW Health is notified, and an investigation occurs. The last two non-conformance (22-23) records and responses were in Coogee (Potts Hills)<sup>152</sup> and Asquith (Prospect North).<sup>153</sup>

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**Element 6:**

Sydney Water has not demonstrated that the requirements of this element of its DWQMS were fully implemented.

Communication:

The contact's list was provided. D0001088 - *Water Quality Management Contacts* (Sydney Water)<sup>154</sup> and ER-P-IMP-100C *Incident Management Contact List* (SUEZ)<sup>155</sup> is maintained to ensure communication is rapid during drinking water events.

Incident and emergency response protocols:

The emergency response plan was enacted during the audit period with the July 2022 extreme weather event, as well as the tripartite incident exercise carried out on 30 May 2023. Q1 2023 SLG item 5.1 - Tripartite Exercise 2023 Update<sup>156</sup> shows the plan for the exercise including timeline for workshop and debrief report. The draft tripartite exercise report was also provided.

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<sup>145</sup> Prospect North THM.

<sup>146</sup> Email: Water Quality Incident Record INC-41661 - *E. coli* detected at drinking water compliance site 55 Lords Ave in Asquith has been created.

<sup>147</sup> *E. coli* Investigation Report - 55 Lords Ave – Asquith.

<sup>148</sup> CRM 8002198345 4 Agnew Cl Kellyville.

<sup>149</sup> Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.

<sup>150</sup> Email: Automated email notification from AMD's Actions Database - 160058.46.

<sup>151</sup> Email: Automated email notification from AMD's Actions Database - 155624.849.

<sup>152</sup> *E. coli* Investigation Report - 19 Division St – Coogee.

<sup>153</sup> *E. coli* Investigation Report - 55 Lords Ave – Asquith.

<sup>154</sup> Water Quality Management Contacts.

<sup>155</sup> Incident Management Contact List.

<sup>156</sup> Strategic Liaison Group 29 March 2023 - Agenda Item 5.1 - Tripartite Exercise 2023 Update.



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SUEZ training content was provided, delivered in January 2023. Sydney Water provided a training attendance record and training presentation for water quality awareness session (including Fluoride Code of Practice) awareness training.

Sydney Water provided the SWIRL/Noggin list of incidents for the reporting period.<sup>157</sup>

NSW Health comment - review procedures to ensure timely and appropriate debrief of incidents. Further, NSW Health mentioned that the debrief for the July 2022 incident was yet to be completed. This was discussed during the audit interviews. It was stated that there is a procedure to guide incident investigations and lessons learned (D0000513), which was provided.<sup>158</sup> An incident logged in the SWIRL/Noggin records in July 2022, the Prospect WFP Clear Water Tank No. 1 cover failure,<sup>159</sup> was reviewed for the audit. It was mentioned that around the same time, there were raw water quality issues (rainfall event), which WaterNSW was managing.

Sydney Water provided documents, *Prospect Water Filtration CWT Cover Failure PWWP Brief*<sup>160</sup> and 30019105-MEMO-MAT-001 (B) - Lot 1 Desktop Review and RCA,<sup>161</sup> which form part of the investigation. It was stated that although the initial incident is closed, the investigation and response of the incident is still ongoing. A formal debrief can be undertaken when more reliable information becomes available to properly document the lessons learned for design. Further, it was stated during the audit interview that the incident was discussed with NSW Health in the August 2023 JOG meeting, and it was also summarised in the quarterly report to NSW Health (note, these were out of the audit period). Sydney Water also had weekly informal meetings with NSW Health to provide updates and share findings.

The evidence provided demonstrated that Sydney Water undertook investigations, are progressing further with investigations and have kept NSW Health informed/updated of the status. However, this is not the same as conducting a debrief. Sydney Water's IMP (DC0000506)<sup>162</sup> states in section 4.4 that a debrief and investigation must be completed within 45 days of the incident. D0000513 *Incident Debrief and Investigation* procedure<sup>163</sup> states in section 3 that the debrief should be held within 4-6 weeks of the incident (section 4.8 states that it must be scheduled within 8 weeks of closing the incident; there is a slight inconsistency between the sections). The SWIRL record<sup>164</sup> states the incident date as 5 May 2022 and the incident close date as 26 May 2023. The temporary repairs to the cover were completed in November-December 2022, with ongoing monitoring and work scheduled. The testing of *E. coli* at the Prospect main delivery dropped to weekly in January 2023 from initial daily then every second day. A debrief (multi-agency) for relevant incidents such as this one should be done while the response and management actions taken are still fresh. Undertaking a debrief after 1 year defeats the purpose of a debrief.

**REC-SWC-2023-02:** Review implementation of the process for closing incidents and undertaking incident debriefs (internal and multi-agency) as per Sydney Water's Incident Management Procedure and Incident Debrief and Investigation Procedure and undertake an awareness session with all relevant staff to enable the procedures to be fully implemented.

Sydney Water undertook an after-action review for the July 2022 flood event<sup>165</sup> with some recommendations identified. This review was completed in September 2022.

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<sup>157</sup> Water Quality Hazards & Incidents (SWIRL) 2022-23.

<sup>158</sup> Incident Debrief & Investigation – Procedure.

<sup>159</sup> Incident Details – Prospect WFP Clear Water Tank No. 1 cover failure.

<sup>160</sup> Prospect Water Filtration CWT Cover Failure.

<sup>161</sup> Prospect WFP - Cover Support Structure Structural Assessment & Rehabilitation.

<sup>162</sup> Incident Management Procedure.

<sup>163</sup> Incident Debrief & Investigation – Procedure.

<sup>164</sup> Water Quality Hazards & Incidents (SWIRL) 2022-23.

<sup>165</sup> After-Action Review Sydney Water July 2022 Flood Event.

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The JOG meetings track the findings of incidents. Actions are internally tracked in Noggin. Incidents are included in Briefing papers and considered for risk assessments through that process. The emergency management action in the case of the floods pushed through the Orchard Hills and Warragamba projects.

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***Element 8:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

*Community consultation:*

The ‘Our Water Our Voice’ program can be sighted on Sydney Water website. This program demonstrates Sydney Water’s community consultation.

*Communication:*

A newsletter is attached to every bill called Water Wrap. This is available on the Sydney Water website.

Through the Customer and Community Reference Group, it was recently mentioned that there was an opportunity to engage with new community groups. The new arrivals flyer, which included messages in several languages, was provided.<sup>166</sup> The water literacy tracker, looks at the sources and how acceptable different sources would be; an example, Water Literacy Tracker Wave 6 Report 2023,<sup>167</sup> was provided.

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***Element 9:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

*Investigative studies and research monitoring:*

Sydney Water’s research priority areas were shared - Innovation, Research and Deployment Plan – Research horizon priorities.<sup>168</sup>

The S&T plan with SUEZ and one project report completed within FY22-23 was provided as evidence (*R&D S&T Plan 2020-2023 – SUEZ and Sydney Water and Brief D report – Final – R&D S&T*).<sup>169</sup>

The final report for the project, *Adapting catchment monitoring and potable water treatment to climate change*<sup>170</sup> was provided by Sydney Water.

*Validation of processes:*

Sydney Water carried out performance verification of treatment process in pilot scale treatment trials. A pilot plant trial was conducted for 6 months to assess the performance of a pre-treatment process (ballasted sedimentation) and direct filtration in 2020/21 at Orchard Hills.<sup>171</sup> It showed that treatment performance improved by a pre-treatment process for deteriorated quality raw water.

NSW Health comment: review emergency pre-treatments at Warragamba and Orchard Hills and progress on permanent upgrades.

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<sup>166</sup> CCRG New Arrivals Flyers.

<sup>167</sup> Water Literacy Tracker Wave 6 Report April-June 2023 Quantitative Findings.

<sup>168</sup> Research horizon priorities - Innovation Research & Deployment Plan.

<sup>169</sup> PWWP R&D 8th Triennium - Brief D - Preparing for emergency operations during a severely deteriorated raw water quality event.

<sup>170</sup> Adapting catchment monitoring and potable water treatment to climate change.

<sup>171</sup> Ballasted Sedimentation (Actiflo) and Direct Filtration Pilot Plant Trials at Orchard Hills WFP.

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The Actiflow plant (ballasted sedimentation process) was piloted at the Orchard Hills plant.<sup>172</sup> It identified that it would be a suitable solution option. This plant has now been moved to the Warragamba WFP. These were trialled as emergency options and are in place for use. Permanent upgrades are a longer process and will be tracked via the Improvement Plan.<sup>173</sup> The Prospect pre-treatment plant augmentation and upgrade project timeline was shared, which showed completion was expected to be in 2026.

*Design of equipment:*

Temporary additional treatment processes have been commissioned for Warragamba WFP<sup>174</sup> and a previously decommissioned primary sedimentation tank for Orchard Hills WFP as part of the emergency response to the July 2022 event. The purpose of the process units is to improve raw water quality prior to existing treatment processes. Sydney Water carried out detailed performance verification of the pre-treatment process in a pilot-scale treatment trial at Orchard Hills WFP.<sup>175</sup>

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***Element 10:***

Sydney Water demonstrated that the requirements of this element of its DWQMS were fully implemented.

*Management of documentation and records:*

BMIS runs on Lotus Notes, it is planned to be retired. SWIM is also a document management and may replace BMIS. Currently, SWIM is used mainly for records. Reports are kept in SWIM.

Incident records are retained in Noggin with some of the documents in SharePoint and included as attachments in Noggin.

iConnect is an interface and can find documents in SWIM and BMIS. Documents with a version control are stored in BMIS.

SCADA data is in the data warehouse.

BMIS and iConnect (interface) were seen onsite.

The monitoring for expired documents is a previous recommendation (2022-13) and has been covered in that section.

The Digital Team looks after cybersecurity.

The crews have Toughbooks for access to procedures and the entry of records, such as work orders.

*Reporting:*

Examples of reports produced were provided:

- *Annual Corporate Compliance and Performance Report 2021-22\_final*<sup>176</sup> was shared with IPART and NSW Health via email. The email to NSW Health was provided as evidence (Email Annual DWQ and RWQ Compliance and Performance Reports - 2021-22-010922).<sup>177</sup>

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<sup>172</sup> Ballasted Sedimentation (Actiflo) and Direct Filtration Pilot Plant Trials at Orchard Hills WFP.

<sup>173</sup> Sydney Water Drinking Water Quality Improvement Plan.

<sup>174</sup> Temporary Work Instructions – Actiflo Unit.

<sup>175</sup> Ballasted Sedimentation (Actiflo) and Direct Filtration Pilot Plant Trials at Orchard Hills WFP.

<sup>176</sup> Annual Drinking Water Quality Compliance and Performance Report 2021 – 2022.

<sup>177</sup> Email: Annual DWQ and RWQ Compliance and Performance Reports - 2021-22.

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- Consumers can access a quarterly report from the Sydney Water website. The auditors were able to successfully download the April-June 2023 quarterly report<sup>178</sup> for Prospect North from the website.

**OFI-SWC-2023-15:** Correct the table/s in the website quarterly reports which mentions that the ADWG health guideline is 5 mg/L for free chlorine. The 5 mg/L value is for total chlorine in the ADWG.

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### Recommendations

The following recommendations are made in respect of this obligation:

- **REC-SWC-2023-01:** By 31 December 2024, Sydney Water is to ensure that there is a process in place to provide contractors performing network repairs with adequate training to undertake works to the specified hygienic requirements and protect water quality (e.g. hygienic storage and repairs, adequate flushing, testing etc). In addition, a process must be in place to verify that these practices are being implemented by contractors (relates to Element 3).
  - **REC-SWC-2023-02:** By 31 December 2024, review implementation of the process for closing incidents and undertaking incident debriefs (internal and multi-agency) as per Sydney Water's Incident Management Procedure and Incident Debrief and Investigation Procedure and undertake an awareness session with all relevant staff to enable the procedures to be fully implemented (Element 6).
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### Opportunities for improvement


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

- **OFI-SWC-2023-10:** Ensure that the work procedure on 'Operations of Orchard Hills WFP Stage 1 Sedimentation tank' is a controlled document with an appropriate review frequency assigned (relates to Element 3).
  - **OFI-SWC-2023-11:** For the Prospect WFP - Review and update IMP-800 *Incident Response Options Table* to ensure that there is alignment between the procedure, SCADA and the CCPs, accepting that operational alarms may be tighter than the critical limits to prevent a breach (Element 3).
  - **OFI-SWC-2023-12:** For the Prospect WFP - Review and update IMP-600 *Water Quantity & Quality Failure – Incident Notification* to ensure that CCPs/QCPs are current (Element 3).
  - **OFI-SWC-2023-13:** Consider assessing the risk of elevated chlorate concentrations from onsite hypochlorite solution storage, and ensure that appropriate practices are implemented consistently across all locations to maintain the risk as low (Element 4).
  - **OFI-SWC-2023-14:** For the Prospect WFP - Review and update the Field Equipment List document in relation to the turbidity analysers. All meters are now HACH Ultratub, with calibration intervals of 1/month internally and 1/year service externally (Element 4).
  - **OFI-SWC-2023-15:** Correct the table/s in the website quarterly reports which mentions that the ADWG health guideline is 5 mg/L for free chlorine. The 5 mg/L value is for total chlorine in the ADWG (Element 10).
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<sup>178</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - Fourth Quarter 2022-23.

## 2.3.2 Recycled Water (clause 4.2)

### 2.3.2.1 Recycled Water – Maintenance of RWQMS (sub-clause 4.2.1)

Sub-clause	Requirement	Compliance Grade
4.2.1	<p>Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling and any requirements relating to water recycling specified by NSW Health (the <b>Recycled Water Quality Management System</b>).</p> <p><i>Note: AGWR elements 1-6, 10, 11 and 12 only nominated for audit.</i></p>	 <b>Non-compliant (non-material)</b>

#### Risk if non-compliant

Without a comprehensive Recycled Water Quality Management System, there is a high risk that Sydney Water may not be able to effectively manage risks to recycled water quality, thereby posing risks to both public health and the environment.

#### Evidence sighted

Refer Appendix C (C.2.3).

#### Summary of audit findings/reasons for grade

Sydney Water has been found to be non-compliant (non-material) with this Licence obligation as there are inadequacies in the process of customers connecting to Sydney Water's recycled water mains. The procedure is not clear and there is some uncertainty regarding the responsibilities of different stakeholders, in particular Sydney Water and the Department of Fair Trading. The resulting lack of clarity has led to gaps in the process and, in certain circumstances where connection errors between the main and meter occur, they are not being identified. This was not considered to be material as the risk is still quite low; it will only affect a very small number of properties and the recycled water quality is very high to account for the potential of cross-connections.

There were two cross-connections identified in the audit period and in both incidents Sydney Water's drinking water meter was installed on the wrong main to meter connection, i.e. the drinking water meter was on a recycled water supply. In both cases the mains to meter connections and water meters were installed by a third-party. It is acknowledged that the mains to meter connections are owned by the property owner, however, the water meters are Sydney Water's assets that were installed incorrectly, and in both cases, it resulted in residential customers consuming recycled water. It is still unclear if procedures have been fully followed and if they would identify this type of cross-connection. However, it is considered that Sydney Water's current process is inadequate in identifying cross-connections prior to the water supply commencing.

The Department of Fair Trading is the plumbing inspector and is responsible for checking the internal plumbing for cross-connections before recycled water is supplied. However, this inspection does not include the mains to meter connection. That connection is the property of the customer; however, the water meter is the property of Sydney Water. This is where the uncertainty regarding responsibilities appears to occur and process of checking that component of the supply is not clearly defined.

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This was the only adequacy issue that was identified with Sydney Water's Recycled Water Quality Management System. In general, the system is quite mature and adequately manages the risks. It is also seen that Sydney Water is actively working to further improve systems, such as through the Wingara (Digital Uplift) Program.

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### **Areas of good practice observed**

Sydney Water has not demonstrated full compliance with this obligation. No specific areas of good practice have been identified.

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### **Discussion and notes**

Maintenance of the Recycled Water Quality Management System (RWQMS) to be consistent with each audited element of the *Australian Guidelines for Water Recycling* (AGWR) is discussed below.

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#### ***Element 1:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

##### *Responsible use of recycled water:*

Section 1.1 of the Recycled Water Quality Management Plan (RWQMP) details the agencies relevant to the scheme. It includes references to the Memoranda of Understanding (MoUs) held with NSW Health, Environment Protection Agency (EPA) and Department of Fair Trading (DFT). It is noted that the DFT MoU is not included in the Sydney Water operational licence or listed on the Sydney Water website. As DFT is a key agency involved in the coregulation of recycled water plumbing it should be being more prominent in the governance framework. The DFT relationship is mentioned in subsequent elements.

**OFI-SWC-2023-16:** The DFT MoU is not included in the Sydney Water Operating Licence or listed on the Sydney Water website. Consider adding the DFT MoU to the Sydney Water website.

Section 1.1 of the RWQMP also commits to ensuring the expertise of those involved in the designing, managing and operating of recycled water plants.

##### *Regulatory and formal requirements:*

The RWQMP lists the main regulatory and formal requirements required for operation of the recycled water schemes. For greater detail it refers to the *Compliance Accountability Register*<sup>179</sup> (CAR), which holds specific details in relation to each of the requirements including, requirement, accountability, Sydney Water contact, measures to comply and evaluation mechanism.

It also refers to the *Environmental External Requirements Register*<sup>180</sup> for the other requirements.

The governance of the recycled water schemes is detailed in the RWQMP section 1.2 and 1.3.

The *External Stakeholder Engagement Map*<sup>181</sup> details the relationship with stakeholders and how and who in Sydney Water is responsible for the relationship. The individual scheme RWQMP identifies recycled water customers.

Regulatory requirements are allocated to staff in the CAR<sup>182</sup> and the measures used to implement them, this includes relevant procedures and plans that are required to implement the requirements.

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<sup>179</sup> Compliance Accountability Register 2022.

<sup>180</sup> Environmental External Requirements Register.

<sup>181</sup> External Stakeholder Engagement Map – Masterfile.

<sup>182</sup> Compliance Accountability Register 2022.



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The process for reviewing and maintaining currency of CAR<sup>183</sup> is briefly mentioned in section 1.2 of the RWQMP. The Corporate Compliance team publishes a legislative update fortnightly<sup>184</sup>, it provides information on recent changes to local and national legislation potentially affecting Sydney Water. The information is gathered from legislative alerts, newsfeeds, NSW Government notification subscriptions and gazette.

This could be better articulated in the RWQMP, as the process is not alluded to. However, the CAR<sup>185</sup> is to be digitised, which is why no major reviews have been undertaken in the audit period.

*Partnerships and engagement of stakeholders (including the public):*

The *External Stakeholder Engagement Map*<sup>186</sup> details the relationship with stakeholders and how and who in Sydney Water is responsible for the relationship. This was last updated in May 2022.

Sydney Water has MoUs with key agencies, including NSW Health, EPA and DFT. The relevant details and engagement with other stakeholders is detailed in Section 1.3, Table 2 of the RWQMP. Stakeholders affecting, or affected by, decisions or activities related to the use of recycled water are listed in the RWQMP.

End users are broadly identified in the RWQMP, it states that business customers are detailed in the site plans. The St Marys RWQMP identifies the recycled water is supplied to two end users, the Dunheved Golf Course (DGC) and St Marys Advanced Water Treatment Plant (AWTP). The AWTP is operated by Sydney Water and is technically an internal use. The responsibilities of DGC are specified in the Recycled Water Supply Agreement,<sup>187</sup> which was supplied.

Business users are engaged through Business Customer Representatives. As part of the agreement to supply recycled water, users must submit an Annual Declaration Form.<sup>188</sup> The declaration requires them to verify that they understand and have implemented the requirements of the agreement.

*Recycled water policy:*

*BMIS0260.01 - Recycled Water Management Policy*<sup>189</sup> has been endorsed by the Managing Director. The recycled water policy is available on the Sydney Water website.

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***Element 2:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

*Source of recycled water, intended uses, receiving environments and routes of exposure:*

The RWQMP refers to the individual scheme plans for scheme specific information.

The source water is identified in the St Marys RWQMP,<sup>190</sup> section 2.1.1. The quality of influent has been assessed using 10 years of water quality data.

The intended uses, routes of exposure, receiving environments, endpoints are all identified in Section 2 of the St Marys RWQMP. Section 2.1.5 includes details of inadvertent and unauthorised uses. Impacts from inadvertent or unauthorised uses are identified in Table 2, these were noted as being considered in the water quality risk assessment.

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<sup>183</sup> Compliance Accountability Register 2022.

<sup>184</sup> Sydney Water Legislative Update 19 June - 16 July 2023.

<sup>185</sup> Compliance Accountability Register 2022.

<sup>186</sup> External Stakeholder Engagement Map – Masterfile.

<sup>187</sup> Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.

<sup>188</sup> Dunheved Golf Club statutory declaration 2023.

<sup>189</sup> Recycled Water Management Policy.

<sup>190</sup> Recycled Water Quality Management Plan St Marys Recycled Water Scheme.

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Recycled water system analysis:

The RWQMP refers to the long-term strategic planning approach to the recycled water scheme analysis. This includes the plant specific process capability assessments, which are developed for recycled water plants as part of system planning to assess the condition, performance, and process capability of recycled water plants.

There is high-level detail of the scheme in section 2 of the St Marys RWQMP.<sup>191</sup> The Risk Assessment Briefing Paper<sup>192</sup> includes a description of the scheme and detailed information on influent and effluent quality.

The risk assessment team is detailed in the St Marys risk register<sup>193</sup> and in section 2.2 of the *St Marys Recycled Water Risk Report*.<sup>194</sup> The team includes members in a range of positions from Sydney Water and representatives from NSW Health and DGC.

There is a high-level PFD in the St Marys RWQMP, a more detailed PFD document is also referenced<sup>195</sup> and has been prepared in accordance with the procedure.<sup>196</sup> On review of PFD through the onsite inspection it would appear that they are consistent with the infrastructure on the ground.

D0001681 – *Recycled Water Risk Assessment Workshop Procedure* documents the RWQMP review process.<sup>197</sup> This includes the steps to take to review the risk assessment, including the scheme information that needs to be reviewed and prepared in the form of a risk assessment briefing paper. It states that the risk assessments are to be reviewed every 4 years.

Assessment of water quality data:

Recycled Water Risk Assessment Workshop Procedure<sup>198</sup> in Section 4 Point 3 states that 10 years of water quality data should be assessed with charts and trends.

Hazard identification and risk assessment:

The RWQMP refers to the scheme RWQMPs and the corporate risk management tool KnowRisk.

The risk assessment process is documented in the Recycled Water Risk Assessment Workshop Procedure.<sup>199</sup> This is referenced in the RWQMP, although not in section 2.4 Hazard Identification and Risk Assessment.

**OFI-SWC-2023-17:** Consider referencing the *Recycled Water Risk Assessment Workshop Procedure* in Section 2.4 of the RWQMP for the methodology of conducting a risk assessment.

KnowRisk is being discontinued as part of the Wingara (Digital Uplift) Program and replaced with Camms.risk. The risk spreadsheets are currently not uploaded into KnowRisk. The Camms.risk tool will have greater functionality and will be able to find trends in issues and controls, activities such as risk reviews and audits. There will also be interconnection between Noggin (incident management) and Camms.risk. The *Recycled Water Risk Assessment Workshop Procedure* will need to be updated to accommodate this change, this is a recent change and KnowRisk is still functional.

Section 2 of the RWQMP states the triggers for a RWQMP review are as follows:

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<sup>191</sup> Recycled Water Quality Management Plan St Marys Recycled Water Scheme.

<sup>192</sup> Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme - June 2023.

<sup>193</sup> St Marys WRRF Recycled Water Risk Assessment.

<sup>194</sup> St Marys Recycled Water Risk Report - September 2023.

<sup>195</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.

<sup>196</sup> Creation of Process Flow Diagram - Work Instruction.

<sup>197</sup> Recycled Water Risk Assessment Workshop SOP – Procedure.

<sup>198</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.

<sup>199</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.



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- every 4 years;
  - addition of a new use;
  - change to the operation of the scheme;
  - an incident that indicates controls are not effective; and
  - identification of a new hazard or hazardous event.

The hazards and hazardous events are listed in the Recovered Resources Hazard and Risk (Controls) Library.<sup>200</sup>

The risks for the St Marys scheme have been assessed in accordance with the risk methodology.

Sydney Water has a document identifying Risk Appetite Statements,<sup>201</sup> which determines those risks that are acceptable and those that require control. In effect identifying significant risk.

The *Recycled Water Risk Assessment Workshop Procedure*<sup>202</sup> includes the methodology to determine uncertainty, this has been assessed for each hazardous event to assess the certainty of the risk assessment and applied controls.

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### ***Element 3:***

The RWQMS does not conform to the requirements of this element. After a review of the cross-connections that occurred in the audit period between the recycled water and drinking water services, it was considered that the existing preventive measure were not adequate.

#### ***Preventive measures and multiple barriers:***

Section 3.1 of the RWQMP identifies organisation-wide preventive measures and barriers that are in place to manage hazards and hazardous events. At a scheme level they are detailed in the risk assessment.<sup>203</sup> Controls have been identified for each of the hazardous events in the St Marys risk assessment.

There were no risks identified for the St Marys WRRF that were higher than the Sydney Water risk appetite<sup>204</sup> after controls were applied and therefore there was no need for additional preventive measures.

A persistent issue with recycled water schemes is the potential for cross-connections due to the similar appearance to drinking water. There are no issues with the commercial users, such as the DGC. There is a greater potential issue with domestic third pipe supplies due to the number of connections, less control and uses internal to the home.

After some deliberation it is considered that the strategy regarding the management of cross-connections in residential premises is inadequate to manage the risk. A discussion on the issue is as follows.

Sydney Water has an MOU with the DFT<sup>205</sup> regarding the regulation of plumbing. This states that DFT is responsible for the regulation of on-site plumbing and will conduct final inspections on all properties that are connected to a recycled water scheme. It is noted that there is a backlog of up to 3,500 properties in relation to these inspections, preventing installation of recycled water meters.<sup>206</sup> Sydney Water is responsible for recycled water services

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<sup>200</sup> Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.

<sup>201</sup> Risk Appetite Statements.

<sup>202</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.

<sup>203</sup> St Marys WRRF Recycled Water Risk Assessment.

<sup>204</sup> Risk Appetite Statements.

<sup>205</sup> Memorandum of Understanding between Sydney Water and Crown in right of the State of New South Wales (represented by the NSW Fair Trading of the Department of Customer Service).

<sup>206</sup> Minutes and Actions: Memorandum of Understanding Renewal of MOU.

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which are delivered via its assets, products and services. It also states that Sydney Water is to grant approvals for connections to and disconnections from its mains.

There have been two cross-connection incidents in the audit period. These were similar in nature but have different underlying root causes. Investigations have been undertaken and some key points are below:

- 37 – 41 Serpentine Avenue, North Kellyville<sup>207, 208</sup>
  - This occurred in a new subdivision.
  - The drinking water meter had been installed on the clearly marked recycled water main to meter connection.
  - The drinking water and recycled water mains and main to meter connections were all installed by third-parties.
  - The incident report does not specifically state who incorrectly installed the water meter, but it is assumed to be a third-party plumber.
  - No recycled water meter had yet been installed and the internal recycled water service was connected to the drinking water, as is normal practice.
  - The cross-connection (meter to incorrect main connection) was identified when Sydney Water undertook routine main to meter flow tests for the recycled and drinking water supplies.
  - The residents of the home had already moved into the property when the issue was identified.
  - The development was managed by a third-party Water Servicing Coordinator.
- 12 – 14 Nightcap Street, North Kellyville<sup>209, 210, 211, 212</sup>
  - 41 strata title units were supplied recycled water in the drinking water service through a single connection for up to 18 months.
  - The issue was identified through a customer complaining about the taste of the water and the subsequent Sydney Water investigation, as required in dual reticulation areas.<sup>213</sup>
  - The developer had used the Tap-in application process to get approval for a Driller to install the mains to meter connection for the drinking, recycled and fire services for the building. The connections were not as per the design and were not labelled.
  - The developer's plumber incorrectly connected the fire service to drinking water and the recycled water AND drinking water internal services to the recycled water supply.
  - The internal plumbing was tested by DFT and was found compliant.
  - Sydney Water conducted a flow check on the mains to meter connection, before the recycled water meter was connected, and it passed.
  - A Sydney Water contractor installed the recycled water meter.

In both incidents Sydney Water's drinking water meter was installed on the wrong main to meter connection, with the drinking meter installed on the recycled water supply. In both cases the mains to meter connections and water meters were installed by a third-party.

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<sup>207</sup> Cross connection report - 37-41 Serpentine Ave, North Kellyville.

<sup>208</sup> Incident on Serpentine Ave North Kellyville - SWIRL Record.

<sup>209</sup> CRM Extract - 8002510614 12 Nightcap St North Kellyville.

<sup>210</sup> Email: Incident: Prospect North - Hills Suburbs - 0051-2023 - Plumbing anomaly identified on private potable service at a residential property located at 12 Nightcap Street in Kellyville.

<sup>211</sup> Technical Review for the cross connection at 14 Nightcap St North Kellyville - Backflow Prevention Team.

<sup>212</sup> Noggin Record: Plumbing anomaly identified on private potable service at a residential property located at 12-14 Nightcap Street in Kellyville.

<sup>213</sup> Managing Water Quality Customer Complaints – Procedure.

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At Serpentine Avenue, it would appear that flow tests were undertaken and identified the cross-connection, but after the water meter had been installed and the resident occupied the dwelling. It is not known if the occupation was legal, however, this is irrelevant as the drinking water supply should be compliant throughout the construction phase. It is not unreasonable for the builder to use the water for potable uses such as drinking.

In the Nightcap Street instance, Sydney Water undertook the flow test of the recycled water and drinking services in December 2021, 3-months after the developer collected the drinking water meter, but before the recycled water meter was collected. It would seem in this instance the flow check was unable to determine that there was recycled water being supplied to the development's drinking water connection. There was also no check of the fire service to identify that it was incorrectly connected to the drinking water. There is a complication in that there is no record as to when the drinking water meter was actually installed. However, even if it was not installed at the time of the flow test, the mains to meter connection did not comply with the *Plumbing Code of Australia* as it was not appropriately marked in accordance with AS 3500.1 *Plumbing and Drainage Water Services*. This should have been identified.

It was noted in the Nightcap incident report that this type of issue could have gone undetected in other developments. Sydney Water or DFT do not undertake audits of recycled water connections as recommended in the ADWG Table 2.8 after connection. This remains a gap and is somewhat complicated by the fact that DFT is the plumbing inspector and Sydney Water is the supplier of the recycled water. Cross-connection testing is undertaken by Sydney Water following a complaint. This incident identifies how ineffective this approach is at identifying issues, as 41 properties were cross-connected, and it was only after 18 months that one person complained due to the taste.

It is acknowledged that the mains to meter connections are owned by the property owner, however, the water meters are Sydney Water's assets, and it is also their responsibility for the supply of the recycled water. It should only be supplied for the intended use, to ensure risks are managed appropriately (i.e. it is not intended to be used as drinking water). DFT only checks the onsite plumbing, leaving a gap in the cross-connection check for the mains to meter connection. There appears to be a lack of clarity on the responsibility to check the mains to meter connections and ensure that meters are installed correctly. In the two incidents above, the meters were installed incorrectly and in both cases resulted in residential customers consuming recycled water. It is still unclear if procedures have been fully followed and if they should pick up this type of cross-connection. It is considered that it is Sydney Water's responsibility to ensure its meters are installed correctly and recycled water is being supplied for the intended purpose and the current process is inadequate to provide this assurance.

It is also worth considering that the log removal values for dual reticulation in the AGWR are based on a maximum of 1/1,000 people consuming 1L of recycled water a day. Sydney Water undertakes a comprehensive verification monitoring program every four years to check that recycled treatment plants meet or exceed pathogen log removal values. If the number of cross-connections were to exceed 1/1,000, then it would present an unacceptable health risk. It is not considered that these events have resulted in this threshold being exceeded, however, there is some uncertainty in the extent of this issue. It would also seem that non-standard multi-dwelling connections are a higher risk of cross-connections due to the number of parties involved.

**REC-SWC-2023-03:** Sydney Water must amend its existing process for connecting properties to the recycled water network to ensure that avoidable cross-connections are eliminated. Sydney Water should also quantify the public health risk of existing properties and put appropriate controls in place, which may include the auditing of existing connections. This review must be undertaken in collaboration with NSW Health and DFT.

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Critical control points:

Section 3.2 of the RWQMP refers to the *Recycled Water Product Specification (DO00096)*,<sup>214</sup> which identifies the CCPs for all of Sydney Water's schemes. The Specification includes a detailed description of a CCP and the process used to identify them, which is based on ensuring that barriers to pathogens are in place and provide the appropriate level of treatment.

The site specific RWQMPs contain details of the CCPs such as monitoring locations, responsibilities and the action following exceedance of the limit.<sup>215</sup>

It was noted in the 2022 operational audit that some of the online turbidity instruments used for CCPs were not in the correct location. The same issue is present at the St Marys WRRF, as observed at the site inspection. The turbidity instrument for the tertiary filtration CCP is located in the middle of the chlorine contact tank; it should be at the outlet of the filter. Sydney Water's filtration unit process guideline<sup>216</sup> states that turbidity should be monitored at the outlet of the filter. There is an open recommendation on this issue, 2022-07.

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**Element 4:**

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

Operational procedures:

Section 4.1 of the RWQMP provides details of the operational procedures. It is noted that the recycled water plants are automated with PLC and SCADA control, and many of the operational interventions are implemented by the control system.

Sydney Water has developed overarching, hub and site-specific procedures. For the St Marys WRRF the following procedures were provided as evidence:

- *St Marys WRRF Plant Operations Manual.*<sup>217</sup>
- *St Marys WRRF Process Specification.*<sup>218</sup>
- *Water Resource Recovery Common Laboratory Methods & Analysis Manual.*<sup>219</sup>
- *Wianamatta Hub Sampling and Analysis.*<sup>220</sup>
- *St Marys WRRF Process Specification.*<sup>221</sup>
- *Unit Process Guideline Rapid and High Rate Filtration.*<sup>222</sup>

Operational monitoring:

Operational monitoring is detailed in Section 4.2 of the RWQMP. The following is identified in the plan:

- Monitoring of trade waste licences and site inspections, based on risk profile.
- Automated real time monitoring of equipment and process performance via SCADA, and remote 24/7 monitoring of alarms via IICATS.
- Routine plant equipment and process inspections and checks by operators on days that the plant is manned.

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<sup>214</sup> Recycled Water Product Specifications.

<sup>215</sup> Recycled Water Quality Management Plan - St Marys.

<sup>216</sup> WTHQ5022 – Rapid and High Rate Filtration Generic Unit Process Guide.

<sup>217</sup> D0001305 St Marys WRRF Plant Operations Manual.

<sup>218</sup> D0001267 - St Marys WRRF Process Specification.

<sup>219</sup> D0001344 - Water Resource Recovery Common Laboratory Methods & Analysis Manual.

<sup>220</sup> D0001334.10 – Wianamatta Hub Sampling and Analysis.

<sup>221</sup> D0001267 - St Marys WRRF Process Specification.

<sup>222</sup> WTHQ5022 – Unit Process Guideline Rapid and High Rate Filtration.

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- On-site analysis of routine grab/composite sample analysis of various process parameters on days the plant is manned.
  - Routine review of process control trends (SCADA and other data), alarm occurrences, plant control settings.
  - Review of data from the Sydney Water *Recycled Water Quality: Compliance & Operational Monitoring Plan*, which is used to verify recycled water quality.
  - Mains to meter inspections for new recycled water connections.

The St Marys RWQMP<sup>223</sup> details the CCP monitoring in Table 3 and the operational control points (OCPs) in Table 4.

During the site visit at St Marys WRRF, operational monitoring checklists were reviewed.

Operational corrections:

As mentioned above many of the operational corrections are automated through the PLC and SCADA. The recycled water pump supplying the golf course is interlocked with a number of prerequisites for supply. There are also a number of other checks and balances such as the following:

- Validation of data on entry into SCADA Central.
- Data also entered into the team meeting notes, these are reviewed 3 times a week.
- Process controller's role is to review the data, including SCADA.

The *Recycled Water Quality Event Management Plan*<sup>224</sup> documents the processes to identify and manage events and incidents relating to recycled water.

Equipment capability and maintenance:

This is considered more thoroughly in the Asset Management clause. In this section the main focus is the calibration of the online instruments, which are essential for automated control of the plant and to provide real-time validation of the treatment processes.

Section 4.4 of the RWQMP provides an overview of the planned maintenance and calibration of instruments. It states that *Critical monitoring instruments are regularly checked and calibrated regularly as per manufacturers' recommendations, or a suitable frequency based on operational experience.*

*Calibration of the key recycled water quality monitoring instruments is generally carried out by plant operators using relevant SOPs. Calibration records are maintained on site and recorded in Maximo.*

Materials and chemicals:

Sydney Water stated:

*All chemical suppliers are selected through a strict tender process lead by Sydney Water procurement team. Quality specifications for chemicals listed in D0000634 Approved list of chemicals in Sydney Water and Change Management Process. These specifications are reflected in our contracts. The testing results are checked as per OS0015 Bulk Chemical Data Capture and Assessment Work Instruction.*

Sydney Water has an approved list of chemicals<sup>225</sup> that details all of the chemicals used at Sydney Water sites. All of the treatment chemicals used at St Marys WRRF were listed in the procedure.

There is also a procedure in place to manage the delivery of chemicals to site.<sup>226</sup>

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<sup>223</sup> Recycled Water Quality Management Plan - St Marys.

<sup>224</sup> Recycled Water Quality Event Management Plan - Integrated Management System.

<sup>225</sup> Approved List of Chemicals in Sydney Water and Change Management Process – Procedure.

<sup>226</sup> D0001388 - Wastewater and Recycled Water Bulk Chemical Delivery.



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***Element 5:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

*Recycled water quality monitoring:*

The RWQMP in section 5.1 provides the basis used to develop the verification monitoring program, which is to ensure the *Recycled Water Product Specifications*<sup>227</sup> are being met. Guidance has also been taken from the AGWR and environmental protection licences (EPL) where there is a discharge to the environment. Details of the monitoring undertaken are included in the *Recycled Water Quality: Compliance & Operational Monitoring Plan*<sup>228</sup>. Table 8 of the plan includes details of the parameters to be monitored at St Marys WRRF, monitoring points and frequency, details for the other schemes are also presented.

In addition to the routine verification program, plant log reduction values (LRVs) performance is assessed for each scheme to provide a detailed measure of log reductions across the various unit processes and for the WRRF overall. There is a procedure in place that details how to develop this monitoring.<sup>229</sup> This is undertaken in conjunction with the four-year risk review process. This monitoring is used to assess the removal of three pathogen groups, protozoa, virus and bacteria. Surrogate microorganisms are used, as follows:

- *E. coli* (intestinal bacteria surrogate).
- *Clostridium perfringens* spores (intestinal protozoa surrogate).
- F-specific RNA bacteriophage MS2 (intestinal virus surrogate).

The frequencies and locations of the monitoring depends on the scheme and seasonality. It is suggested that 10 sampling runs are undertaken to provide meaningful data to describe the variation in surrogate numbers.

*Application site and receiving environment monitoring:*

The RWQMP states that this is the responsibility of the customer and requirements are in the customer agreement.

Section 5.2(a) of the Dunheved Golf Club Recycled Water Agreement<sup>230</sup> states that the purchaser agrees to monitor the Site. The only other place that the monitoring requirement is apparent is in the 6 monthly *Recycled Water Customer Meeting Form*.<sup>231</sup> The form dated 30 June 2023 has in section 5 that the end user is aware of the AGWR responsibilities for monitoring soil and ground water for the impacts of recycled water. Although the requirement is on the user, it may be assumed that they are not experts in recycled water and some guidance should be provided on the monitoring that that should be undertaken by the end user.

**OFI-SWC-2023-18:** Consider providing end users more information on the potential risks to soils and plants from the prolonged use of recycled water and advice on the groundwater and soil monitoring it would be advisable to undertake.

*Documentation and reliability:*

The RWQMP indicates that the monitoring plan is reviewed every year and monitoring is undertaken by Sydney Water's NATA accredited laboratory. The recycled water monitoring plan<sup>232</sup> was provided as evidence.

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<sup>227</sup> Recycled Water Product Specifications.

<sup>228</sup> Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.

<sup>229</sup> Recycled Water Treatment Detailed Verification Monitoring of Pathogen Reduction procedure.

<sup>230</sup> Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.

<sup>231</sup> Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.

<sup>232</sup> Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.

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*Satisfaction of users of recycled water:*

All complaints to Sydney Water are managed under the *Complaint Procedure*.<sup>233</sup> This is a business wide process and requires all staff to enter complaints into the Customer relationship management (CRM) system as soon as possible.

The scope of this audit included the St Marys WRRF and recycled water at this plant is supplied to one irrigation customer. The RWQMP section 5.4 states that for irrigation and industrial schemes, user satisfaction is gauged and managed on an ongoing basis through the Business Customer Representative in Customer Services. Six-monthly onsite meetings are held. Areas that have dual reticulation water quality complaints go through the customer contact centre.

The *Managing Water Quality Customer Complaints*<sup>234</sup> procedure details how water quality complaints are to be handled. It has specific requirements for the response to a water quality complaint in the dual reticulation area. A 1-hour response time is required due to the potential health risk of a cross connection.

The *Managing Water Quality Customer Complaints* procedure does not appear to differentiate recycled water complaints from drinking water. All water quality complaints appear to be grouped together. It was noted in the audit interviews that this was the case.

**OFI-SWC-2023-19:** Consider differentiating recycled water and drinking water complaints in the *Managing Water Quality Customer Complaints* procedure. Based on this, consider reporting recycled water complaints separately to drinking water.

*Short-term evaluation of results:*

The RWQMP, section 5.5, identifies that electronic systems are used to assess recycled water data and generate exception reports to key staff. Results from the verification monitoring is recorded in Labware, the Sydney Water LIMS. If results exceed the set limits, emails are generated that notify the relevant staff.

Sydney Water produces a number of monthly and quarterly reports, as listed in section 10.2 of the RWQMP as well as in section 12 of the monitoring plan.<sup>235</sup> These reports include:

- Quarterly water quality report to NSW Health.<sup>236</sup>
- Quarterly Irrigation Water Quality Report to Clients.<sup>237</sup>
- Monthly Performance Report - Recycled residential, recycled industrial, and irrigation.<sup>238</sup>

*Corrective responses:*

Non-conformances in relation to water quality grab sampling data are reported using Labware and the Effluent Knowledge and Management System (EKAMS). Daily exception notifications are sent to relevant internal stakeholders. Immediate phone notification by the laboratory is undertaken for any positive Cryptosporidium, Giardia or virus results, as per section 12.2.2 of the monitoring plan.<sup>239</sup>

Section 5.6 of the RWQMP states that the *Recycled Water Quality Event Management Plan*<sup>240</sup> is used to identify and respond to recycled water quality events, notifiable events, and incidents.

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<sup>233</sup> Complaint Procedure.

<sup>234</sup> Managing Water Quality Customer Complaints.

<sup>235</sup> Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.

<sup>236</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - Fourth Quarter 2022-23.

<sup>237</sup> Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.

<sup>238</sup> St. Marys Irrigation Scheme Monthly Report v2 - Operational Compliance Report: June 2023.

<sup>239</sup> Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.

<sup>240</sup> Recycled Water Quality Event Management Plan.

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***Element 6:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

***Communication:***

Section 6.1 of the RWQMP states that the *Recycled Water Quality Event Management Plan* (RWQEMP)<sup>241</sup> outlines the communication protocols for the various categories of incidents, both internal and external stakeholders, including the types of scenarios that constitute an incident and are required to be reported to NSW Health. It includes details for generic and site-specific events.

Contact details are in the *Water Quality Management Contact List*<sup>242</sup> spreadsheet, which contains all the relevant internal and external contacts, names, numbers and emails. This includes the major customers for the relevant recycled water sites.

The RWQEMP<sup>243</sup> specifies that media and social media responses will be undertaken by the Media & External Communications Team in liaison with NSW Health.

***Incident and emergency response protocols:***

The RWQEMP<sup>244</sup> has specific information on the events and incidents relevant to the recycled water schemes and how to respond to them. The RWQEMP has triggers for reporting events and incidents to NSW Health and any escalation that may be required. There are further site-specific details in site incident response manuals, the *St Mary's WRRF Incident Response Manual*<sup>245</sup> was provided as evidence. There is also additional information for all types of incidents in the *Water Resource Recovery and Water Supply and Production and Reporting Procedure* this includes details of registering the incident in SWIRL. It was noted in the audit interviews that although SWIRL is still being used it is being phased out by a new system call Noggin.

The *Incident Debrief & Investigation Procedure*<sup>246</sup> details the incident debrief and investigations processes, including when it is required in accordance with the consequence or incident level.

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***Element 10:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

***Management of documentation and records:***

Management of documents and records is described in section 10.1 of the RWQMP.<sup>247</sup>

There is a *Controlled Documents Procedure*<sup>248</sup> which outlines the process for document review and there is a *Controlled Document Standard*<sup>249</sup> which outlines the review frequency according to controlled document type.

Documents are managed in BMIS and SWIM. These have a workflow for controlled documents. Email notifications are sent to document owners when document review dates are approaching. When there are changes which need to be reflected in a document, then the document can be updated outside of the suggested timeframe.

It was noted during the interviews that BMIS operates on an old system (Lotus Notes), which is no longer supported. This will be phased out and completely replaced with SWIM. BMIS is used for controlled documents and SWIM for records. However, SWIM has all the

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<sup>241</sup> Recycled Water Quality Event Management Plan.

<sup>242</sup> Water Quality Management Contacts.

<sup>243</sup> Recycled Water Quality Event Management Plan.

<sup>244</sup> Recycled Water Quality Event Management Plan.

<sup>245</sup> St Marys WRP Incident Response Manual.

<sup>246</sup> Incident Debrief & Investigation Procedure.

<sup>247</sup> Recycled Water Quality Management Plan.

<sup>248</sup> Controlled Documents – Procedure.

<sup>249</sup> Controlled Documents – Standard.



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functionality of BMIS. iConnect is an intranet site that is used internally to access documents and records. It provides staff with a single point of access and facilitates the easy access to documents and records.

There is also a major project to integrate management systems across Sydney Water, One Management System (1MS).<sup>250</sup> This will integrate nine management systems, including drinking water and recycled water management. There have been not significant changes in the audit period, but this will continue to progress. A subcomponent of this, in the Wingara (Digital Uplift) Program, the corporate risk assessment tool is being changed to Camms.risk from KnowRisk, as discussed in Element 2. Another aspect is the transfer to using Noggin instead of SWIRL for incident management.

The *External Stakeholder Engagement Map*<sup>251</sup> contains details of how external requirements are managed. It was noted that a secondary contact, in this document, was a person that had left Sydney Water, however, this was recent. Sydney Water provided the *Offboarding Checklist*,<sup>252</sup> which includes reviewing a leaving team member's responsibilities and document ownership. This shows that there is a process to manage staff leaving and updating responsibilities.

#### Reporting:

A summary of internal and external drinking water reporting is included in section 10.2 of the RWQMP,<sup>253</sup> Table 5 includes details of key reports provided internally and externally. The *Preparing the Annual DWMS & RWMS Compliance Reports for IPART*<sup>254</sup> procedure was supplied as evidence that there are processes in place to develop reports. The *Corporate Accountability Register*<sup>255</sup> is also used to identify the reports that are required and assigns accountability for preparation.

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### ***Element 11:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

#### Long-term evaluation of results:

Section 11.1 of the RWQMP states that the evaluation of long-term results is undertaken through the following:

- Annual Recycled Water Performance and Compliance Report to NSW Health and IPART, including Q4 Recycled Water Report as a summary of annual recycled water quality performance.
- Annual recycled water plant performance reviews to identify any emerging issues.
- Annual management system review.
- Four yearly major review of each recycled water scheme which involves a review of the recycled water system, review of recycled water uses, review of longer-term performance data and a detailed review of the risk assessment and controls. The scheme RWQMP is updated as part of this process.

The major evaluation of water quality results is the four yearly review of the recycled water scheme. Detailed procedures have been provided for the preparation the risk assessment briefing paper.<sup>256</sup>

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<sup>250</sup> 1MS Steering Group Meeting Presentation.

<sup>251</sup> External Stakeholder Engagement Map – Masterfile.

<sup>252</sup> Offboarding Checklist (Team Member).

<sup>253</sup> Recycled Water Quality Management Plan.

<sup>254</sup> Preparing the Annual DWMS & RWMS Compliance Reports for IPART - Work instruction.

<sup>255</sup> Compliance Accountability Register 2022.

<sup>256</sup> Recycled Water Risk Assessment Workshop SOP – Procedure.

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*Audit of recycled water quality management:*

Section 11.2 of the RWQMP detail the audit of the recycled water quality management system, part of the second line of assurance activities. The *Second Line of Assurance – Procedure* outlines the process for internal and external audits.<sup>257</sup>

A three yearly audit program is developed and reviewed annually.<sup>258</sup> The schedule requires that 4-6 schemes per year are audited. The program is risk based and the order of the schemes is prioritised using the *Recycled Water Audit Scoring Tool*.<sup>259</sup>

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***Element 12:***

Sydney Water demonstrated that its RWQMS conforms to the requirements of this element.

*Review by senior managers:*

Section 12.1 details how the RWQMP is reviewed by senior managers. One of these processes is the review and approval of plans and reports. A key element of this is the Strategic Liaison Group (SLG) and JOG meetings held with key stakeholders. SLG is at a strategic level, but include senior managers, JOG meetings are more concerned with the implementation of the RWQMP and are attended by subject matter experts.

The RWQMP identifies the following specialist forms:

- Recycled Water as a Product Leadership Group.
- Product and Asset Leadership Group (PALG).
- Product and Asset Management Forum – Water.

Product and Asset Management Forum is a key group as it escalates issues to the JOG and SLG.

An annual management system review is undertaken by the heads of business and General Managers. The process for holding these meetings is documented in the *Management Review Procedure*.<sup>260</sup> This procedure also identifies how managers are required to review activities throughout the year.

*Recycled water quality management improvement plan:*

Section 12.2 of the RWQMP specifies that recycled water improvements are added to the improvement plan in accordance with the Product Quality Improvement Procedure. Items are identified through the following:

- as an outcome of the scheme risk assessments;
- through business planning;
- as necessary to meet the Recycled Water Product Specifications;
- through audit and benchmarking;
- as relevant incident and exercise debrief actions; and
- aligned to growth and renewal of assets.

Progress of actions is tracked through the Product and Asset Management Forum and reported in the Annual Recycled Water Compliance and Performance Report and quarterly JOG meetings.

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<sup>257</sup> Second Line of Assurance – Procedure.

<sup>258</sup> Drinking Water and recycled water audit programs 2021 – 2024.

<sup>259</sup> Recycled Water Audit Scoring Tool 2023-26.

<sup>260</sup> Management Review Procedure.

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## Recommendations

The following recommendation is made in respect of this obligation:

- **REC-SWC-2023-03:** By 31 December 2024, Sydney Water amend its existing process for connecting properties to the recycled water network to ensure that avoidable cross-connections are eliminated. Sydney Water should also quantify the public health risk of existing properties and put appropriate controls in place, which may include the auditing of existing connections. This review must be undertaken in collaboration with NSW Health and the Department of Fair Trading (relates to Element 3).


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## Opportunities for improvement

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

- **OFI-SWC-2023-16:** The DFT MoU is not included in the Sydney Water Operating Licence or listed on the Sydney Water website. Consider adding the DFT MoU to the Sydney Water website (relates to Element 1).
  - **OFI-SWC-2023-17:** Consider referencing the Recycled Water Risk Assessment Workshop Procedure in Section 2.4 of the RWQMP for the methodology of conducting a risk assessment (Element 2).
  - **OFI-SWC-2023-18:** Consider providing end users more information on the potential risks to soils and plant from the prolonged use of recycled water and advice on the groundwater and soil monitoring that should be undertaken by the end user (Element 5).
  - **OFI-SWC-2023-19:** Consider differentiating recycled water and drinking water complaints in the *Managing Water Quality Customer Complaints* procedure. Based on this, consider reporting recycled water complaints separately to drinking water (Element 5).
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### 2.3.2.2 Recycled Water – Implementation of RWQMS (sub-clause 4.2.3)

Sub-clause	Requirement	Compliance Grade
4.2.3	<p>Sydney Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Recycled Water Quality Management System and to the satisfaction of NSW Health.</p> <p><i><b>Note:</b> AGWR elements 1-6, 10, 11 and 12 only nominated for audit.</i></p>	 <b>Non-compliant (non-material)</b>

#### Risk if non-compliant

If the Recycled Water Quality Management System is not fully implemented, there is a high risk that Sydney Water may not be able to effectively manage risks to recycled water quality, thereby posing risks to both public health and the environment.

#### Evidence sighted

Refer Appendix C (C.2.3).

#### Summary of audit findings/reasons for grade

This obligation has been found to be non-compliant due to the Recycled Water Quality Management System not being fully implemented. Neither of the identified non-compliances were considered to be material in nature as there was no evidence that either of these issues resulted in the supply of unsafe recycled water or a significant increase in risk during the audit period.

This grade was awarded based of the following issues:

- The risk assessment for the St Marys WRRF was delayed for approximately 3 years. By delaying the risk assessment, this also results in the detailed verification validation and reassessment of the log reduction values, review of long-term data and the system analysis being delayed (Element 2).
- The St Marys WRRF Chlorine Contact Tank was full of vegetation, and it was considered that there could potentially be issues with the performance of the disinfection (Element 3).

In regard to the delay in the risk assessment, it is understood that this was due to COVID and a delay in the upgrade at the St Marys WRRF and that the revised timelines have been communicated to NSW Health through the JOG meeting. However, the audit is to assess compliance with the RWQMP and in this instance the risk assessment was significantly delayed. This was not considered to be a material issue, as there was a risk assessment in place; it is that without the updated risk assessment any changes to the risk profile may not have been picked up or addressed.

During the site inspection it was noted that the Chlorine Contact Tank was heavily overgrown. This was not mentioned in the risk assessment that was undertaken after the audit period finished. However, there is potential uncertainty on how this may affect the flow in the contact tank and thus affect the disinfection process. The response onsite was that it was unsafe to remove the growth and that once the plant upgrade was complete, the contact tank could be emptied and cleaned. The growth represented a number of years of build up as it included established trees. Although there is some uncertainty how this may impact the chlorine disinfection CCP, this issue was considered to be non-material as the water is used on a golf course, which has onsite controls in place and the water quality monitoring indicated that all

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microbiological monitoring was within specification during the audit period. With these controls in place the required treatment of pathogens is exceeded considerably.

There were also some minor shortcomings identified in relation to the implementation of the RWQMP, these were as follows:

- MoU meeting not undertaken with the required frequency with the Department of Fair Trading (Element 1).
- Historical water quality data was not trended and charted, as required by the AGWR and *Sydney Water Risk Workshop Procedure* (Element 2).
- Based on the evidence it could not be determined if the handheld pH meter at the St Marys WRRF was calibrated at the required frequency (Element 4).
- There was an issue raised by NSW Health regarding the timeliness of undertaking incident investigations and debriefs. It was also noted that notification to NSW Health of the initial incident was delayed (Element 6).

In accordance with the MoU, meetings are to be held every six months and no meetings have been held over the audit period. Meeting minutes were provided for a meeting held on 23 August 2023, which is outside of the audit period. Based on the issues experienced in the connection of new recycled water properties at North Kellyville and NSW Health's submission to the audit on cross connections, it is considered that this is an important relationship to maintain.

Historical water quality data for the St Marys WRRF has been assembled and presented in the *Risk Assessment Briefing Paper*. 10 years of data has been assembled and statistics have been tabulated for influent and effluent quality. However, tools that assess trends and charts have not been used.

It appeared that the records at the St Marys WRRF were either incomplete or calibrations of some of the instruments were incomplete. An example is the Laboratory Portable pH meter HACH/HQ40D. There was a record that provided monthly work order numbers for calibration. But there was no evidence of what these included, and the paper sheets appeared to be incomplete.

In accordance with the D0000513 - *Incident Debrief and Investigations Procedure* incident investigation are either to be completed within 45 or 90 days depending on the incident level and/or consequences. The debrief for the Cross-Connection at Nightcap Street was completed 10 weeks after the initial incident was identified. It was also noted that notification to NSW Health of the initial incident is required to be immediate under the MoU and it took 18 hours for notification, which seems excessive.

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### Areas of good practice observed

Sydney Water has not demonstrated full compliance with this obligation. No specific areas of good practice have been identified.

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### Discussion and notes

Implementation of the Recycled Water Quality Management System (RWQMS) for each audited element of the *Australian Guidelines for Water Recycling* (AGWR) is discussed below.

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***Element 1:***

Sydney Water demonstrated that the requirements of this element of its RWQMS were not fully implemented.

***Responsible use of recycled water:***

The main stakeholder in relation to the RWQMP and public health is NSW Health. Sydney Water has an MoU with NSW Health and provides the details of how the relationship is managed and their involvement in recycled water scheme governance. NSW Health is regularly engaged through the JOG<sup>261</sup> and SLG meetings.

A similar arrangement is maintained with the EPA,<sup>262</sup> the environmental regulator.

Throughout the audit Sydney Water staff appeared to have the appropriate competencies to operate a recycled water scheme.

***Regulatory and formal requirements:***

The governance of the recycled water schemes is detailed in the RWQMP, section 1.2 and 1.3, and the details in these sections appear to be current. The *External Stakeholder Engagement Map*<sup>263</sup> contains details of how external requirements are managed.

Regulatory requirements are integrated into the RWQMP through the requirements being included in procedures, contracts and training. This could be seen during the audit, based on the sample reviewed, the requirements seem to be current. The CAR<sup>264</sup> is available on iConnect and this was also viewed during the audit.

The CAR will be made digital as the current review process is very manual using track changes between stakeholders. The small updates are being made, but there hasn't been a thorough review during the audit period.

Corporate Monthly Performance Report Compliance Update provides an overview of compliance issues. The July 2023 report has been provided as evidence.<sup>265</sup>

***Partnerships and engagement of stakeholders (including the public):***

The governance of the recycled water schemes is detailed in the RWQMP section 1.2 and 1.3.

The *External Stakeholder Engagement Map*<sup>266</sup> details the relationship with stakeholders and how and who in Sydney Water is responsible for the relationship.

The RWQMP was last updated on 28 August 2023 and the *External Stakeholder Engagement Map* was last updated in May 2022. The *Controlled Document Standard*<sup>267</sup> states that documents that manage an activity should be reviewed every 1-3 years. It may be beneficial to review the *External Stakeholder Engagement Map* annually, as it contains details of people and contact, which can frequently change.

**OFI-SWC-2023-20:** Consider reviewing the *External Stakeholder Engagement Map* annually as this document contains many personal contact details that can quickly be outdated.

Minutes of meetings with agencies identified as stakeholders and with whom Sydney Water has an MoU have been provided except for the Department of Fair Trading (DFT).<sup>268, 269</sup> In accordance with the DFT MoU, meetings are to be held every six months and no meetings have been held over the audit period. Meeting minutes were provided for a meeting held on 23 August 2023,<sup>270</sup> which is outside of the audit period. Based on the issues experienced in the connection of new recycled water properties at North Kellyville and NSW Health's submission to the audit on cross-connections, it is considered that this is an important relationship to maintain. The North Kellyville cross-connections were both at the interface between Sydney Water and DFT interface of responsibility.

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**REC-SWC-2023-04:** Ensure stakeholder meetings are held at the required frequencies, especially those where an MoU has been developed.

Stakeholders are detailed in the RWQMP, and there is more detail in the *External Stakeholder Engagement Map*.<sup>271</sup> This identifies how Sydney Water interacts with these stakeholders. The list of stakeholders seems to be current.

The *Recycled Water Supply Agreement*<sup>272</sup> details the responsibilities of the user. Sydney Water ensures these are understood through six-monthly meetings with a Business Customer Consultant. The *Recycled Water Supply Agreement* and minutes for the 30 June 2023 meeting were provided as evidence.<sup>273</sup>

The annual statutory declaration for the Dunheved Golf Club (DGC) for recycled water supplied up until 1 July 2023,<sup>274</sup> demonstrating that they have complied with the requirements of their recycled water supply agreement.

Recycled water policy:

Based on the audit findings it is considered that the policy<sup>275</sup> has been implemented.

Mandatory corporate induction training is undertaken, this includes details or water quality awareness. The Compass Mandatory training has been provided as evidence.<sup>276</sup>

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**Element 2:**

Sydney Water has not demonstrated that the requirements of this element of its RWQMS were fully implemented. The St Marys WRRF risk assessment was delayed for 3 years and the data analysis undertaken in the briefing paper did not fully comply with the procedure for the preparation of briefing papers.

Source of recycled water, intended uses, receiving environments and routes of exposure:

Source of recycled water, intended uses, receiving environments and routes of exposure are identified in Section 2 of the St Marys RWQMP.<sup>277</sup>

Recycled water system analysis:

The risk assessment team is detailed in the St Marys risk register and in section 2.2 of the St Marys Recycled Water Risk Report.<sup>278</sup> The team includes members in a range of positions from Sydney Water and representatives from NSW Health and DGC.

The St Marys WRRF PDF was last updated and field verified in August 2023.<sup>279</sup> Based on the site inspections it appears to be accurate.

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<sup>261</sup> Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.

<sup>262</sup> Sydney Water and Environment Protection Authority Strategic Liaison Group.

<sup>263</sup> External Stakeholder Engagement Map - Masterfile May 2022.

<sup>264</sup> Compliance Accountability Register 2022.

<sup>265</sup> Sydney Water Legislative Update 19 June - 16 July 2023.

<sup>266</sup> External Stakeholder Engagement Map - Masterfile May 2022.

<sup>267</sup> Controlled Documents – Standard.

<sup>268</sup> Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.

<sup>269</sup> Sydney Water and Environment Protection Authority Strategic Liaison Group.

<sup>270</sup> Minutes and Actions: Memorandum of Understanding Renewal of MOU.

<sup>271</sup> External Stakeholder Engagement Map - Masterfile May 2022.

<sup>272</sup> Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.

<sup>273</sup> Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.

<sup>274</sup> Dunheved Golf Club statutory declaration 2023.

<sup>275</sup> Recycled Water Management Policy.

<sup>276</sup> Learning and Development - Mandatory Training.

<sup>277</sup> Recycled Water Quality Management Plan - St Marys.

<sup>278</sup> St Marys Recycled Water Risk Report - September 2023.

<sup>279</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.

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*D0001681 – Recycled Water Risk Assessment Workshop Procedure*<sup>280</sup> documents the RWQMP review procedure. It states that the risk assessments are to be reviewed every 4 years, which includes the review of the scheme description, data, sources and uses.

The St Marys RWQMP was reviewed on 24 June 2019, which was the version that was in place during the audit period. However, this was just a minor review; the last major review, which included an assessment of the influent, effluent and log reduction values was conducted 26 August 2016. This should have had a major review within 4 years, in accordance with Section 2 of the RWQMP, and as such was conducted 3 years late. This was noted as being due to COVID, and delayed construction the St Marys WRRF. These delays were communicated to NSW Health through the JOG. The revised schedule was presented at the November 2022<sup>281</sup> and May 2023<sup>282</sup> JOG meetings, minutes were provided. It was finally updated 28 August 2023<sup>283</sup>, which was after the audit period. A short delay could be justified in the circumstances, however, it is considered that the time allowed to lapse between undertaking a full risk assessment review, to ensure risks had not changed, was excessive and the requirements of the RWQMP have not been implemented.

It is considered that in this instance that *Recycled Water Risk Assessment Workshop Procedure*<sup>284</sup> timeframes have not been met.

**REC-SWC-2023-05:** Revise the risk assessment process to include a requirement to review the potential risk of overruns in the four yearly major risk assessment reviews. Overruns should be minimised, but where they are unavoidable the reasons for the delay should be documented, as well as the potential risk to Sydney Water in not thoroughly assessing the scheme within the four-year period and an estimated date that the risk assessment will be undertaken.

*Assessment of water quality data:*

*Recycled Water Risk Assessment Workshop Procedure* in section 4 states that 10 years of water quality data should be assessed with charts and trends. Historical water quality data for the St Marys WRRF has been assembled and presented in the *Risk Assessment Briefing Paper*.<sup>285</sup> 10 years of data has been assembled and statistics have been tabulated for influent and effluent quality. However, tools that assess trends and charts have not been used.

**REC-SWC-2023-06:** Ensure that the *Recycled Water Risk Assessment Workshop Procedure* is followed and risk assessment briefing papers include the review of data for problems using trends and charts.

*Hazard identification and risk assessment:*

The St Marys risk assessment was completed in August 2023,<sup>286</sup> however, prior to that it was not updated since 2016. It was 7 years between the risk assessment being updated, as mentioned above.

Hazards and hazardous events are detailed in the hazards library<sup>287</sup> and these appear to be current based on the site inspection.

It was noted that there was a typo in regard to chlorine disinfection; in the risk assessment it states that free chlorine is used to control the CCP. However, the current control parameter is

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<sup>280</sup> Recycled Water Risk Assessment Workshop SOP – Procedure.

<sup>281</sup> Recycled Water Management System Update - JOG 14 November 2022.

<sup>282</sup> Recycled Water Management System Update - Item 7.3 JOG 15 May 2023.

<sup>283</sup> Recycled Water Quality Management Plan - St Marys.

<sup>284</sup> Recycled Water Risk Assessment Workshop SOP – Procedure.

<sup>285</sup> Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme - June 2023.

<sup>286</sup> St Marys Recycled Water Risk Report - September 2023.

<sup>287</sup> Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.



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total chlorine, and a new free chlorine instrument will be installed as part of the upgrade. This was noted in the interviews and corrected.

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### ***Element 3:***

Sydney Water did not demonstrate that the requirements of this element of its RWQMS were fully implemented. The maintenance of the Chlorine Contact Tank (CCT), a primary barrier was considered to be inadequate and the current condition of the CCT may potentially impede disinfection performance.

#### *Preventive measures and multiple barriers:*

Evidence of the following preventive measures being undertaken was provided:

- backflow prevention;<sup>288</sup>
- customer meetings;<sup>289</sup>
- commercial user statutory declarations;<sup>290</sup> and
- trade waste agreements.<sup>291</sup>

During the site inspection of St Marys WRRF it was noted that the CCT was heavily overgrown. The growth represented a number of years of build up as it included established trees. This was not mentioned in the recent risk assessment, and there was no evidence that the condition of the CCT had been assessed to determine the potential impact on disinfection. The response onsite was that it was unsafe to remove the growth and that once the plant upgrade was complete, the CCT would be drained and the vegetation safely removed. As part of the recent risk assessment, detailed verification monitoring was undertaken and performance of the treatment process was assessed. The treatment plant and other controls in place at the golf course well exceeded the performance requirements for pathogens.<sup>292</sup> Sydney Water's monitoring (weekly microbiological monitoring as provided in the quarterly reports to NSW Health) also showed that recycled water supplied during the audit period met the required water quality specification.

It is considered unacceptable for a CCP process to be jeopardised by a lack of maintenance; however, it has been demonstrated that within the audit period it has not impacted water quality to the extent that there is a risk to the end user.

**REC-SWC-2023-07:** Remove the vegetation from the St Marys WRRF CCT. Review the maintenance planning process and prioritise maintenance for CCPs; ensure that the reason for any delays is recorded and assess the potential impacts on treatment performance.

#### *Critical control points:*

Critical control points were reviewed onsite at the St Marys WRRF. The critical limits are programmed into SCADA. These were compared to the required values in the Product Specification.<sup>293</sup>

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### ***Element 4:***

Sydney Water has not demonstrated that the requirements of this element of its RWQMS were fully implemented. The Laboratory Portable pH meter HACH/HQ40D was not calibrated within the required timeframe at the St Marys WRRF.

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<sup>288</sup> Dunheved Golf Club backflow testing compliance status.

<sup>289</sup> Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.

<sup>290</sup> Dunheved Golf Club statutory declaration 2023.

<sup>291</sup> Trade Waste Agreement Routine Inspection Report Results id 14042023.

<sup>292</sup> WQ0008.01 - St Marys Recycled Water Briefing Paper.

<sup>293</sup> Recycled Water Product Specifications.

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Operational procedures:

During the audit, operational procedures were reviewed in the iConnect online portal and it could be seen that the latest operational procedures are available to staff.

Based on the audit and site inspection it was considered the procedures were current and were being implemented.

Operational monitoring:

During the site inspection, use of the St Marys *WRP Daily Analysis Form* was reviewed as being completed.

SCADA was also reviewed and it could be seen that operational controls were implemented.

Minutes for the Hub operational meetings were provided for 3 August 2022<sup>294</sup> and 15 August 2022<sup>295</sup> demonstrating that the St Marys WRRF operational data is reviewed at the meetings.

Operational corrections:

Sydney Water provided the following evidence of operational corrections being undertaken:

*An increase in turbidity in the CCT during higher flows was noted by a Production Officer (PO) at St Marys WRRF. Polymer dosing was increased and max flow rate on the pump was adjusted. Changes noted in plant diary. PO noted for the next day to check on polymer batching and CCT turbidity.*

The page of the plant diary for 11 August 2022 was provided as evidence.<sup>296</sup>

SCADA was also reviewed during the site inspection, and it could be seen the pump interlocks were operational.

Equipment capability and maintenance:

There was an issue identified with the vegetation in the CCT, which was considered in the previous element.

Records were viewed onsite of the CCP instrument calibrations, including the following:

- Instrument Calibration Check Sheet St Marys 2023 – detailing the monthly work order for calibrations.
- Laboratory Portable pH meter HACH/HQ40D serial No. 07200016196 (monthly).
- Calibration of pH Sensor APA8101 (3 Monthly).

It appeared that the records at the plant were either incomplete or calibration of some of the instruments were incomplete. Including the Laboratory Portable pH meter HACH/HQ40D.

**REC-SWC-2023-08:** Ensure that all monitoring instruments, including handheld, are calibrated as required and appropriate records are maintained.

Materials and chemicals:

During the site inspection it could be seen that alum, polymer and sodium hypochlorite are dosed during the tertiary treatment. However, there were no records of the chemical deliveries during audit.

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<sup>294</sup> Wianamatta Hub Check-in - 3/08/2022.

<sup>295</sup> Wianamatta Hub Check-in - 15/08/2022.

<sup>296</sup> St Marys - Plant Diary - 11 & 12/08/2023.

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***Element 5:***

Sydney Water demonstrated that the requirements of this element of its RWQMS were fully implemented.

*Recycled water quality monitoring:*

During the audit interviews, recycled water quality data was viewed in the Monitoring BI. It was noted that during the audit period there were no health exceptions at St Marys. Sydney Water provided the four quarterly reports to NSW Health<sup>297</sup> summarising the water quality analysis. It could be seen from the results that there were some environmental parameters that exceeded limits, total dissolved solids, sodium adsorption ratio (SAR) and turbidity.

The LRV monitoring for St Marys was conducted in the audit period. Sydney Water provided the Report<sup>298</sup> and raw data for the monitoring.<sup>299</sup> It can be seen that there were 14 samples taken between 20 February 2023 and 4 July 2023 from 7 different sample locations within the treatment process. Log removals were calculated for *E. coli*, total coliforms, *Clostridium perfringens* and bacteriophage.

*Application site and receiving environment monitoring:*

Based on the water quality monitoring, the TDS is quite high and the SAR can also be high at St Marys.<sup>300</sup> These parameters, if too high, can affect the structure of the soil. It is advisable that the golf club monitors the soil appropriately. However, the golf course is supplied the water quality data in quarterly reports.<sup>301</sup>

The *Recycled water customer meeting form - Dunheved Golf Club*<sup>302</sup> was provided as evidence. In section 5, Customer recycled water awareness, includes end user responsibility for environmental monitoring.

*Documentation and reliability:*

Based on the site inspections the monitoring program for the St Marys WRRF seems to be representative of the scheme.

*Satisfaction of users of recycled water:*

Complaints from customers in dual reticulation areas go through the Customer Contact Centre. Sydney Water has provided evidence that agents receive training in complaints handling.<sup>303</sup>

Very few complaints are received regarding recycled water quality and any issues raised by contracted customers, such as the Dunheved Golf Course are through the Business Customer Consultant. Six monthly meetings are held where these issues may get resolved.<sup>304</sup>

There were two cross connections between recycled water and the drinking water network in the audit period and one of those was identified through a customer drinking water quality complaint. The CRM record has been provided for this email received by the Customer Contact Centre.<sup>305</sup> It can be seen that the complaint was received at 13:35, the customer was called and a message left for them at 13:54. An appointment was arranged and the site was attended at 15:30 and testing for electrical conductivity on the customer's internal taps identified a cross-connection which was then addressed.<sup>306</sup> In accordance with the *Managing Water Quality Customer Complaints*<sup>307</sup> procedure complaints in recycled water dual reticulation areas are to be responded to within 1 hour and the site attended immediately, and a thorough investigation undertaken. This process was followed in this instance. An incident was raised in Noggin following the identification of the cross-connection, the system generated email notifying stakeholders was provided as evidence.<sup>308</sup>

Complaints are tracked by Sydney Water through the monthly *Water Quality Management Reports*<sup>309</sup> and also in the *Corporate Performance Report*.<sup>310</sup> Although, anecdotally, there were very few recycled water quality complaints, they do not appear to be reported separately.

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Short-term evaluation of results:

The four quarterly reports to NSW Health were provided as evidence,<sup>311</sup> well as a sample of the quarterly customer reports,<sup>312</sup> *Water Quality Management Reports*,<sup>313</sup> and scheme monthly performance reports.<sup>314</sup>

Corrective responses:

A review of the Quarterly reports to NSW Health and JOG<sup>315</sup> meeting minutes showed that recycled water quality is reviewed as a standing item. At a more operational level weekly production team meetings are held that cover an operational area (Hub). Meeting minutes for the *Wianamatta Hub Check-in Meeting*<sup>316</sup> were provided. This showed that water quality issues are discussed at an operational level in order to implement corrective actions where required.

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**Element 6:**

Sydney Water did not demonstrate that the requirements of this element of its RWQMS were fully implemented. The timeframes for reporting and investigating an incident within the audit period did not comply with the agreed timeframes.

Communication:

The Water Quality Management Contacts are updated every six months and upon review, the contacts appeared to be up to date.

There were no incidents during the audit period for the St Marys WRRF. As discussed in previous sections of this report, there were two recycled water cross connections. One involved multiple dwellings,<sup>317</sup> and the other a single dwelling.<sup>318</sup> It was noted in the records that customers were advised as soon as practically possible of the potential health risk. In both instances these issues were confined to a known area.

Incident and emergency response protocols:

The Water Quality Hazards & Incidents (SWIRL) 2022-23 register for incidents was provided. The following documentation has been provided for the two cross-connection incidents that have been discussed:

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<sup>297</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.

<sup>298</sup> WQ0008.01 - St Marys Recycled Water Briefing Paper.

<sup>299</sup> St Marys\_LRV\_raw\_data Log values 2023 Final.

<sup>300</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - First Quarter 2022-23.

<sup>301</sup> Irrigation Water Quarterly report Dunheved Golf Course Supply Scheme Fourth Quarter.

<sup>302</sup> Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.

<sup>303</sup> Training Record Business Customer Consultant Complaints Handling.

<sup>304</sup> Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.

<sup>305</sup> CRM Extract - 8002510614 12 Nightcap St North Kellyville.

<sup>306</sup> Drinking Water Quality - Callout Report OCR4NM-AM134771 - Kellyville North.

<sup>307</sup> Managing Water Quality Customer Complaints – Procedure.

<sup>308</sup> Email: Incident: Prospect North - Hills Suburbs - 0051-2023 - Plumbing anomaly identified on private potable service at a residential property located at 12 Nightcap Street in Kellyville.

<sup>309</sup> Water Quality Management Report: August 2023.

<sup>310</sup> Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.

<sup>311</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.

<sup>312</sup> Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.

<sup>313</sup> Water Quality Management Report: August 2023.

<sup>314</sup> St. Marys Irrigation Scheme Monthly Report v2 - Operational Compliance Report: June 2023.

<sup>315</sup> JOG Meeting Minutes 15 Aug 22.

<sup>316</sup> Wianamatta Hub Check-in 3/8/2022 & 15/8/2022.

<sup>317</sup> Drinking Water Quality - Callout Report OCR4NM-AM134771 - Kellyville North.

<sup>318</sup> Incident on Serpentine Ave North Kellyville - SWIRL Record.

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- Nightcap Street:
    - *Drinking Water Quality - Callout Report OCR4NM-AM135771 - Kellyville North.*
    - Technical Review for the cross connection at 14 Nightcap Street North Kellyville - Backflow Prevention Team.
    - CRM Extract - 8002510614 12 Nightcap St North Kellyville.
    - Plumbing anomaly identified on private drinking water service at a residential property located at 12-14 Nightcap Street in Kellyville – Noggin Record.
    - North Kellyville Cross Connection Incident Investigation.
  - Serpentine Avenue:
    - Cross connection report - 37-41 Serpentine Ave, North Kellyville.
    - Incident on Serpentine Ave North Kellyville - SWIRL Record.

Summary of the Nightcap event is as follows:

- Complaint received 13:35, 30 May 2023 and logged in CRM.
- Responded within an hour and arranged water quality testing.
- Cross connection confirmed at 16:50, 30 May 2023.
- All residents notified on the same day of the cross-connection through the property manager.
- Work to rectify the issue was undertaken on 31 May 2023 and it was confirmed to be a plumbing issue affecting 40 units.
- NSW Health was verbally informed 31 May 2023 at 11:20.
- A cross-agency root cause investigation workshop was held on 25 August 2023.
- Incident Investigation undertaken and report released 3 October 2023.

Under section 8.4 of the NSW Health MOU,<sup>319</sup> Sydney Water is required to report to NSW Health immediately of any incident that may adversely affect public health. In this incident it took Sydney Water approximately 18 hours to notify NSW Health. This would appear to be an extended period of time to wait for an immediate verbal notification.

In accordance with the *Incident Debrief and Investigation Procedure*, a multi-agency debrief is to occur within six weeks. In this instance the workshop was held 10 weeks after the incident was identified. The deep dive investigation is required to be undertaken within 90 days. In this instance the investigation was completed within 126 days.

**REC-SWC-2023-09:** Ensure that the management of incidents, including the conduct of thorough investigations, is undertaken in a timely manner. Review incident management documentation with NSW Health to ensure a balance is struck between timelines and practicality, whilst managing risks to public health appropriately. In doing so, ensure that the agreed timelines are met for the notification, reporting and investigation of recycled water incidents.

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#### ***Element 10:***

Sydney Water demonstrated that the requirements of this element of its RWQMS were fully implemented.

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<sup>319</sup> Memorandum of Understanding between the NSW Ministry of Health and Sydney Water Corporation.

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Management of documentation and records:

During the audit, numerous documents and records were reviewed and no issues in relation to document management or maintaining records were identified.

The BMIS, SWIM and iConnect system were reviewed during the audit interviews. The BMIS record for the RWQMP in particular was viewed, it had been reviewed within the required timeframes.

Reporting:

Many of Sydney Water's reports were reviewed as part of this audit and all the required reports requested had been prepared and were readily available. An example of this is the quarterly reports that are prepared for NSW Health, all reports for the 2022/23 financial year were provided as evidence.<sup>320</sup>

Sydney Water prepares an annual report for NSW Health and IPART, the 2021/22 report was submitted within the audit period and was provided as evidence.<sup>321</sup> For contracted customers, quarterly customer reports are prepared.<sup>322</sup> For customers in the dual reticulation areas, there did not appear to be any report available regarding the quality of the recycled water supplied. It was noted on the Sydney Water website that the EPL licence reports are available,<sup>323</sup> however, this monitoring is representative of water released to the environment, not reticulated recycled water.

**OFI-SWC-2023-21:** Consider providing recycled water quality monitoring results for dual reticulation schemes on the Sydney Water website. Currently the EPL reports available only provide information that is representative of water released to the environment.

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***Element 11:***

Sydney Water demonstrated that the requirements of this element of its RWQMS were fully implemented.

Long-term evaluation of results:

An *Annual performance report*<sup>324</sup> is required to be submitted to IPART by 1 September each year. Sydney Water provided an email<sup>325</sup> showing that the 2021/22 performance reports had been submitted by the due date.

The St Marys and Bombo WRRF risk assessment reviews were conducted in the audit period, the briefing papers<sup>326,327</sup> for these include analysis of the last year's data, as well as a 10-year review.

Audit of recycled water quality management:

RW Audit schedule within the audit period has been implemented. This is demonstrated by the following audit reports:

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<sup>320</sup> Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.

<sup>321</sup> Annual Recycled Water Quality Compliance and Performance Report - 2021 – 2022.

<sup>322</sup> Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.

<sup>323</sup> <https://www.sydneywater.com.au/content/dam/sydneywater/epa-documents/epa-yearly-summaries/rouse-hill-wwtp-2022-23-year-summary-epa-report.pdf>.

<sup>324</sup> Annual Recycled Water Quality Compliance and Performance Report - 2021 – 2022.

<sup>325</sup> Email: Transmittal to IPART - Sydney Water Operating Licence Compliance & Performance Reports 2021-22 (1 September reports).

<sup>326</sup> Risk Assessment Briefing Paper - Bombo Recycled Water Irrigation Scheme - June 2023.

<sup>327</sup> Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme.



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- Gerringong Gerroa AGWR Audit.<sup>328</sup>
  - Blue Mountains Hub AGWR Audit.<sup>329</sup>
  - A0001037 West Camden AGWR Audit.<sup>330</sup>

Audit actions, including those from the operational licence audit, are entered into BMIS and responsibility is assigned to implement the audit actions. Details of the actions raised and entered into BMIS for the Gerringong Gerroa AGWR Audit were provided as evidence of this process.<sup>331</sup>

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### ***Element 12:***

Sydney Water demonstrated that the requirements of this element of its RWQMS were fully implemented.

#### ***Review by senior managers:***

Action plans are reviewed through the PAMF (Product and Asset Management Forum) on a quarterly basis and updated progress is provided to NSW Health at quarterly JOG meetings. The following minutes have been provided to demonstrate implementation of this process:

- PAMF Water August 2023.<sup>332</sup>
- JOG Quarters 1<sup>333</sup>, 2<sup>334</sup>, 3<sup>335</sup> and 4.<sup>336</sup>

The presentation to senior management for the annual management system review was provided as evidence.<sup>337</sup>

#### ***Recycled water quality management improvement plan:***

Sydney Water provided a copy of the *Recycled Water Quality Improvement Plan*.<sup>338</sup> On review of the plan there were no high-risk items that were overdue. On review of the JOG meeting minutes it could be seen that the water quality improvement plans for drinking water and recycled water are standing items at the meetings.<sup>339, 340, 341, 342</sup>

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### **Recommendations**

The following recommendations are made in respect of this obligation:

- **REC-SWC-2023-04:** By 30 June 2024, ensure stakeholder meetings are held at the required frequencies, especially those where an MoU has been developed (relates to Element 1).
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<sup>328</sup> Assurance Summary - Gerringong Gerroa Sewerage Scheme.

<sup>329</sup> Assurance Summary - Blue Mountains Hub - Penrith Recycled Water.

<sup>330</sup> Assurance Summary - West Camden Hub.

<sup>331</sup> Email: Gerringong Gerroa Sewerage Scheme Audit Actions Table.

<sup>332</sup> Minutes and actions - PAMF (Water) - August 2023.

<sup>333</sup> Joint Operational Group - Monday, 13 February 2023 - Meeting Minutes.

<sup>334</sup> Joint Operational Group - Wednesday, 15 May 2023 - Meeting Minutes.

<sup>335</sup> Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.

<sup>336</sup> Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.

<sup>337</sup> 1MS Steering Group Meeting - Annual Management Review 2022.

<sup>338</sup> Sydney Water Recycled Water Quality Improvement Plan

<sup>339</sup> Joint Operational Group - Monday, 13 February 2023 - Meeting Minutes

<sup>340</sup> Joint Operational Group - Wednesday, 15 May 2023 - Meeting Minutes

<sup>341</sup> Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes

<sup>342</sup> Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes



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- **REC-SWC-2023-05:** By 30 June 2024, revise the risk assessment process to include a requirement to review the potential risk of overruns in the four yearly major risk assessment reviews. Overruns should be minimised, but where they are unavoidable the reasons for the delay should be documented, as well as the potential risk to Sydney Water in not thoroughly assessing the scheme within the four-year period and an estimated date that the risk assessment will be undertaken (Element 2).
  - **REC-SWC-2023-06:** By 30 June 2024, ensure that the *Recycled Water Risk Assessment Workshop Procedure* is followed, and risk assessment briefing papers include the review of data for problems using trends and charts (Element 2).
  - **REC-SWC-2023-07:** By 31 December 2024, remove the vegetation from the St Marys WRRF CCT. Review the maintenance planning process and prioritise maintenance for CCPs; ensure that the reason for any delays is recorded and assess the potential impacts on treatment performance (Element 3).
  - **REC-SWC-2023-08:** By 30 June 2024, ensure that all monitoring instruments, including handheld, are calibrated as required and appropriate records are maintained (Element 4).
  - **REC-SWC-2023-09:** By 30 June 2024, ensure that the management of incidents, including the conduct of thorough investigations, is undertaken in a timely manner. Review incident management documentation with NSW Health to ensure a balance is struck between timelines and practicality, whilst managing risks to public health appropriately. In doing so, ensure that the agreed timelines are met for the notification, reporting and investigation of recycled water incidents (Element 6).
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### Opportunities for improvement


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

- **OFI-SWC-2023-20:** Consider reviewing the External Stakeholder Engagement Map annually as this document contains many personal contact details that can quickly be outdated (relates to Element 1).
  - **OFI-SWC-2023-21:** Consider providing recycled water quality monitoring results for dual reticulation schemes on the Sydney Water website. Currently the EPL reports available only provide information that is representative of water released to the environment (Element 10).
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## 2.4 Performance Standards for Service Interruptions (Licence Part 5)

### 2.4.1 Water Pressure Standard (clause 5.2)

#### 2.4.1.1 Water Pressure Standard (sub-clause 5.2.5)

Sub-clause	Requirement	Compliance Grade
5.2.5	<p>For each Property Cluster, Sydney Water must:</p> <ul style="list-style-type: none"> <li>a) by 30 June 2020, review its business processes to ensure that no Property at risk of being affected by recurring Water Pressure Failures from the same cause is connected to Sydney Water's Drinking Water supply system, unless the owner (at the time of connection) is:                             <ul style="list-style-type: none"> <li>i. informed of that risk; and</li> <li>ii. provided with options to reduce that risk; and</li> </ul> </li> <li>b) by 31 October 2022, take steps to minimise or eliminate the risk of recurring Water Pressure Failures from that cause, in a manner that takes into account its Customers' willingness to pay for Drinking Water supply services.</li> </ul> <p><i><b>Note:</b> paragraph 5.2.5(b) only to be audited.</i></p>	 <b>Compliant</b>

#### Risk if non-compliant

Failure to take action to minimise or eliminate the risk of recurring Water Pressure Failures, subject to Customers' willingness to pay, presents a high risk that acceptable levels of service are not provided to those in the identified Property Clusters.

#### Evidence sighted

Refer Appendix C (C.2.4).

#### Summary of audit findings/reasons for grade

Sydney Water demonstrated that it had investigated options to minimise or eliminate the risk of Water Pressure Failures in each of the six identified Property Clusters; however, the estimated cost benefit ratios were such that only one Cluster (North Richmond) warranted progression to further investigation and preparation of a business case. The cost per metered property exceeded the willingness to pay in the remaining Clusters.

On this basis, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. The approach (cost benefit analysis) adopted by Sydney Water to assess the viability of servicing each Property Cluster based on customer willingness to pay reflects good practice and is commended.

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## Discussion and notes

Paragraph (b) of this obligation for was identified for audit.

The *Operating Licence* identifies six Property Clusters that are affected by recurring Water Pressure Failures. These Clusters are located in the Kurrajong, North Richmond, Horsley Park, Bass Hill, Buxton, and Denham Court areas, and are referenced accordingly.

Sydney Water demonstrated that it had investigated options to minimise or eliminate the risk of Water Pressure Failures in each of these areas. The investigation approach and findings are summarised in a *Water Pressure Audit Presentation*<sup>343</sup> and presented in detail in the *Low Pressure Investigation; Options Summary* report.<sup>344</sup>

These documents provide details of the investigation, including:

- The adopted methodology which comprised:
  - Identification of affected customers through pressure monitoring;
  - Hydraulic modelling to identify poor pressure customers under maximum demand day conditions;
  - Assessment of future needs and whether growth will impact customer pressures;
  - Identification of any additional customers that may be affected;
  - Assessment and modelling of improvement options;
  - Derivation of planning cost estimates;
  - Ranking of each cluster based on cost per property and Customer willingness to pay net benefit;
  - Recommendation of areas in which to implement improvements;
  - Obtaining robust cost estimates for recommended areas; and
  - Obtaining approval for construction.
- Details of the improvement options identified for each Property Cluster. These included (as applicable):
  - Providing local Sydney Water booster pumping stations (with or without additional pipework);
  - Providing individual customer boosters (eliminated as a viable option in all cases);
  - Rezoning affected customers;
  - Pipe network augmentations;
  - Installation of elevated tanks; or
  - A combination of the above options.
- The estimated cost (P50 planning) for each viable option.
- Identification of the preferred option for each Cluster.
- Assessment of the cost per property (based on number of metered properties) for each Cluster<sup>345</sup> in comparison to customer willingness to pay. This has been based on a detailed NPV (net present value) cost benefit analysis of the preferred option for each Cluster.<sup>346</sup>

The *Low Pressure Investigation; Options Summary* report indicates that:<sup>347</sup>

*“Sydney Water has conducted a willingness to pay survey which identified that about \$10 million of ratepayer money could be used to improve pressures for disadvantaged customers.”*

Given that the investigation identified a total of 84 metered properties in the six Property Clusters, this allows \$0.12 million per metered property (\$0.05 million per property if all 195 lots are taken into consideration). Only the North Richmond Property Cluster has an

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estimated cost benefit ratio (the estimated cost of \$0.1 million per metered property is less than the \$0.12 million per metered property threshold) and is therefore the only Cluster that warrants progression to further investigation and preparation of a business case.

The *Low Pressure Investigation; Options Summary* report notes that, based on an NPV analysis, maintaining the status quo, whereby a low pressure rebate of \$40 per quarter is paid per affected property, remains the preferred option as it has the least overall cost. The annual rebate paid across the six Clusters currently amounts to \$13,440, with the greatest amount (\$7,200) paid in the North Richmond Cluster. Affected customers either accept the low-pressure service or may have installed their own booster arrangements (not determined by Sydney Water).

The North Richmond option (rezoning and construction of additional reticulation pipework and a PRV (pressure reducing valve) has now progressed. A delivery cost estimate has been prepared, the “willingness to pay” NPV cost benefit has been reassessed, and a business case submission prioritisation and delivery optimisation against other customer servicing capital expenditure items (Delivery Approval Business Case) has been prepared.

Based on the preceding observations, it is apparent that Sydney Water has taken steps (investigated options) to minimise or eliminate the risk of recurring Water Pressure Failures in the identified Property Clusters. Customers’ willingness to pay has been taken into account in assessing the available options.

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### **Recommendations**

There are no recommendations in respect of this obligation.

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### **Opportunities for improvement**

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

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<sup>343</sup> Document: *2023 Water Pressure Audit presentation.pdf* (PowerPoint presentation: *Water Pressure; 2023 Operating Licence; Clause 5.2.5*).

<sup>344</sup> Sydney Water, *Low Pressure Investigation; Options Summary; Project No. 20038630*, 20 October 2022 (file: *20038630 Low Pressure Properties Options Summary V3.1\_Final\_Signed.pdf*).


<sup>345</sup> The total number of lots in each Property Cluster exceeded the number of metered properties by varying amounts.

<sup>346</sup> MS Excel workbook: *Low water pressure areas - costs and WTP - updated Oct 2022.xlsx*.

<sup>347</sup> Sydney Water, *Low Pressure Investigation; Options Summary; Project No. 20038630*, 20 October 2022 (file: *20038630 Low Pressure Properties Options Summary V3.1\_Final\_Signed.pdf*), section 7.

## 2.4.2 Asset management (clause 5.5)

### 2.4.2.1 Asset management – Maintenance of an AMS (sub-clause 5.5.1)

Sub-clause	Requirement	Compliance Grade
5.5.1	Sydney Water must maintain a Management System in relation to Sydney Water’s Assets that is consistent with the Australian Standard AS ISO 55001:2014 Asset management – Management systems – Requirements (the <b>Asset Management System</b> ).	 <b>Compliant</b>

#### Risk if non-compliant

Failure to maintain an Asset Management System consistent with the ISO 55001 guidance presents a high level of operational risk that Sydney Water may not be able to effectively manage the safe and reliable performance of its assets as required to meet its business objectives.

#### Evidence sighted

Refer Appendix C (C.2.5).

#### Summary of audit findings/reasons for grade

Sydney Water demonstrated that it has maintained an Asset Management System that is consistent with ISO 55001:2014 by providing evidence that the Asset Management System continues to be certified by an external body as being so. The current *Certificate of Registration* has an expiry date of 11 June 2025. The report on the most recent surveillance audit identified two (2) opportunities for improvement, one in respect of asset management objectives and one in respect of the management of the providers of outsourced services; no non-compliances were identified.

As discussed in detail in respect of sub-clause 5.5.2 (refer **section 2.4.2.2**), ongoing improvements being implemented in accordance with the *Service Excellence Road Map* demonstrate that Sydney Water is committed to both maintenance and improvement of its Asset Management System.

Accordingly, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. Its commitment to ongoing improvement of the Asset Management System (as further discussed **section 2.4.2.2**) is commended.

#### Discussion and notes

Sydney Water implements an Integrated Business Management System; the Asset Management System (AMS) is one of five subsidiary management systems, each of which forms part of the overarching integrated Business Management System and has been certified by an external certifying authority as being consistent with the respective management system requirements.

Sydney Water provided the *Strategic Asset Management Plan*<sup>348</sup> as evidence of the established AMS and the *BSI Certificate of Registration*<sup>349</sup> as evidence of certification by an external certification

<sup>348</sup> Sydney Water, *Strategic Asset Management Plan*, April 2023 (file: D0000876\_Strategic Asset Mgmt. Plan.pdf).

<sup>349</sup> BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (file: D0000876\_Strategic Asset Mgmt. Plan.pdf).

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body that the AMS is consistent with *ISO 55001:2014*; the current certification expires on 11 June 2025. The scope of the certification aligns with Sydney Water's functions, as follows:

*“The assets management system associated with all water system assets (physical assets and processes) within Sydney Water’s operational area used to provide water, wastewater, recycled water and stormwater services to customers.”*

Sydney Water also provided the most recent certification body's *Assessment Report*,<sup>350</sup> which presents the findings of a surveillance audit of Sydney Water's management systems conducted by the certification body in February/March 2023. The report identified two (2) opportunities for improvement in respect of the AMS; these related to:

- Asset management objectives (ISO 55001 cl.6.2.1) – *“The AMS Indexes were shown as the measured KPIs in the SAMP. These could be checked to ensure that the same measure is only counted once. A focus on lead indicators may also be a better approach.”*
- Outsourcing (ISO 55001 cl.8.3) – *“At the time of the audit, the P4S Performance Report [in relation to partnerships/contractors] listed the measure of asset performance as under development. Facility Management ISO 41001:2018 could be considered as guide for this measurement.”*

Sydney Water also referred to ongoing improvements being implemented in accordance with the *Service Excellence Road Map*, details of which are discussed in detail in respect of sub-clause 5.5.2 (refer **section 2.4.2.2**). This ongoing work demonstrates that Sydney Water is committed to both maintenance and improvement of its Asset Management System.

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## Recommendations

There are no recommendations in respect of this obligation.

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## Opportunities for improvement


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

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<sup>350</sup> BSI, *Assessment Report; Sydney Water*, 27 February 2023 to 15 March 2023 (file: 2303 Sydney WaterQA Cav ES RES Assessment Report V1 (1).pdf).

### 2.4.2.2 Asset management – Implementation of the AMS (sub-clause 5.5.2)

Sub-clause	Requirement	Compliance Grade
5.5.2	Sydney Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the Asset Management System.	 <b>Non-compliant (non-material)</b>

#### Risk if non-compliant

Failure to fully implement its Asset Management System presents a high level of operational risk that Sydney Water may not be able to effectively manage the safe and reliable performance of its assets as required to meet its business objectives.

#### Evidence sighted

Refer Appendix C (C.2.5).

#### Summary of audit findings/reasons for grade

Sydney Water demonstrated that it had, in most respects, continued to fully and effectively implement its Asset Management System during the audit period. This is evidenced in part by it continuing to maintain accreditation of the Asset Management System as being consistent with the Australian Standard AS ISO 55001 *Asset management – Management system – Requirements*.

More specifically, Sydney Water demonstrated that it has managed its asset portfolio in accordance with the Asset Management System through the provision of example documentation and records related to the strategy and planning; asset creation; maintenance; and asset renewal phases of the asset lifecycle. Evidence of ongoing asset management related training and an internal audit was also provided.

Sydney Water explained and demonstrated ongoing improvements that are being implemented in accordance with the *Service Excellence Road Map*. There is a significant body of work in progress, with action to date focussed on improvements to maintenance management. Observations made during the audit indicate positive improvement, noting that Sydney Water is in the first year of a three-year program to improve its asset management.

Improvements made during the audit period include (for example):

- update of the *Strategic Asset Management Plan* to incorporate redefined asset management objectives that are better aligned to the Corporate Strategy;
- development of a new risk cost performance framework which, together with supporting implementation and monitoring mechanisms, is aimed at driving asset performance;
- development of an Asset Performance Tool, which is used to monitor and provide performance visibility, including by monitoring metrics such as maintenance completion;
- the use of structured methods including Kepner Tregoe problem solving (root cause analysis) and the Six Sigma improvement approach (in respect of (for example) reservoir inspections) to achieve better asset management/maintenance outcomes; and
- rearrangement and improved focus of the approach to asset maintenance governance.

Notwithstanding the positive improvements observed, there remain some concerns in respect of the effective management of asset maintenance. Observations made at the St Marys Water Resource Recovery Facility suggest that previously identified maintenance management deficiencies may not yet have been fully addressed. Furthermore, these observations were



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made at a site randomly selected for audit and may still be reflective of wider spread shortcomings.

In view of the identified deficiencies, it is assessed that Sydney Water has not demonstrated full compliance with this obligation. Given the progress made to date, and Sydney Water's assessment (using its internal risk management processes) that the risks associated with the observed deficiencies have been effectively managed, the non-compliance is at this stage considered non-material.

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### **Areas of good practice observed**

Sydney Water has not demonstrated full compliance with this obligation. Nonetheless, the extensive body of work being implemented under the *Service Excellence Framework* and other initiatives to improve the Asset Management System is commended.

As this is the first year of the three-year *Service Excellence* program, it may be too early to draw definitive conclusions about effectiveness; however, the improvements demonstrated to date are encouraging. The rolling out of the framework across the whole organisation, and the enthusiasm of the staff who presented at the audit, was impressive.

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### **Discussion and notes**

#### ***Overview:***

Assessment of compliance in respect of this obligation has involved review of Sydney Water's management of its assets under its AS ISO 55001 certified Asset Management System (AMS). This has included review of the system documentation and records of implementation (both at system level and in the field), and more detailed assessment of some aspects based on field observations.

It is noted that Sydney Water has continued to implement ongoing improvements in accordance with the *Service Excellence Road Map*, details of which are discussed in the following.

#### ***Asset Management System Overview:***

The *Asset Management Policy*, *Strategic Asset Management Plan* and a series of Asset Class Plans (previously Master Plans) are the key governance and guidance documents for Sydney Water's AMS.

The *Asset Management Policy*,<sup>351</sup> which was last reviewed/updated in February 2023, sets out Sydney Water's commitment to manage its assets to achieve the strategic outcomes detailed in its Corporate Strategy. The principles that guide sustainable management of Sydney Water's infrastructure to provide water services are identified.

The *Strategic Asset Management Plan* (SAMP)<sup>352</sup> is the central document to Sydney Water's AMS. The purpose of the SAMP is: "...clarify intentions, priorities, and practices to be adopted. It takes a long-term view and considers the combination of organisation needs, stakeholder expectations and the realities of existing assets and asset management capabilities". It embraces the principles of asset management and identifies Asset Management Objectives that align with the Corporate strategic outcomes. The SAMP was updated in March 2023 (i.e. during the audit period), as further discussed below.

Sydney Water advised that the 'Master Plans' are being reviewed and updated as 'Asset Class Plans'. Review of examples including the *Wastewater Treatment Plants Asset Class Plan*,<sup>353</sup> the

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<sup>351</sup> Sydney Water, *Policy; Asset Management Policy*, February 2023 (file: *AMQ0033\_Asset Management Policy.pdf*).

<sup>352</sup> Sydney Water, *Strategic Asset Management Plan* (Version 6), March 2023 (file: *D0000876\_Strategic Asset Mgmt. Plan.pdf*).

<sup>353</sup> Sydney Water, *Asset Class Plan; Wastewater Treatment Plants (WWTP)* (Version 1), 1 July 2022 (file: *D0002159\_Wastewater Treatment Plant ACP 2022.pdf*).

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*Reservoir Asset Class Plan*,<sup>354</sup> and the *Water Filtration Plant Asset Master Plan*<sup>355</sup> (the replacement *Water Filtration Plant Asset Class Plan*<sup>356</sup> is currently under development/review) reveals that these plans detail the tactical approach to management of the specific asset class. They provide an overview of the assets (including details of the assets, condition, criticality and risk profile); identify performance requirements (levels of service and future demands); detail the approach to asset lifecycle management; detail how a risk management approach is implemented in respect of the asset class; provide a summary of operation/maintenance and capital expenditure requirements; and the arrangements for continuous improvement (which includes annual risk, issue and opportunity (RIO) assessments)<sup>357</sup> and identified emerging opportunities.

Further review of the *Reservoir Asset Class Plan* reveals that it includes additional focussed information in appendices including (for example) the standard Reservoir asset hierarchy (as adopted in Maximo); a listing of reservoirs that are heritage listed; a list of candidates for future renewal (identified from Level 1 inspections; Level 2 inspections being undertaken to refine list); a list of data sources, i.e. systems in which asset class data is retained; asset class stakeholders; links to relevant plans and standards; and inspection types and frequencies.

Under the BOO (Build Own Operate) contractual arrangements in respect of the Prospect Water Filtration Plant (WFP), the operator SUEZ has in place an *Asset and Energy Management Policy* (in respect of its Australia and New Zealand operations)<sup>358</sup> and a *Strategic Asset Management Plan; Prospect Water Filtration Plant O&M*.<sup>359</sup> These documents detail SUEZ's commitment to the management of assets for which it is responsible and the arrangements for managing operation and management of the Prospect WFP.

### ***System Implementation:***

#### ***General:***

Sydney Water provided sample documentation to demonstrate ongoing implementation of asset management practices as they relate to various aspects of the asset management lifecycle, consistent with its AMS. A review of some of the practices /documentation is set out in the following.

#### ***Asset Creation:***

The asset creation process is summarised in the *Approve Project Investments – Process Overview* flow diagram as presented in the Helix management platform.<sup>360</sup> As with other elements of asset management practice, the asset creation process is governed through the submission and approval of business cases at each stage of development; this process is detailed in the *Business Case Guideline*,<sup>361</sup> which details the purpose of and requirements for each approval stage (Project Initiation, Needs Approval, Option Approval, Delivery Approval, and Variation Approval; a Small Project Approval can be used for projects less than \$5 million).

Sydney Water advised that its *Planning Decision Framework* has recently been updated (copy of the version in place during the audit period provided).<sup>362</sup> This details the processes to be implemented for selecting a preferred option during an infrastructure based planning activity, identifying economics, risk and customer experience as key drivers of the process.

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<sup>354</sup> Sydney Water, *Asset Class Plan; Reservoirs* (Version 6), 2 September 2022 (file: *AMQ0120 Reservoir Asset Class Plan.pdf*).

<sup>355</sup> Sydney Water, *Water Filtration Plant Asset Master Plan* (Version 5), 2019 (file: *AMQ0123 WFP Master Plan.pdf*).

<sup>356</sup> Sydney Water, *Asset Class Plan; Water Filtration Plants* (under development) (file: *ACP WFP.docx*).

<sup>357</sup> Part of Sydney Water's approach to operational risk management, as discussed in **section 3.2.4.1**.

<sup>358</sup> SUEZ, *Asset and Energy Management Policy* (Version 1), 1 March 2022 (file: *SZ-PO-006 SUEZ ANZ Asset Management Policy.pdf*).

<sup>359</sup> SUEZ, *Strategic Asset Management Plan; Prospect Water Filtration Plant O&M* (Version 3), 2 August 2022 (file: *AM-P-001 PWFP SAMP V3.pdf*).

<sup>360</sup> Document: *Helix extract - Approve Project Investments - Process Overview.png*.

<sup>361</sup> Sydney Water, *Business Case Guideline* (Version 3), 1 July 2023 (file: *2936429 Business Case Guideline.docx*).

<sup>362</sup> Document: *D0000732 Planning Decision Framework.docx*.

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Given its reliance on professional engineering services to create, maintain and operate its assets, Sydney Water uses guidance presented in the *Engineering Competency Standard*<sup>363</sup> to assess a person's competence to carry out specific engineering tasks for design and protection of Sydney Water's infrastructure assets and associated works. The *Standard* details the required competencies by role/responsibility level and by engineering discipline. Application of the standard, such as an example assessment, was not sighted for the purposes of the audit; however, the embodied principal of ensuring that work is undertaken by appropriately skilled and experienced personnel is supported.

Records provided as evidence of implementation related to the "Quakers Hill and St Marys WRP Treatment Process and Reliability Renewal (PARR)" project being delivered via Delivery Partner (WSP&UGL Joint Venture) under management of the Sydney Water Major Projects team. Records included:

- *Delivery Approval Business Case*.<sup>364</sup>
- *Variation Business Case*, which was sought for "... escalation, latent conditions and additional scope arising from detail design".<sup>365</sup>
- *Variation Business Case*, which was sought to "...to negotiate up to the \$11.8 million for provisional sum to cover potential expenditure specifically related to contractual disputes, impacts of Covid-19 and industrial relations".<sup>366</sup>
- *Weekly Interface Meeting – St Marys*,<sup>367</sup> which documents the meeting between Sydney Water operational personnel and the Delivery Partners team.
- *January 2023 Monthly Report*,<sup>368</sup> prepared by the Delivery Partner, which details progress in respect of each of the projects currently being undertaken, including the St Marys and Quakers Hill projects.
- A *Report Action*<sup>369</sup> in respect of "Poor design and installation of Temporary Works"; the records detail the identified issue (reported on 22 March 2023), action taken in response and close out.
- *Internal Monthly Project Reporting*<sup>370</sup> in respect of the Lower South Creek Project (which includes the St Marys and Quakers Hill projects).

#### Operation:

Sydney Water advised that operations at its sites is undertaken in accordance with the relevant management plans, operation and maintenance manuals and work instructions. Examples of these are discussed in **sections 2.3.1.2** and **2.3.2.2** (in respect of the implementation of the Drinking and Recycled Water Quality Management Systems, respectively).

Process flow diagrams for *Prospect Water Filtration Plant*<sup>371</sup> and *St Marys Water Resource Recovery Facility*<sup>372</sup> provide an overview of the componentry and therefore underpin the operational arrangements/requirements for each facility.

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<sup>363</sup> Sydney Water, *Engineering Competency Standard* (Version 4), 19 February 2021 (file: D0000833 *Engineering Competency Standard.docx*).

<sup>364</sup> Document: *Quakers Hill and St Marys PARR DABC and PS\_22 September 2017.pdf*.

<sup>365</sup> Document: *20031056 - 20031057 - Quakers Hill- St Marys PARR VBC for Kevin J sign off.pdf*.

<sup>366</sup> Document: *20031056 - 20031057 - Reference - Quakers Hill- St Marys PARR VBC\_Ver 4.0.pdf*.

<sup>367</sup> Document: *Weekly Interface Meeting Agenda - St Marys 16 Jan 23.docx*.

<sup>368</sup> Document: *2023 Jan - 110.A-PROMGT-Y-MRP-0001-0120\_A – Program.pdf*.

<sup>369</sup> Document: *Report.Action\_RA09672.pdf*.

<sup>370</sup> Document: *St Marys and Quakers Hill projects.pdf*.

<sup>371</sup> Document: *QMP-P-100.A PWWP Process Flow Diagram. Issue 3.pdf*.

<sup>372</sup> Document: *2924442 - St Marys WRRF PFD.pdf*.

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Six-monthly inspection reports in respect of Rouse Hill Reservoir (WS0476) (discussed in detail in **section 3.2.4.2**) and Guildford Reservoir (WS0484)<sup>373</sup> were provided as evidence that regular inspection activities are undertaken.

Maintenance:

Asset maintenance is undertaken in accordance with the principles and guidance provided in a collection of documents, including (for example):

- *Asset Maintenance Policy*,<sup>374</sup> which outlines the guiding principles and elements of asset maintenance management as implemented by Sydney Water.
- *Maintenance Strategy*,<sup>375</sup> defines the six maintenance strategies/approaches that are implemented by Sydney Water, including (for example) Failure Based Maintenance and Periodic Schedule Maintenance.
- *Maintenance Management Framework*,<sup>376</sup> which identifies standards, definitions and methodologies used by Sydney Water to determine the maintenance requirements for assets.

Maintenance management is further supported by standards/guidance in respect of Condition Assessment,<sup>377</sup> which details the purpose of and process for undertaking asset condition assessments and assigning Condition Assessment Grades (CAGs); the management of Major Periodic Maintenance<sup>378</sup> (further discussed in **section 3.2.4.3**); and undertaking 5-year Investment Plan Reviews<sup>379</sup> of treatment plant facilities, which guides the identification of short to mid-term investment needs for treatment plants (for example).

Implementation of maintenance practices is demonstrated by:

- For Prospect WFP
  - Copies of the *Prospect Water Filtration Plant Preventative Maintenance Schedule* for the 2022 and 2023 calendar years were provided.<sup>380</sup> These appear to reflect an appropriate program of maintenance with the need for partial or total plant shutdowns clearly identified.
  - Minutes of a fortnightly Joint Maintenance Planning meeting,<sup>381</sup> at which maintenance activity is jointly reviewed by Sydney Water and SUEZ (WaterNSW and Sydney Desalination Plant also participate),

Maintenance activities at the Prospect WFP are further discussed in the “Field Implementation” section below.

- For St Marys Water Resource Recovery Facility:
  - Minutes of fortnightly Wianamatta Hub Maintenance Meeting (which includes St Marys and Quakers Hill WRRPs).<sup>382</sup>
  - Completed “General Role” site check list for the week commencing 8 May 2023.<sup>383</sup>

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<sup>373</sup> Document: *AISReservoirInspectionPassword-17215190.pdf*.

<sup>374</sup> Sydney Water, Policy; *Asset Maintenance Policy* (Version 2), 21 November 2018 (file: *AMQ0002 - Asset Maintenance Policy.docx*).

<sup>375</sup> Sydney Water, *Standard; Maintenance Strategy* (Version 3), December 2022 (file: *D0000654 Maintenance Strategy.docx*).

<sup>376</sup> Sydney Water, *Standard; Maintenance Management Framework* (Version 1), 19 February 2021 (file: *D0001854 Maintenance Management Framework.pdf*).

<sup>377</sup> Sydney Water, *Standard; Condition Assessment Standard* (Version 1), February 2022 (file: *D0002014 Condition Assessment Standard.docx*).

<sup>378</sup> Sydney Water, *IMS – Production Major Periodic Maintenance (MPM) Procedure* (Version 2), 26 May 2021 (file: *D0001843 Production Major Periodic Maintenance (MPM) Procedure.docx*).

<sup>379</sup> Sydney Water, *Procedure for Production’s treatment plant facilities: 5 Year Investment Plan (5YIP) Review* (Version 3), 2 November 2018 (file: *D0000365-Procedure-5YIP Review.docx*).

<sup>380</sup> MS Excel workbooks: *Major Maintenance Schedule 2022 - V2.xlsx* and *Major Maintenance Schedule 2023\_Rev 5.xlsx*.

<sup>381</sup> Document: *JAM Minutes 29 06 2023.pdf*.

<sup>382</sup> Document: *St Marys Monthly Maintenance Meeting minutes July 2023.pdf*.

<sup>383</sup> Document: *St Marys - Site Checklist 2.pdf*.

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- Completed “Liquid Stream” site check list for the week commencing 2 January 2023.<sup>384</sup>
  - List of work orders completed in 2022/23 (1526 listed).<sup>385</sup>

Further examples of maintenance implementation are provided in the discussion in of respect of “Field Implementation” (see below).

#### Renewals:

Renewal planning and implementation is undertaken in accordance with the principles and guidance provided in a collection of documents, including (for example):

- *Asset Renewals Planning Standard*,<sup>386</sup> which sets the requirements to ensure that the asset renewal process is managed effectively by undertaking timely and consistent asset assessments; maintaining accessible records of assessment data; identifying objective asset renewal triggers; and initiating renewals in a timely manner. This will ensure that: “... *the right assets are renewed at the right time to maintain acceptable asset risk profiles at lowest lifecycle cost and limit unplanned work*”.
- *Facility Assets Renewal Reliability and Business Efficiency Decision Framework*,<sup>387</sup> sets out the requirements for the selection, evaluation and approval of facility assets for renewal.
- *Procedure for Production’s treatment plant facilities: 5 Year Investment Plan (5YIP) Review* (referenced above in respect of “Maintenance”).
- *Consequence of Failure Standard*,<sup>388</sup> which sets out the requirements for assessing and assigning a Consequence of Failure (CoF) score for all assets, process and subprocesses.
- *Condition Assessment Standard* (referenced above in respect of “Maintenance”).
- *Mechanical and Electrical Like for Like Field-based Decision Framework*,<sup>389</sup> which provides a practical tool for use in support of repair or replacement of mechanical and electrical assets.

From a practical/implementation perspective, the following were provided:

- *Replacement and upgrade program for Prospect WFP*,<sup>390</sup> which details planned capital expenditure plan for the period 2019 to 2023 (partially extended to 2026).
- Approved seed funding request forms for “ST11- Renew Bio 3 Air header”<sup>391</sup> and “CT1648 ST11 St. Marys WRP New Install Rock Traps x5 & Other Reliability Improvements”<sup>392</sup> at ST Marys WRRF.

#### AMS Training:

Sydney Water provided a copy of its *Asset Management System; Awareness training* module,<sup>393</sup> which is high level presentation that explains why asset management is carried out, identifies the key documents and objectives, and explains linkages to other components of the Sydney Water management system. This training, which is provided to new staff exposed to the asset management system, remains consistent with that sighted during previous audits.

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<sup>384</sup> Document: *St Marys - Site Checklist 1.pdf*.

<sup>385</sup> MS Excel workbook: *ST0011 - BM\_CM\_PM Completed Workorder List 22\_23.xlsx*.

<sup>386</sup> Sydney Water, Policy; *Asset Maintenance Policy* (Version 2), 21 November 2018 (file: *AMQ0002 - Asset Maintenance Policy.docx*).

<sup>387</sup> Sydney Water, *Facility Assets Renewal, Reliability & Business Efficiency Decision Framework* (Version 5), undated (file: *AMQ0116 Facility Assets Renewal Reliability and Business Efficiency Decision Framework.docx*).

<sup>388</sup> Sydney Water, *Standard: Consequence of Failure* (Version 7), 30 August 2021 (file: *DOC0297 Consequence of Failure Standard.docx*).

<sup>389</sup> MS Excel workbook: *DOC0328 Mechanical and Electrical Like for Like filed based decision framework.xlsx*.

<sup>390</sup> MS Excel workbook: *Asset Replacements and Upgrades 2019 to 2023.xlsx*.

<sup>391</sup> Document: *CT1689-ST11 Renew Bio 3 Air header- SIGN OFF.pdf*.

<sup>392</sup> Document: *CT1648 ST11 Inlet Works Rel. Impr. SCREENS -V4 -.Seed Form-APPROVED.pdf*.

<sup>393</sup> PowerPoint presentation: *Sydney Water Asset Management System (AMS); Awareness training* (file: *AMS - Training module\_Incl maintenance.pptx*).



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A document detailing the *Competency Training Process for WT16 Authorised Maintenance Providers*<sup>394</sup> was also provided. This details the competency based training programs and relevant onsite experience required to be deemed competent to work at the Warragamba Chlorination Plant (WT16).

As reported below in respect of “Improvement Initiatives”, Sydney Water has adopted the use of structured methods including the Kepner Tregoe problem solving and ‘Six Sigma’ improvement approaches. A selection of staff has undertaken training in respect of these methods; for example:

- A *Certificate; Lean Six Sigma Green Belt*<sup>395</sup> indicated that a staff member had completed “*Lean-Six Sigma Green Belt training in accordance with ISO-13053: Quantitative methods in process improvement – Six Sigma on 7<sup>th</sup> June 2023*”.
- A training presentation demonstrating use of the Kepner-Tregoe problem solving technique to undertake root cause analysis was provided.<sup>396</sup> This case study, which involved investigation of a clarifier wheel failure, demonstrated how even a small change in detail can change the outcome, thereby revealing the benefit of this more robust method of analysis in comparison to the routine “5-Whys” approach.

#### Monitoring and Review:

Management Review of all management systems, including the Asset Management System, was conducted on 7 December 2022. The presentation slides<sup>397</sup> and meeting minutes<sup>398</sup> indicate that asset management discussions were focussed on system and implementation improvements, including those being implemented under the “Service Excellence Framework” (see further discussion in respect of “Improvement Initiatives” below).

A report on an internal audit of the North Region water resource recovery and water filtration plants, the objective of which was: “*To assess the effectiveness of asset, quality and safety management systems requirements against the relevant Standards, legislative, business requirements and enterprise risk*” was provided as evidence that such audits are carried out.<sup>399</sup> One major non-compliance (in relation to missing mobile plant and overhead crane prestart and maintenance records), three minor non-compliances, and three improvement opportunities were identified.

#### Developer Works:

In feedback provided to IPART in respect of the scope of this audit, NSW Health raised concerns regarding the identification/prevention of cross-connections between the drinking and recycled water networks. Details/records of the interaction with developers in respect of assets ultimately gifted to Sydney Water were requested to enable an assessment of the appropriateness of the measures implemented by Sydney Water.

An extensive portfolio of documentation (not specifically referenced for the purposes of this report), including instructions to service providers, provider capability checklists and field test record forms, was provided for review. From an overview perspective, this documentation provides appropriate guidance and record requirements in respect of such work; however, the arrangement and responsibilities for ensuring compliance at the network/property interface do not appear to be sufficiently defined.

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<sup>394</sup> Document: *D0000859 Competency training process for WT16 Authorised Maintenance Providers.docx*.

<sup>395</sup> Document: *Darryl Foster GB #00659.pdf*.

<sup>396</sup> Document: *KT Presentation August 2023 SR SP Final.pdf* (PowerPoint presentation: *Warriewood clarifier #5 wheel failure' August 2023*).

<sup>397</sup> PowerPoint presentation: *1MS Steering Group Meeting; Annual Management Review; 7 December 2022* (file: *2022 12 1MS Steering Committee\_Slide pack incl Annual Management Review.pptx*).

<sup>398</sup> Document: *2022 12 1MS Steering Committee\_Minutes.docx*.

<sup>399</sup> Document: *A0001007 - 2022 Internal Audit - 2LoA - NW Hub - AMS, WHSMS and QMS.docx*.

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The issue of cross-connections, including details of specific cases, is discussed in detail in **sections 2.3.2.1 and 2.3.2.2** (in relation to recycled water quality).

Summary:

In summary, Sydney Water continues to have appropriate guidance in place for each phase of the asset management lifecycle. Evidence provided, together the field verification observations, confirms that management of the assets is undertaken generally in accordance with the documented procedures.

***Improvement Initiatives***

General:

Sydney Water continued to implement a series of improvement initiatives during the audit period. Principal amongst these were those implemented under the *Service Excellence Framework*, but it also included targeted improvements such as update of the reservoir roof inspection procedures, and others mentioned briefly throughout this report.

Service Excellence Framework:

Sydney Water explained and demonstrated ongoing improvements that are being implemented in accordance with the *Service Excellence Framework*. Under this initiative, a risk-based road map for achieving excellence in respect of business, environmental, health and asset risks has been developed to guide improvement.

The *Service Excellence Road Map*<sup>400</sup> outlines a program of improvement themes and associated activities to be implemented over a three phase/three-year timeline. The four improvement themes are: Operations and maintenance; Delivery; Asset management system; and Asset management strategy and planning.

Development of the *Road Map* has been based on comprehensive mapping of the alignment between the asset management system and the requirements of ISO 55001:2014.<sup>401</sup>

The three phases of development include:

- ‘Foundational’ phase – during which the risk exposure remains high, is to be achieved in the first year (2022/23) of a three-year program.
- ‘Alignment phase’ – during which the risk exposure remains high, to be achieved during the second year.
- ‘Integration, optimisation and maturity’ phase – during which the risk exposure is reduced to medium, to be achieved during the third year.

There is a significant body of work in progress, with action to date focussed on improvements to maintenance management. Sydney Water’s progress update as at the end of 2022/23 indicates a 70% achievement against the targets.

Progress to date is documented in a *Progress Report on Deliverables*,<sup>402</sup> in which progress in respect of five workstreams has been detailed:

- Workstream 1: Asset management objectives – the *Strategic Asset Management Plan* has been revised to better enunciate intentions, priorities, and practices and alignment between asset management objectives and Sydney Water’s enterprise strategy.

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<sup>400</sup> Document: *Service Excellence Roadmap-Year 2.jpg*.

<sup>401</sup> Document: *Service Excellence Links to ISO55K as at June 22.pdf*.

<sup>402</sup> Sydney Water, *Asset Service Excellence; Progress Report on Deliverables*, September 2023 (file: *Final Report - Service Excellence IPART Response.pdf*).



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- Workstream 2: Bottom-up maintenance and renewal planning and budgeting – the 2023/24 needs-based maintenance plan has been developed using an iterative approach to account for priority, deliverability, and budget. The plan is reviewed on an ongoing basis to ensure that its effectiveness is maintained.
  - Workstream 3: Integrated works planning maintenance/renewals – maintenance work plans are being delivered through external delivery partners and Sydney Water internal work teams. Delivery performance is being monitored under new management arrangements aimed at improving service outcomes.
  - Workstream 4: Assurance Process for Maintenance and Renewals – review and improvement of the current top level key processes relating to building, maintaining and monitoring assets is underway.
  - Workstream 5: Maintenance Governance Council and Maintenance and renewal work effectiveness and controls – a new Maintenance Governance Council, now called Maintenance Birrang Miya, has been reframed to review and improve maintenance delivery performance.

More specific improvements made during the audit period include (for example):

- development of a new risk cost performance framework which, together with supporting implementation and monitoring mechanisms, is aimed at driving asset performance;
- development of an Asset Performance Tool, which is used to monitor and provide performance visibility, including by monitoring metrics such as maintenance completion; and
- the use of structured methods including Kepner Tregoe problem solving (root cause analysis) and the Six Sigma improvement approach (in respect of (for example) reservoir inspections) to achieve better asset management/maintenance outcomes.

Since this is the first year of a three-year program, it may be too early to draw definitive conclusions about effectiveness; however, the improvements demonstrated to date are encouraging. The rolling out of the framework across the whole organisation, and the enthusiasm of the staff who presented at the audit, was impressive.

Updated Reservoir Roof Inspection Procedure:

As also reported in **section 3.2.4.2**, Sydney Water demonstrated that it has recently reviewed its Level 0 reservoir inspection process/checklist to give more specific guidance for undertaking inspections and the actions to be taken if issues are identified (including raising work orders and the priorities to be assigned).<sup>403</sup> The updated process has been documented in a new *Level 0 Reservoir Inspection Process*,<sup>404</sup> which includes an *Inspection Process Map*,<sup>405</sup> that clearly outlines the inspection and follow-up process.

Of note is the requirement for all defects and corrective activities to be managed through the Maximo maintenance/work order management process. It is understood that this approach is to be adopted (and enforced) across the organisation.

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<sup>403</sup> Document: *FORMSITE question update\_Sep 23.pdf*.

<sup>404</sup> Sydney Water, *Process; Level 0 Reservoir Inspection Process* (Version 1), 31 October 2023 (file: *LO Reservoir Inspection Process Final.pdf*).

<sup>405</sup> Document: *Res Inspection Process\_Sep 23.pdf*.

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### ***Field Implementation:***

#### ***General:***

Field verification visits were undertaken to four sites/facilities to verify how effectively Sydney Water is implementing the requirements of its AMS in practice. The notes presented in **Appendix B** provide an overview of the observations made during the site inspections; the following discussions provide further detail in respect of some specific issues/aspects of implementation.

It is also noted that, although not specifically reported, additional documentation provided by Sydney Water in response to the auditor's request has been viewed and taken into account in considering the overall assessment of compliance with this obligation.

#### ***Rouse Hill Water Reservoir (WS 0476):***

As reported in **Appendix B.2**, the reservoir was in generally good condition; however, Sydney Water noted that there has been a recurring issue with sheared roof fixings due to expansion of the aluminium sheeting. This issue is discussed in detail in **section 3.2.4.2**.

From an overall perspective, the issue has been managed appropriately; however, there have been some minor issues/opportunities for improvement in respect of reporting outstanding /repeat issues, and the requirement to manage all defects/repairs in Maximo from the time they are identified, issues that have now been largely addressed.

#### ***Field maintenance activity (repair of a leaking water main):***

The field maintenance activity inspected comprised of the response to a report of "water on footpath" at a location in Girraween. The work was undertaken by a Sydney Water maintenance contractor pursuant to Work Order No: 89640098,<sup>406</sup> the record of which indicated that:

- The issue was reported on 4 September 2023 (12:46pm); it was rated Priority 4.
- The work was completed on 13 September 2023 (7:37am to 2:41pm).
- Actual work done was recorded as: "leak under drive, rip driveway up, and dug to main and replace 4.5m on pipe to stop leak, and back filled hole and resto driveway", which is consistent with the observations made during the inspection.

Safe Work Method Statement (SWMS No: 11) for *Repair Replace Main/Pipe Fittings*<sup>407</sup> was referenced in undertaking the work. The field crew demonstrated their familiarity with the documented procedures and were following them on site.

Training records<sup>408</sup> for the maintenance personnel that undertook the repair work revealed that they were, in most respects, appropriately trained; however, an issue in relation to the implementation of hygienic practices has been raised, from a water quality perspective, in **section 2.3.1.2**.

#### ***Prospect Water Filtration Plant:***

As reported in **Appendix B.4**, under the terms of the Build and Operate contract, SUEZ is responsible for all operation and maintenance activities at the Prospect Water Filtration Plant; however, Sydney Water maintains oversight of the operation and maintenance of the facility.

Under these arrangements, SUEZ provides monthly performance reports, which include details of maintenance activity, to Sydney Water. Review of the report for February 2023 reveals that it includes:<sup>409</sup>

- A Maintenance Schedule Update – which details the number of work orders issued, number completed, and number not completed after 30 days for the current month and
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year to date, by work order type (breakdown, preventive, corrective, and capex). Rates of completion are generally as expected.

- Schedule of Major Equipment Calibrations – which details the timing and any comments in respect of calibrations undertaken during the month.
- Scheduled Preventative Maintenance – list of preventative maintenance completed during the month.
- Breakdowns, Corrective and Others – list of work undertaken during the month.
- Capex and Projects – list of capex projects completed.
- Key Performance Indicators – includes five indicators in respect of work order management.
- Maintenance Summary – a list of work orders completed during the month.

As part of Sydney Water’s oversight, it undertakes periodic audits of the Asset Maintenance Management System. Sydney Water provided record of an audit undertaken in August 2018 (well before the audit period), the objective of which was “... to assess the implementation and performance of the Prospect WFP maintenance system as required by the Water Filtration Agreement ...”. The audit was focussed on: Management responsibilities; Overview of PWP’s Asset Maintenance Management System; Asset Register; Handling of preventive and breakdown work orders; Planning and Asset performance evaluation; Philosophy for overhaul and replacement; and Training/Work force. Ten (10) improvement opportunities and two (2) observations were made as a result of the audit.

Given that the audit record provided by Sydney Water was dated August 2018, there is concern that oversight audits may not have been undertaken more recently, including during the audit period (although this has not been confirmed by the auditor). As an opportunity for improvement (**OFI-SWC-2023-22**), it is suggested that Sydney Water considers developing and implementing a regular program of oversight audits of SUEZ’s implementation of its Asset Maintenance Management System for the Prospect WFP (subject to the relevant contractual arrangements).

St Marys Water Resource Recovery Facility:

General

As reported in **Appendix B.5**, three issues were identified that warranted further investigation and assessment. These issues, which relate to one of the tertiary clarifiers, the tertiary filters and the chlorine contact tank, are discussed in the following.

Maximo maintenance records for a number of assets were also reviewed, SCADA checked for consistency with instrument readings, and the arrangements for maintenance management and delivery discussed.

As background, Sydney Water noted that elements of the Lower South Creek Treatment Program (2017-2024)<sup>410</sup> were being implemented at the St Marys WRRF (principally in secondary treatment areas of the plant) during the audit period. There have been major operational interactions to manage existing production and Environment Protection Licence compliance, as well as interfacing involvement in delivery of the new works.

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<sup>406</sup> Document: *MAXIMO Work Order 89640098.pdf*.

<sup>407</sup> Document: *Safe Work Method Statement (SWMS) - number 11.pdf*.

<sup>408</sup> MS Excel workbook: *SW Course Completions v2 - TBowden and DPettit.xlsx*.

<sup>409</sup> SUEZ, *Prospect Water Filtration Plant; Monthly Performance Report* (for February 2023), 15 March 2023 (file: *PWFP-03-03-SWC Monthly Report Feb 2023*).

<sup>410</sup> Includes the Quakers Hill and St Marys WRP Treatment Process and Reliability Renewal (PARR) project referenced elsewhere in this report.

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### Tertiary Clarifier (No. 3)

The central baffle in tertiary clarifier No. 3 was observed to be partially submerged. This may be indicative of a compromised structure; it may also be resulting in short-circuiting of flow within the clarifier which may in turn compromise the effectiveness of the treatment process.

Evidence was sought to demonstrate that the issue had been identified (through regular plant inspections or focussed asset inspection) and the action taken (recorded; investigated and assessed; corrective action planned/scheduled). Sydney Water provided detailed explanation (including timeline of events) with supporting evidence as follows:<sup>411</sup>

- Tilt of the baffle was detected and notified to the Reliability Engineer in July 2020.<sup>412</sup>
- St Marys Key Assets Out of Service Timeline indicates the timing interaction for outages of key assets.<sup>413</sup> This indicates that, during the audit period, Tertiary filters No. 2 and 4 were consecutively out of service from March 2022 until June 2023 thereby preventing the clarifier to be taken out of service during this time.
- Tertiary Clarifiers TIBCO<sup>414</sup> record identifying the MPM overhaul of the clarifier as unfunded work with a Business Risk score = 4 (low risk), Condition Asset Grade (CAG) = 3, Consequence of failure (CoF) = 1 and Renewal Priority Number (RPN) = 4. Prioritisation reviews undertaken in (for example) October 2021 and December 2022 did not change the priority rating; the action was to continue to monitor and reassess next quarter.<sup>415</sup>
- Work order No. 87004077, raised and completed in September 2022, in relation to a slipping belt which was the only breakdown or corrective maintenance work order raised in respect of the clarifier during the audit period.<sup>416</sup>
- Inspection checklists for 20 & 27 July 2020<sup>417</sup> and 20 February 2022<sup>418</sup> indicate that the visual inspections of the clarifier were being undertaken and sludge blanket levels recorded.
- Laboratory test records for 17 May 2023 indicate that liquid and solids analysis was being undertaken.<sup>419</sup>
- Work order No. 87876661 for preventative maintenance completed in June 2023 (initially raised in February 2023).<sup>420</sup>

Sydney Water's advice and these records collectively indicate that the baffle issue had been identified and captured in the TIBCO renewals management system, and that its priority rating has been repeatedly reviewed; it is noted that RPN ratings of 1 (highest priority) or 2 proceed to renewal, but assets with lower ratings wait until the priority of other needs is reduced. The issue has been visually monitored and sludge blanket levels are deemed to have been considered acceptable (although this does not indicate how much solid matter is being carried forward to the tertiary clarifiers).

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<sup>411</sup> Document: *Audit 2023 AMS Additional Information.docx*.

<sup>412</sup> Document: *Tertiary Clarifier #3 - Baffle Tilt First detection email.pdf*.

<sup>413</sup> Document: *St Marys Key Assets Out Of Service timeline.pdf*.

<sup>414</sup> TIBCO is an online application used by Sydney Water to manage its renewals program.

<sup>415</sup> Document: *Tertiary Clarifier TIBCO Information.pdf*.

<sup>416</sup> Document: *Tertiary Clarifiers #3 Maximo BM & CM.pdf*.

<sup>417</sup> Document: *ST Marys Monitoring Data 20-Jul & 27-Jul-2020.pdf*.

<sup>418</sup> Document: *St. Marys General Check Sheet 20Feb22 (1).pdf*.

<sup>419</sup> Document: *ST Marys 1x Lab Checksheet (Mon, Wed, Fri) May 23.pdf*.

<sup>420</sup> Document: *Tertiary Clarifiers #3 Preventative Maintenance.pdf*.

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### Tertiary Filters

Sydney Water advised that some of the tertiary filters had recently been refurbished under the MPM (major periodic maintenance) program, and that such replacement had been informed by a condition assessment. A copy of the *Condition Assessment Report*<sup>421</sup> was requested as an example of the input to this MPM activity.

Review of the *Condition Assessment Report*, which was based on assessments undertaken in March and April 2016, indicated that the filters were in generally poor condition, and that Sydney Water should “*Continue with the current media replacement/filter overhaul schedule in the worst performing filters*”. This raised questions regarding the timing of the refurbishment works; assuming that the condition assessment was initiated on the basis of planned MPM, was the maintenance activity deferred, and if so, was justification documented?

Sydney Water provided an explanation with supporting evidence as follows:<sup>422</sup>

- Condition assessment and media replacement in Filter 2 was completed in April 2016. This had been completed whilst the abovementioned *Condition Assessment Report* was being prepared.
- Condition assessment and media replacement in Filter 7 was completed in January 2017. It appears that media refurbishment for Filters 2 and 7 was already in progress at the time the abovementioned *Condition Assessment Report* was being prepared.
- Delivery business case approval for “T-Wide (Treatment Wide) Filters MPM Program –1<sup>st</sup> Cycle” was obtained in October 2017.<sup>423</sup> This ‘bundled project’ approval included three filters at St Marys but is not apparent from the evidence provided what other sites/filters were included.
- An emerging high priority obligation to replace filters at Cronulla<sup>424</sup> impacted that delivery program for the first three filters at St Marys; this work is undertaken by common resources that operate across Sydney Water’s Water Treatment (T-Wide) Filter Program.
- Subsequent condition assessment and media replacement in filters at St Marys was commenced in January 2021 and completed as follows: Filter 5 in April 2021; Filter 3 in August 2021; Filter 7 in November 2021; Filter 1 in February 2022; Filter 2 in August 2022; and Filter 4 in August 2023 (delayed due to requirement for civil repairs).
- A change request to add Filters 2 and 7 to the 1<sup>st</sup> Cycle program due to performance deterioration was approved in November 2021.<sup>425</sup> An internal assessment report completed in May 2020<sup>426</sup> concluded that the seven filters assessed, including Filters 2 and 7, were in poor condition. It appears that the deterioration was a result of additional loading due to deferment of other filter refurbishments (Filter 2) and incorrect installation of a blanking piece instead of a nozzle leading to advanced deterioration (Filter 7).
- Delivery business case approval for “T-Wide Filters MPM Program – 2<sup>nd</sup> Cycle” was obtained in November 2022. This bundle includes Filters 6 and 8 at St Marys, refurbishment of which is forecast to be complete by June 2024.

Based on the evidence provided, it appears that filter refurbishment has been managed in accordance with the *Production Major Periodic Maintenance Procedure*,<sup>427</sup> including the prioritisation provisions. Nonetheless, the observations give rise to the following concerns:

- The need to replace filter media after periods of only 5-6 years is considerably less than the norm; typically, the requirement for replacement would be expected to be after 10-20 years (nominally 15-years). Sydney Water indicated that, in view of the identified faults and deteriorated performance, it was appropriate to replace media after 5 to 6 years; nonetheless, this frequency suggests that Sydney Water is incurring significant expenditure that is in excess of the industry norm due to these and potentially other unidentified performance limiting factors.



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- The potential for flow short-circuiting due to the tilted baffle in Tertiary clarifier No. 3 may have resulted in the filters receiving a higher loading of solids. This may explain, at least partly, the need to replace filter media on a relatively frequent basis and appears to be supported by the inability to remove the clarifier from service whilst filters were being refurbished.

### Chlorine Contact Tank

Significant plant/weed growth was observed in the open topped chlorine contact tank (channel) (CCT1). It was considered that this growth, which may be impacting the effectiveness of the chlorination process is reflective of inadequate maintenance.

Evidence was again sought to demonstrate that the growth had been identified (through regular plant inspections or focussed asset inspection) and the action taken (recorded; investigated and assessed; corrective action planned/scheduled). Sydney Water provided a detailed explanation with supporting evidence as follows:<sup>428</sup>

- Construction of a second chlorine contact tank (CCT2) forms part of the Lower South Creek Treatment Program.
- Actions taken in respect of the growth in CCT1 is predicated on the requirement for CCT2 to be commissioned to enable CCT1 to be taken offline for cleaning, structural assessment, rehabilitation and recharging. This approach is in part driven by experience /lessons learned in relation to a similar installation at West Camden WRRF, where failure of baffle walls within the CCT led to a requirement for CCTs to be offline during any works (also eliminates working over water risks).<sup>429</sup>
- Replacement of shade covers over the CCT due to UV deterioration was raised in TIBCO in March 2021. The deteriorated covers were not providing adequate protection and are deemed to have contributed to the growth in the tank, amongst other issues.<sup>430</sup>
- Seed funding approval for shade cover renewal and expansion investigation was obtained in December 2021.<sup>431</sup> Delivery approval was obtained in July 2022<sup>432</sup> and installation was completed in August 2023.
- Monthly reporting<sup>433</sup> and weekly meeting records<sup>434</sup> for the Lower South Creek Program indicate that process commissioning of CCT2 commenced in July 2021, but an issue with the dosing flow was identified; a design solution was identified in February 2022; and CCT2 disinfection testing was completed in July 2023. Commissioning and handover are forecast for December 2023.

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<sup>421</sup> Sydney Water, *St Marys WRP Filter Assessment – Initial Report*, undated (file: *St Marys WRP Filter Assessment Report.docx*).

<sup>422</sup> Document: *Audit 2023 AMS Additional Information.docx*.

<sup>423</sup> Document: *Bundle Filters West DABC Approved.pdf*.

<sup>424</sup> Document: *Email - Cronulla Filters Priority for EPA Action.pdf*.

<sup>425</sup> Document: *20035875 ST11 St. Marys Change Request Form.pdf*.

<sup>426</sup> Document: *St Marys WRP Filter Assessment Report 2020 Final.pdf*.

<sup>427</sup> Sydney Water, *IMS – Production Major Periodic Maintenance (MPM) Procedure* (Version 2), 26 May 2021 (file: *D0001843 Production Major Periodic Maintenance (MPM) Procedure.docx*).

<sup>428</sup> Document: *Audit 2023 AMS Additional Information.docx*.

<sup>429</sup> Documents detailing the issue at West Camden WRRF were provided as evidence but are not specifically referenced for the purposes of this report.

<sup>430</sup> Document: *CT1420 ST11 Renew Shade Cloths – TIBCO.pdf*.

<sup>431</sup> Document: *CT1420 ST11 Renew Shade Cloths - Seed Fund Approved.pdf*.

<sup>432</sup> Documents: *CT1420 ST11 Renew Shade Cloths DABC.pdf* and *CT1420 - ST11 - Renew Shade Cloths DABC - Approved LB.pdf*.

<sup>433</sup> Documents: *110.A-PROMGT-Y-MRP-0001-0092\_A\_MR\_Jul21.pdf*, *110.A-PROMGT-Y-MRP-0001-0092\_A\_MR\_Jun22.pdf* and *110.A-PROMGT-Y-MRP-0001-0132\_A\_MR\_Jul23.pdf*.

<sup>434</sup> Documents: *110.A-PROMGT-Y-MIN-0001-0616\_A\_WM\_230921.pdf* and *110.A-PROMGT-Y-MIN-0001-0680\_A\_WM\_020323.pdf*.

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- An operational review in May 2022 concluded that having CCT2 online is the most effective and safest manner in which undertake the cleaning works.
  - Weekly data records<sup>435</sup> and a Risk assessment briefing paper<sup>436</sup> indicate that residual chlorine levels remained within specification throughout the audit period.

It is not apparent when the growth was first identified, however, it appears that removal has been postponed until after the commissioning of CCT2. This has been driven primarily by safety concerns and the need to maintain the disinfection process.

#### Maximo Maintenance Records

An online overview of the St Marys WRRF asset hierarchy as shown in Maximo was provided as a precursor to reviewing records in respect of several assets including (for example):

- ST0011APH8024 – pH Analyser – Disinfection Contact Tank TNK8201.
- ST0011ATU8222 – Turbidity Transmitter – Disinfection Contact Tank TNK8201.
- ST011PMP7044 – Pump – Submersible Pump Unit – Tertiary Effluent Pump 4.

Records sighted included examples of related preventative maintenance schedules, maintenance routes, work order tasks, and records of completed maintenance for the individual assets.

From an overview perspective, all appeared to be appropriate and in order.

#### SCADA/Instrument Consistency

Displayed readings from Turbidity (ATU8222), Residual chlorine (ACL8262) and pH (APH8024) instruments at the chlorine contact tank were recorded during the site inspection and subsequently checked against those displayed in SCADA. Notwithstanding the short time lag, the readings shown in SCADA were consistent with those taken directly from the instruments.

#### Maintenance Management and Delivery Arrangements

An overview explanation regarding maintenance management (planning and delivery) was provided. Some observations from this discussion included:

- Sydney Water uses *Mechanical and Electrical Like for Like Field-based Decision Framework* (previously discussed) to support decision making in respect of repair or replacement of mechanical and electrical assets.
- Regional Delivery Consortia have been engaged to support Sydney Water in its asset management practices. These consortia provide planning, design, capital delivery and maintenance services under arrangements aimed at ensuring these service providers engage in a lifecycle understanding of the assets with which they are involved.
- Facilities are grouped in “Hubs” (for example, St Marys and Quakers Hill WRRFs) for the purposes of operation and maintenance.
- Maintenance activity is planned and monitored at weekly maintenance meetings. Monthly meetings are held with the Reliability Operation and Maintenance (ROM) team. Process and/or planning personnel can also be involved with the objective of obtaining a more broadly based ‘balanced’ view of the issues at hand.

From an overall perspective, these arrangements appear to support an appropriate maintenance management regime.

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<sup>435</sup> MS Excel workbook: 110A-PROMGT-Y-MIN-0001-0680\_A\_WTM\_020323.xlsx.

<sup>436</sup> Document: WQ0008.01 - St Marys Recycled Water Briefing Paper.docx.



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*Summary:*

From an overall perspective, the field verification site visits revealed that the infrastructure (asset portfolio) is generally well operated and maintained from an asset management perspective, both by Sydney Water itself and by SUEZ in respect of the Prospect WFP. No capital projects were inspected, so no comment can be made in respect of the manner in which they are being implemented. Major works at the St Marys WRRF (focussed primarily on the primary and secondary components of the plant) did, however, have operational and maintenance impacts for the tertiary plant.

Sydney Water advised of a recurring issue in respect of roof fixing at Rouse Hill Reservoir. This issue appears to have been appropriately managed; however, there are opportunities for improvement to the manner in which identified defects (particularly repeat occurrences) are reported and managed through the Maximo maintenance management/work order system. Such improvements are being implemented in response to a previous audit recommendation (refer **section 3.2.4.3**).

Several maintenance related issues were identified at St Marys WRRF. Whilst explanation and records provided by Sydney Water demonstrated that these issues have been reasonably managed from an overall perspective, there remain some shortcomings in the asset maintenance recording process. These are applicable to both 'business as usual' corrective maintenance and major periodic maintenance.

Whilst there has been improvement in respect of this previously identified maintenance management deficiency (refer previous recommendations 2022-09 and 2022-10, which are discussed in **sections 3.2.4.2** and **3.2.4.3** respectively), these examples suggest that it has not yet been fully addressed. Furthermore, these observations were made at a site randomly selected for audit and may be more broadly applicable.

This ongoing deficiency is considered to reflect non-compliance with the requirements of the asset management system. Given the progress made to date, and Sydney Water's assessment (using its internal risk management processes) that the risks associated with the observed deficiencies have been effectively managed, the non-compliance is at this stage considered non-material.

Accordingly, it is recommended (**REC-SWC-2022-10**) that Sydney Water takes action to ensure that its improved maintenance management processes, including the management of associated records, are fully embedded (understood and implemented) across the organisation. This may require (for example) focussed training of relevant personnel and/or internal audits to ensure that the documented processes are being fully implemented.

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**Recommendations**

The following recommendation is made in respect of this obligation:

- **REC-SWC-2023-10:** It is recommended that, by 31 December 2024 Sydney Water must take action to ensure that its improved maintenance management processes, including the management of associated records, are fully embedded (understood and implemented) across the organisation. This should be demonstrated by (for example): evidence that focussed training of relevant personnel has been undertaken; and/or records of internal audits across a representative sample of facilities and maintenance groups.
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### Opportunities for improvement


The following opportunity for improvement has been identified in respect of this obligation:

- **OFI-SWC-2023-22:** It is suggested that Sydney Water considers developing and implementing a regular program of oversight audits of SUEZ's implementation of its Asset Maintenance Management System for the Prospect Water Filtration Plant (subject to the relevant contractual arrangements).
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## 2.5 Stakeholder Cooperation (Licence Part 7)

### 2.5.1 Memoranda of Understanding with WAMC, NSW Health and EPA (clause 7.1)

#### 2.5.1.1 *Memoranda of Understanding with WAMC, NSW Health and EPA (sub-clause 7.1.1)*

Sub-clause	Requirement	Compliance Grade
7.1.1	<p>Sydney Water must maintain the memoranda of understanding entered into under section 35 of the Act with:</p> <ul style="list-style-type: none"> <li>a) the Water Administration Ministerial Corporation (<b>WAMC</b>);</li> <li>b) the Secretary of the Ministry of Health (<b>NSW Health</b>); and</li> <li>c) the Environment Protection Authority (<b>EPA</b>).</li> </ul>	 <b>Compliant</b>

#### **Risk if non-compliant**

Failure to comply with this obligation presents a high operational risk. Given their regulatory and operational roles in respect of water management, public health and environmental protection respectively, it is essential that Sydney Water maintains effective interaction with each of WAMC, NSW Health and the EPA.

#### **Evidence sighted**

Refer Appendix C (C.2.6).

#### **Summary of audit findings/reasons for grade**

Although Sydney Water was unable to demonstrate that the Memorandum of Understanding with the EPA had been reviewed following the replacement of Sydney Water's Operating Licence in July 2019 (as required by the Memorandum of Understanding), it is apparent that Memoranda of Understanding were maintained with each of the WAMC, NSW Health and the EPA during the audit period. Sydney Water demonstrated that the provisions of the Memoranda of Understanding, including that with the EPA, had continued to be implemented.

Accordingly, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### **Areas of good practice observed**

Sydney Water effectively maintained memoranda of understanding with each of WAMC, NSW Health and EPA. Although assessment of implementation is not required pursuant to this obligation, evidence provided in respect of the memorandum of understanding with the EPA demonstrates that it was effectively implemented during the audit period.

#### **Discussion and notes**

The Memorandum of Understanding (MoU) with each of WAMC, NSW Health and EPA are available on, and can be downloaded from, the Sydney Water website.<sup>437</sup>

Review of each of the MoU reveals:

<sup>437</sup> "Reports and publications" webpage on the Sydney Water website at: <https://www.sydneywater.com.au/about-us/our-publications/reports-publications.html> (Select "Memorandums of Understanding").

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- WAMC – is dated 1 June 2011 and remains in place until amended or replaced.<sup>438</sup>
  - NSW Health – is dated 2 August 2021 and remains in place until 6 months after commencement of new Operating Licence (unless terminated earlier).<sup>439</sup> A new Sydney Water Operating Licence has not commenced since August 2021.
  - EPA – is dated 10 June 2015 and remains in place until amended or replaced.<sup>440</sup> The MoU further indicates that “*Where Sydney Water’s Operating Licence is replaced or amended then the parties shall meet to discuss the implications and revise the MoU as required*”.<sup>441</sup>

Sydney Water advised that there have been no changes to the MoU with the EPA since it was signed in 2015. It further advised that discussions on whether to revise the MoU are held with officers outside the Strategic Liaison Group (SLG) meetings and have not been minuted; however, the Strategic Workplan (which identifies the issues to be jointly considered) is revised annually to ensure that it aligns with key policy directions for both organisations.

Sydney Water provided records (agenda and minutes) for all SLG and Joint Operational Group (JOG) meetings held after issue of the *2019-2023 Operating Licence* as evidence that the provisions of the MoU had continued to be implemented.<sup>442</sup> More specifically, annual Strategic Workplan updates were noted or endorsed as follows:

- 2019/20 update was noted at the June 2020 SLG meeting, but not formally endorsed that year (meetings cancelled and or delayed due to appointment of new CEOs for both organisations and the impacts/diverted focus due to COVID-19);<sup>443</sup>
- 2020/21 Strategic Workplan was tabled for endorsement at a 11 September 2020 meeting; an action to review the Workplan to align the current working plan and longer-term outcomes for the key policy directions as discussed at the meeting was agreed;<sup>444</sup>
- 2021/22 Strategic Workplan was endorsed by the SLG at a 2 September 2021 meeting;<sup>445</sup> and
- 2022/23 (audit period) Strategic Workplan was endorsed by the SLG at a meeting on 21 September 2022;<sup>446</sup> it was subsequently revised and reendorsed at a meeting on 5 April 2023.<sup>447</sup>

Accordingly, although there is no formal record that the MoU with the EPA was reviewed or revised following the commencement of Sydney Water’s current Operating Licence on 1 November 2019, the annual joint approval of Strategic Workplans indicates that the MoU has continued to be implemented in accordance with its intent.

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<sup>438</sup> Sydney Water/WAMC, *Memorandum of Understanding: Between Sydney Water Corporation and the Water Administration Ministerial Corporation*, 1 June 2011, section 5.

<sup>439</sup> Sydney Water/NSW Health, *Memorandum of Understanding between the NSW Ministry of Health and Sydney Water Corporation*, 2 August 2021, section 4.

<sup>440</sup> Sydney Water/NSW EPA, *Memorandum of Understanding between Sydney Water Corporation and The Environment Protection Authority*, 10 June 2015, section 8.1.

<sup>441</sup> Sydney Water/NSW EPA, *Memorandum of Understanding between Sydney Water Corporation and The Environment Protection Authority*, 10 June 2015, section 8.2.

<sup>442</sup> SLG and JOG meeting agenda and minutes for meetings held during 2019/20, 2020/21, 2021/22 and 2022/23 (46 documents in total, not all specifically referenced for the purposes of this report/observation).

<sup>443</sup> Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 12 June 2020 (file: 200612 EPA SWC SLG Meeting minutes\_FINAL.pdf), Item 3.1.

<sup>444</sup> Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 11 September 2020 (file: 200911 EPA SWC SLG meeting minutes\_FINAL.pdf), Item 3.1.

<sup>445</sup> Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 2 September 2021 (file: 210902\_EPA SWC SLG Meeting Minutes\_FINAL.pdf), Item 3.1.

<sup>446</sup> Sydney Water/EPA, *Strategic Liaison Group; Minutes* of meeting held on 21 September 2022 (file: 220921 EPA SWC SLG Meeting Minutes\_FINAL.pdf), Item 3.1.

<sup>447</sup> Sydney Water/EPA, *Strategic Liaison Group; Minutes* of meeting held on 5 April 2023 (file: 230504 EPA SWC JOG Meeting Minutes\_FINAL.pdf), Item 3.1.

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Although the MOU with each of WAMC, NSW Health and the EPA have effectively been maintained during the audit period, as an opportunity for improvement (**OFI-SWC-2023-23**), it is suggested that Sydney Water considers implementing a process to ensure that: where required by a Memorandum of Understanding, the Memorandum of Understanding is reviewed and if necessary revised following the issue of a new Sydney Water Operating Licence; and the completion of such review is documented/recorded.

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### **Recommendations**

There are no recommendations in respect of this obligation.

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### **Opportunities for improvement**

The following opportunity for improvement has been identified in respect of this obligation:


- **OFI-SWC-2023-23:** It is suggested that Sydney Water considers implementing a process to ensure that:
  - where required by a Memorandum of Understanding, the Memorandum of Understanding is reviewed and if necessary revised following the issue of a new Sydney Water Operating Licence, and
  - the completion of such review is documented/recorded.

*[Note: this opportunity for improvement has also been identified in respect of sub clause 7.2.1.]*

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## 2.5.2 Memorandum of Understanding with FRNSW (clause 7.2)

### 2.5.2.1 Memorandum of Understanding with FRNSW – Maintenance of MoU (sub-clause 7.2.1)

Sub-clause	Requirement	Compliance Grade
7.2.1	Sydney Water must use its best endeavours to maintain a memorandum of understanding with Fire and Rescue NSW (FRNSW).	 <b>Compliant</b>

#### Risk if non-compliant

Failure to comply with this obligation presents a high operational risk. FRNSW is a key consumer of Sydney Water’s services, with obligations in respect of community protection. It is therefore essential that Sydney Water maintains effective interaction with FRNSW to help ensure public safety.

#### Evidence sighted

Refer Appendix C (C.2.7).

#### Summary of audit findings/reasons for grade

Although Sydney Water was unable to demonstrate that the Memorandum of Understanding with FRNSW had been reviewed following the replacement of Sydney Water’s Operating Licence in July 2019 (as required by the Memorandum of Understanding), it is apparent that the Memorandum of Understanding was maintained during the audit period. Sydney Water demonstrated that the provisions of the Memorandum of Understanding continued to be implemented (subject to the observations presented in **section 2.5.2.2**).

Accordingly, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. No specific areas of good practice have been identified.

#### Discussion and notes

The Memorandum of Understanding (MoU) with FRNSW is available on, and can be downloaded from, the Sydney Water website.<sup>448</sup>

Review of the MoU reveals that it is dated 1 December 2015 and that it remains in force until amended or replaced.<sup>449</sup> The MoU further indicates that “*When Section 9.4 of Sydney Water’s Operating Licence 2015-2020 is replaced or amended, the parties shall meet to discuss revising or ceasing the MoU as required*”.<sup>450</sup>

Sydney Water advised that there have been no changes to the MoU with FRNSW since it was signed in 2015. It further advised that there is no evidence available of a discussion between

<sup>448</sup> “Reports and publications” webpage on the Sydney Water website at: <https://www.sydneywater.com.au/about-us/our-publications/reports-publications.html> (Select “Memorandums of Understanding”).

<sup>449</sup> Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015), section 5.1.

<sup>450</sup> Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015), section 5.2.

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Sydney Water and FRNSW about extending the life of the MoU or cancelling it, noting that the timeframe for such discussions (i.e. following commencement of Sydney Water's current Operating Licence on 1 November 2019) coincided with the COVID-19 lockdown periods during which formal Strategic Liaison Group (SLG) and Fire Fighting Working Group (FFWG) meetings were put into abeyance due to technical issues using online communication platforms.

Sydney Water noted that FRNSW had participated in/contributed to Operating Licence reviews during this period having asked for additions to the operating licence and not seeking to remove the MoU requirement. It is noted that whilst there were minor wording changes in the new Licence, the requirements in respect of the MoU with FRNSW remained essentially the same; accordingly, the need to revise the MoU is considered unlikely.

Although it is apparent that the MoU was maintained during the audit period and its provisions continued to be implemented (subject to the observations presented in **section 2.5.2.2**), the opportunity for improvement (**OFI-SWC-2023-23**) identified in respect of sub-clause 7.1.1 (refer **section 2.5.1.1**) is again considered applicable; i.e. it is suggested that Sydney Water considers implementing a process to ensure that: where required by a Memorandum of Understanding, the Memorandum of Understanding is reviewed and if necessary revised following the issue of a new Sydney Water Operating Licence; and the completion of such review is documented/recorded.

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### Recommendations

There are no recommendations in respect of this obligation.

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### Opportunities for improvement

The following opportunity for improvement has been identified in respect of this obligation:


- **OFI-SWC-2023-23:** It is suggested that Sydney Water considers implementing a process to ensure that:
  - where required by a Memorandum of Understanding, the Memorandum of Understanding is reviewed and if necessary revised following the issue of a new Sydney Water Operating Licence, and
  - the completion of such review is documented/recorded.

*[Note: this opportunity for improvement has also been identified in respect of sub clause 7.1.1.]*

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**2.5.2.2 Memorandum of Understanding with FRNSW – Compliance with MoU  
 (sub-clause 7.2.2)**

Sub-clause	Requirement	Compliance Grade
7.2.2	Sydney Water must use its best endeavours to comply with the memorandum of understanding with FRNSW.	 <b>Compliant                      (minor shortcomings)</b>

**Risk if non-compliant**

Failure to comply with this obligation presents a high operational risk. FRNSW is a key consumer of Sydney Water’s services, with obligations in respect of community protection. It is therefore essential that Sydney Water complies with the information sharing and other provisions of the memorandum of understanding.

**Evidence sighted**

Refer Appendix C (C.2.7).

**Summary of audit findings/reasons for grade**

Sydney Water demonstrated that, in most respects, it has used its best endeavours to comply with the requirements set out in the Memorandum of Understanding (MoU) with FRNSW. It has:

- participated as members of the Strategic Liaison Group and Fire Fighting Working Group, both of which have met as required;
- implemented arrangements for the sharing of information and is now working on enhancements;
- provided “Pressure System Reports” in respect of 25% of supply zones, and FRNSW has provided a priority list for the remainder;
- consulted with FRNSW in respect of system configuration issues, and will continue to do so, on an as required basis; and
- liaised with FRNSW in respect of other matters including (for example) a communication plan and hydrant app.

Sydney Water has not, however, agreed “... *the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting*”, as required pursuant to clause 4.2.6 of the MoU. Whilst it is apparent that progress is being made notwithstanding resource (appropriately experienced staff and funding) constraints, it is considered appropriate to propose a timeline that can be monitored and updated as necessary. It is noted that FRNSW has raised significant concerns in respect of this issue, which indicates that as a party to the MoU it doesn’t consider that the objectives have been met.

Accordingly, Sydney Water is assessed not to have fully complied with this obligation; however, given the more recent action taken by Sydney Water and the constraints (in many respects beyond its control) that it has faced in developing and preparing the required information, the deficiency is considered a minor shortcoming.

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## Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. No specific areas of good practice have been identified.

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## Discussion and notes

### *Overview:*

To assess whether Sydney Water used its best endeavours to comply with the requirements set out in the Memorandum of Understanding (MoU) with FRNSW during the audit period, action taken in respect of a selection of those requirements is assessed in the following discussion.

It is noted that, in defining the scope of the audit, IPART provided the following comment:

*“FRNSW notes that Sydney Water has not provided sufficient resource commitment to provide a comprehensive data set detailing the performance of the entire Sydney Water network (as per cl 7.2.4 (b)(ii).”*

This issue is further discussed below.

### *Strategic Liaison Group:*

The MoU requires that a Strategic Liaison Group (SLG), comprising not less than two representatives from each organisation, is to meet at least annually. Sydney Water advised that:

*“The Annual SLG meeting was held 17 November 22, with senior managers attending from both FRNSW and SWC. Discussion points included SWC Source of funding (SOC), Hydrant Pressure maps and IPART Operating Licence review.”*

Review of the meeting minutes<sup>451</sup> confirmed that:

- A meeting was held on 17 November 2022, and it was attended by three members from each of Sydney Water and FRNSW.
- Matters discussed included:
  - History of the MoU for new participants/attendees.
  - Various techniques used by FRNSW for connecting to hydrants and buildings.
  - IPART Operating Licence review, with a focus on: Pressure maps (required as soon as possible; funding and resourcing constraints); and Hydrant locations and the provision of hard stand for fire trucks/appliances.
  - Sydney Water’s funding arrangements as a State-Owned Corporation (funded through rates, without Government support) and the impact on the provision of Pressure maps.
  - Feedback from the Fire Fighting Working Group in relation to: a Communication plan; a Hydrant App (currently under development); Pressure maps (FRNSW to determine risk areas and provide priority for completion; and update of an Activity tracker).

The matters discussed are considered consistent with the purpose of the SLG as defined in the MoU.

### *Fire Fighting Working Group:*

The MoU requires that a Fire Fighting Working Group (FFWG) meets quarterly or as otherwise agreed. Sydney Water advised that:

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<sup>451</sup> Document: *Minutes SLG\_Working group\_17 Nov 22.pdf*.

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*“Following the Covid period and changes in working group members, the Working Group meetings and in between meet contacts has been re-established.”*

Meeting notes provided by Sydney Water indicate that meetings of the FFWG were held on 23 August 2022,<sup>452</sup> 21 September 2022<sup>453</sup> and 25 July 2023.<sup>454</sup> Review of these notes revealed that matters discussed at these meetings included (for example):

- Identified pressure issues at specific locations.
- Pressure capacity maps (including work involved (hydraulic model rebuilds); FRNSW priorities; and timing).
- Hydrant App development.
- Communication Plan development.
- FRNSW input to the Sydney Water *Operating Licence* review, with a specific focus on the preparation of pressure maps by Sydney Water.
- Sydney Water design standards.
- Smart Standpipe development and trials.
- Sprinklers in homes.
- Data Sharing Agreements.
- Sydney Water’s upcoming Operational Audit.

The matters discussed are consistent with the role of the FFWG and the matters it is required to consider, as defined in the MoU. Data sharing arrangements, the provision of pressure capacity maps, and matters related to water supply system design and maintenance planning are specifically nominated in the MoU consistent with the requirements of sub-clause 7.2.4 of the *Operating Licence* (refer **section 2.5.2.3**).

It was noted in the notes for the 25 July 2023 meeting that: “FRNSW & SWC agreed to continue regular informal meetings as required and 6 monthly FFWG meetings is ok at this stage”. This indicates that the timing of FFWG has been agreed between the parties as required.

### ***Information Sharing:***

Sydney Water has fulfilled its requirements under the MoU in respect of information sharing, providing monthly updates of GIS network data via a SharePoint portal, and weekly updates on work orders for repair requests (principally in respect of hydrants) raised by FRNSW.

A screenshot of the “FRNSW Monthly Water Data Supply” SharePoint portal was provided together with the *Sydney Water External Site Sharing Disclaimer*,<sup>455</sup> which has been signed by both parties. The disclaimer sets out the scope of rights and user’s obligations in respect of the shared information.

Example email correspondence<sup>456</sup> and attachment<sup>457</sup> demonstrated that work order updates are provided (albeit this example was from after the audit period). Sydney Water also provided evidence comprising a *Hydrant Fault Reporting Form* submitted by FRNSW and associated Maximo maintenance management system extracts to demonstrate the process whereby hydrant faults reported by FRNSW are created on a separate breakdown maintenance work

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<sup>452</sup> Document: *Meeting Notes Internal Working group\_23 Aug 22.pdf*.

<sup>453</sup> Document: *Meeting Notes Internal Working group\_21 Sep 22.pdf*.

<sup>454</sup> Document: *Meeting Notes Internal Working Group 25 July 23.docx*.

<sup>455</sup> Sydney Water, Sydney Water external site sharing disclaimer, signed 17/22 October 2018 (file: *Share Point - Sydney Water External Site Sharing Disclaimer.pdf*).

<sup>456</sup> Email dated 22 August 2023 from Sydney Water to FRNSW (re: *Sydney Water Fire Hydrant Work Orders 2023-08-22*) (file: *EMAIL - SWC Fire Hydrant Work Orders 2023-08-22 - 280823.pdf*).

<sup>457</sup> MS Excel workbook: *EXCEL - SydneyWaterHydrant\_Weekly\_Work\_Order\_20230822.xlsx*.

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order for each hydrant repair. When work orders are scheduled and dispatched to a crew, work will be grouped into logical groupings for crews to attend to repairs in an efficient manner based on priorities of the work (in accordance with the typical maintenance management approach).<sup>458</sup>

### ***Hydrant Pressure Mapping:***

#### Overview:

Pursuant to section 4.2.6 of the MoU:

*“The parties are to agree to the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting.”*

Sydney Water has provided some of the information; however, there does not currently appear to be an agreed timeline for provision of the remainder.

#### Current Status:

Sydney Water advised that, during the audit period, it had completed and issued 25% of the pressure system data to FRNSW in geographical format. The information was provided for critical areas nominated by FRNSW in November 2022.<sup>459</sup>

Sydney Water also sought (November 2022) and has received (December 2022) FRNSW prioritisation for the remaining network modelling.<sup>460,461</sup>

#### Lessons Learned:

Following completion of the work involved in preparing the information delivered to date, Sydney Water sought to understand issues impacting on its delivery. The lessons learned can be summarised as follows:

- To provide the information required by FRNSW, Sydney Water needed to rebuild its hydraulic models, a process that took substantially more time than initially estimated. Sydney Water’s planning models do not provide data at individual hydrants, which requires the insertion of additional nodes which is a time-consuming process (approximately 3-months per model, with approximately 80 models yet to be completed).
- There are limited resources with experience using Sydney Water’s modelling systems; these resources are shared across a range of work processes including system planning, and operational and climatic event (e.g. storm) responses. Work is prioritised with a primary focus on maintaining service continuity.
- The required work is funded from Sydney Water’s operational budget; there is no Government funding and no FRNSW contribution. Again, funds are allocated on a priority basis with a focus on maintaining service continuity.

#### Ongoing Liaison:

Sydney Water demonstrated, through the above referenced SLG and FFWG meeting minutes /notes and other referenced documentation, that there has been ongoing discussion between Sydney Water and FRNSW in respect of the required hydrant pressure information.

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<sup>458</sup> Document: *IPART FRNSW Audit Additional Question - 18Sep23.pdf*.

<sup>459</sup> Email dated 14 November 2022 from Sydney Water to FRNSW (re: *Fire Hydrants Download*) (file: *E mail\_From SWC to FRNSW\_Fire Hydrants Download\_141122.pdf*).

<sup>460</sup> Email dated 21 November 2022 from Sydney Water to FRNSW and response dated 12 December 2022 (re: *FRNSW - LGA and/or Address/Suburb Priorities for Water Network Model Updates*) (file: *EMAIL - FW RE [EXTERNAL] RE FRNSW - LGA and/or Address\_Suburb Priorities for Water Network Model Updates - 121222.pdf*).

<sup>461</sup> MS Excel workbook: *EXCEL - LGA Details for FFWG Priorities Feedback.xlsx*.

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Of particular significance is advice provided to FRNSW in respect of Sydney Water’s funding arrangements at the November 2022 SLG meeting.<sup>462</sup> As a result of the briefing provided to FRNSW (including its Chief Superintendent):<sup>463</sup>

*“Sydney Water believes that FRNSW now has a higher understanding that the dependency of funding is a critical component to complete the works, and that funding needs to be recovered by rate payers and seen as efficient and prudent expenditure by IPART, as Sydney Water receives no funding from NSW Government like FRNSW.”*

Pathways Forward:

Sydney Water advised that upgrade of the next two hydraulic models, selected on the basis of FRNSW priority, is underway. It is also training additional personnel to increase internal modelling capacity.<sup>464</sup>

Sydney Water also advised that it has taken action to progress upgrade of the hydraulic models, including:

- It has scoped the work required in order to update its portfolio of models to a state that will enable it to provide the information sought by FRNSW.<sup>465</sup>
- Has submitted an internal seed funding request for development of a business case in support of the proposed hydraulic model upgrade program.<sup>466</sup>
- Will include funding for the model upgrade program as part of its submission to the upcoming 2025-2030 IPART price determination.<sup>464</sup>

The timing of the future program (including the delivery of hydrant pressure information to FRNSW) will be largely dependent on funding availability. If funding is approved (under the IPART pricing determination), a period of approximately 4-years is forecast to complete the work.<sup>465</sup> If additional funding is not approved and the work is to be completed under the ‘Business as Usual’ program, forecast completion will extend to some 14-years (approximately six upgrades per year);<sup>464</sup> an initial program (2023-24 - *Water Network Model Rebuild (BAU) & FRNSW Model Pressure/Flows program*) indicates the completion of six model rebuilds by June 2024 under this scenario.<sup>467</sup>

Sydney Water has committed to providing a Management Control Plan as the basis for tracking progress by both parties once the final pathway/timing has been confirmed.

FRNSW Position:

It is noted that in feedback provided to IPART in respect of the scope of this audit, FRNSW commented (in part) that:<sup>468</sup>

*“... FRNSW consider that Sydney Water has not met its licence obligations in relation to compliance with an MOU with FRNSW.*

*Specifically, Sydney Water have only provided pressure and flow performance data for 25% of hydrants within their network in the last 12 months. FRNSW have been requesting network performance data from Sydney Water since 2015. Without network performance data, areas of low firefighting water flow are only identified where informed community members (typically hydraulic consultants or firefighters) raise concerns with FRNSW or alternatively these are identified during an incident. This ad-hoc approach has*

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<sup>462</sup> Document: *Minutes SLG Working group\_17 Nov 22.pdf*.

<sup>463</sup> Document: *Audit FRNSW Add.docx* (additional information provided in response to the *Summary of Audit Findings Report*).

<sup>464</sup> Document: *2023 Audit Fire and Rescue NSW MOU.pdf* (PowerPoint presentation: *Fire and Rescue NSW MOU; 2023 Sydney Water Operating Licence Review – Clause 7.2*).

<sup>465</sup> Sydney Water, *Scoping Water Model Builds*, December 2022 (file: *Scoping Water Model Builds - Rev C – 2022.pdf*).

<sup>466</sup> Document: *Water Model Rebuild - Rebuild 2023 - Seed Funding Form – 290823.docx*.

<sup>467</sup> Document: *1 Water Network Model Rebuild (BAU) - 2023\_24.pdf*.

<sup>468</sup> Letter (reference: FRN14/2786-001) dated 16 August 2023 from FRNSW to IPART (re: *FRNSW comments on Sydney Water’s Performance against its operating licence*).



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*hampered any attempt to develop strategic solutions for the provision of water for firefighting. Furthermore, the extent of the problem is difficult to determine.”*

Sydney Water advised that it notes and acknowledges FRNSW’s comments and concerns. It further noted that there are opportunities for FRNSW to provide information that will assist Sydney Water in its supporting role; for example, FRNSW has not provided feedback in respect of the information provided to date, and FRNSW could share low pressure information (which would support prioritisation and funding submissions by Sydney Water).<sup>469</sup>

***Summary:***

In summary, Sydney Water has taken action, to the extent possible under funding and resource constraints, to progress the provision of hydrant pressure information across its water supply network. However, FRNSW has raised significant concerns in respect of this issue, which indicates that, as a party to the MoU, it doesn’t consider that this objective has been met.

Sydney Water has outlined a forward plan to progress provision of the required information within a timeline significantly less than would be achieved under ‘Business as Usual’ funding provisions. Timing for the provision of the remaining 75% of information will be subject to funding approval under the 2025-2030 IPART price determination.

Although some pressure information has been provided, FRNSW has not provided feedback. Therefore, it cannot be assumed that the form in which the information has been provided is acceptable to both parties.

As “... *the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting*” has not yet been agreed between Sydney Water and FRNSW, this obligation cannot be considered to have been addressed. Although Sydney Water has taken action to address this long-running issue, much of it appears to have been towards the end of and following the audit period.

***New Design Consultation:***

Sydney Water advised that it has consulted with FRNSW in respect of an upcoming review of the Water Services Association of Australia *Water Supply Code of Australia* (WSA 03), particularly in respect of hydrant spacing and Sydney Water’s design standards, at the FFWG meeting on 22 July 2023.<sup>470</sup> Sydney Water has formally sought FRNSW input and has offered to meet again to discuss these issues, in detail, if required.<sup>471</sup>

There have also been discussions of emerging technical standards issues concerning access /hardstand provisions for firefighting appliances; developers have a view to moving the hardstand provision from the verge to the road pavement. This arrangement is not preferred by FRNSW due to the types of connections involved and the impact on appliance movements. FRNSW is seeking Sydney Water’s assistance in negotiating with Councils when the issues arise.

***Other Matters:***

Sydney Water has also consulted/engaged with FRNSW in respect of initiatives including a Communications Plan, a “Hydrant App”, improved arrangements for data sharing, and a Smart Standpipe project.

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<sup>469</sup> Document: 2023 Audit\_Fire and Rescue NSW MOU.pdf (PowerPoint presentation: *Fire and Rescue NSW MOU; 2023 Sydney Water Operating Licence Review – Clause 7.2*).

<sup>470</sup> Document: *Meeting Notes Internal Working Group 25 July 23.docx*.

<sup>471</sup> Email dated 28 August 2023 from Sydney Water to FRNSW (re: *FRNSW - WSA 03 Consultation*) (file: *EMAIL2 - FW [FRNSW MOU 2023 July 25 - 5] RE FRNSW - WSA03 Consultation 280823.pdf*) and attachments: *WSA 03 Water Code - 8.8 Hydrants.pdf* and *WSA 03 Water Code - Appendix H - Hydrant Spacings.pdf*.

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Communications Plan:

Sydney Water and FRNSW are in the process of developing a *Joint Communications and Engagement Plan*, which is currently in draft form. As reported above, this has been the subject of discussions at SLG and FFWG meeting held during the audit period.

Hydrant App:

Joint development of a Hydrant App, which is aimed at replacing the manual communication in respect of hydrant faults (refer above comments in respect of information sharing), has progressed steadily over time, with work undertaken by both organisations linked to development and access security. This is evidenced by an email chain including FRNSW internal correspondence and correspondence between FRNSW and Sydney Water, which reports status and establishes contact between IT representatives of both organisations,<sup>472</sup> and notes of a meeting between Sydney Water and FRNSW IT representatives on 25 July 2023.<sup>473</sup>

The Hydrant App was most recently discussed in some detail at the FFWG meeting held on 25 July 2023, at which FRNSW advised that the Hydrant App had been placed on hold due to internal resource requirements. Sydney Water advised that it would continue its work in preparation for when FRNSW is ready to proceed;<sup>474</sup> FRNSW has subsequently sought to progress the project.<sup>475</sup>

Improved Data Sharing Arrangements:

As an improvement opportunity, Sydney Water is investigating the automated transfer of live data to FRNSW through an Application Program Interface (API) which would benefit both organisations. This Sydney Water IT project needs to be prioritised and funded by Sydney Water, as discussed at the meeting between Sydney Water and FRNSW IT representatives on 25 July 2023,<sup>476</sup> and is subject to approval and availability of IT resourcing.

Sydney Water has listed this action in the internal JIRA tracking system where progress is logged.<sup>477</sup>

Smart Standpipe Project:

In feedback provided to IPART in respect of the scope of this audit, FRNSW provided positive comments in respect to initiation of a Smart Standpipe project that will allow Sydney Water to better track water usage.<sup>478</sup> Details of this project were summarised in the notes on the July 2023 FFWG meeting.<sup>479</sup>

**Summary:**

Whilst Sydney Water has demonstrated that, in most respects, it has complied with the requirements set out in the MoU with FRNSW, failure to reach agreement in respect of “... *the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting*” is considered a deficiency. Accordingly, it is assessed that Sydney Water has not fully complied with this obligation; however, given the more recent action taken by Sydney Water and constraints (in many respects beyond its control) that it has faced in developing and preparing the required information, the deficiency is considered a minor shortcoming.

Accordingly, it is recommended (**REC-SWC-2023-11**) that Sydney Water takes action to:

- Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least six supply zones during the 2023/24 year, as indicated in the *2023 24 - Water Network Model Rebuild (BAU) & FRNSW Model Pressure/Flows program*.
- Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least another six supply zones during the 2024/25 year.
- Agree with FRNSW, a timeline for provision of the remaining pressure information.



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## Recommendations

The following recommendation is made in respect of this obligation:

- **REC-SWC-2023-11:** It is recommended that Sydney Water takes action to:
  - Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least six supply zones, as indicated in the *2023 24 - Water Network Model Rebuild (BAU) & FRNSW Model Pressure/Flows program*, by 30 June 2024.
  - Complete hydraulic model rebuilds and provide hydrant pressure information to FRNSW for at least another six supply zones by 30 June 2025.
  - Include funding allowance for completion of the required model rebuilds in its submission to the 2025-2030 IPART price determination.
  - Agree with FRNSW, a timeline for provision of the remaining pressure information to FRNSW by 30 June 2025 (or other date agreed by IPART).

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## Opportunities for improvement

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

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<sup>472</sup> Document: *EMAIL1 - Automation of Data Transfer - FRNSW IT Rep - 4May23.pdf*.

<sup>473</sup> Document: *Meeting Notes Internal - SWCIT & FRNSW IT\_ API Meeting\_100823.docx*.

<sup>474</sup> Document: *Meeting Notes Internal Working Group 25 July 23.docx*.

<sup>475</sup> Email dated 17 August 2023 from FRNSW to Sydney Water and response dated 18 August 2023 (re: *Hydrant App*) (file: *EMAIL 2 - [FRNSW MOU REF 2023]July15 - 2] RE [External] Hydrant App - 180823.pdf*).


<sup>476</sup> Document: *Meeting Notes Internal - SWCIT & FRNSW IT\_ API Meeting\_100823.docx*.

<sup>477</sup> Document: *JIRA - [WRS-7480] - Sharing Hydrant WO information & Asset Information with FireNSW.pdf*.

<sup>478</sup> Letter (reference: FRN14/2786-001) dated 16 August 2023 from FRNSW to IPART (re: *FRNSW comments on Sydney Water's Performance against its operating licence*).

<sup>479</sup> Document: *Meeting Notes Internal Working Group 25 July 23.docx*.

**2.5.2.3 Memorandum of Understanding with FRNSW – Working group requirements**  
*(sub-clause 7.2.4)*

Sub-clause	Requirement	Compliance Grade
7.2.4	<p>The memorandum of understanding with FRNSW must require the maintenance of a working group and must provide that:</p> <ul style="list-style-type: none"> <li>a) the working group must include representatives from Sydney Water and FRNSW and may include representatives from other organisations such as the NSW Rural Fire Service; and</li> <li>b) the working group is to consider the following matters (at a minimum):                             <ul style="list-style-type: none"> <li>i. information sharing arrangements between Sydney Water and FRNSW;</li> <li>ii. agreed timelines and a format for Sydney Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network);</li> <li>iii. arrangements for Sydney Water to consult with FRNSW in the design of new assets and planning of system maintenance, where planning indicates that minimum available flow and pressure may unduly impact firefighting in the network section under consideration; and</li> <li>iv. other matters as agreed by both Sydney Water and FRNSW.</li> </ul> </li> </ul>	 <b>Compliant</b>

**Risk if non-compliant**

Failure to comply with this obligation presents a moderate operational risk. FRNSW is key consumer of Sydney Water’s services, with obligations in respect of community protection. It is important that the identified matters are considered to ensure that (as far as practicable) water supply services are adequate to enable FRNSW to meet its obligations.

**Evidence sighted**

Refer Appendix C (C.2.7).

**Summary of audit findings/reasons for grade**

Sydney Water demonstrated that the Memorandum of Understanding (MoU) with FRNSW requires the establishment of a working group comprised of representatives from Sydney Water and FRNSW and provides for the inclusion of representatives of other organisations to be invited to meetings to assist with deliberations. Furthermore, the MoU identifies the matters that must be considered by the working group.

Accordingly, Sydney Water is assessed to have demonstrated compliance with this obligation.

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## Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. No specific areas of good practice have been identified.

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## Discussion and notes

Review of the Memorandum of Understanding (MoU) between Sydney Water and Fire and Rescue NSW (FRNSW)<sup>480</sup> reveals that:

- it requires the establishment and operation of a Fire Fighting Working Group (FFWG). More specifically, section 4.2.1 indicates that:
  - “*Sydney Water and FRNSW will establish and operate the Fire Fighting Working Group (FFWG).*”
- it requires that the working group includes representatives from Sydney Water and FRNSW and may include representatives from other organisations. More specifically, section 4.2.2 indicates that:
  - “*Specific membership of the FFWG will be as agreed between the parties from time to time. The chairperson of the FFWG will alternate per meeting between representatives of each party. Other bodies can be invited to attend a meeting of the FFWG from time to time to assist in deliberations.*”
- it requires the FFWG to consider matters including but not limited to:
  - information sharing arrangements between Sydney Water and FRNSW. Section 4.2.5 indicates (in part) that:
    - “*The FFWG will consider the need for formal binding arrangements to be put in place between the parties regarding ...*”
      - *the sharing of information, for example, water network information for fire incidents ... and if considered necessary, implement such formal arrangements*”.
    - Section 4.3 provides more specific detail in respect of the exchange of information and data.
  - the format and timing of a report to be provided by Sydney Water detailing its water network performance with regard to the availability of water for firefighting. Section 4.2.6 indicates that:
    - “*The parties are to agree to the format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting.*”
  - arrangements for Sydney Water to consult with FRNSW in the design of new assets and planning of system maintenance. Section 4.2.5 indicates (in part) that:
    - “*The FFWG will consider the need for formal binding arrangements to be put in place between the parties regarding ...*”
      - *design of new, replacement or upgraded water network assets ...*
      - *planning of water network maintenance ...*
    - and if considered necessary, implement such formal arrangements*”.
  - other matters as agreed by both Sydney Water and FRNSW. Section 4.2.4 indicates (in part) that:
    - “*It is intended that the role of the FFWG will be to: ...*”
      - *Identify and consider issues relevant to achieving the objectives stated in Section 3 of this MoU ...*”.

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<sup>480</sup> Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015).

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Section 3 of the MoU sets out the “Principles and objectives of the MoU”, so reference thereto in respect of identifying “other matters” is considered appropriate.

It is therefore apparent that the MoU appropriately details arrangements in respect of the maintenance of a working group pursuant to this obligation.

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### **Recommendations**

There are no recommendations in respect of this obligation.

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### **Opportunities for improvement**


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

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## 2.6 Information and Services for Competitors (Licence Part 8)

### 2.6.1 Negotiations with WIC Act licensees and Potential Competitors (clause 8.1)

#### 2.6.1.1 *Negotiations with WIC Act licensees and Potential Competitors (sub-clause 8.1.1)*

Sub-clause	Requirement	Compliance Grade
8.1.1	Sydney Water must negotiate the provision of Services to WIC Act licensees and Potential Competitors in Good Faith.	 <b>No Requirement</b>
<b>Risk if non-compliant</b> <p>Failure to comply with the requirements of this obligation presents a high risk that services may not be provided to properties that require them where the services are to be provided by a WIC Act Licensee or Potential Competitor. Ultimately, this may present a risk to public health or the environment.</p>		
<b>Evidence sighted</b> <p>Refer Appendix C (C.2.8).</p>		
<b>Summary of audit findings/reasons for grade</b> <p>Sydney Water advised that no WIC Act Licensees or Potential Competitors had sought to negotiate the provision of services during the audit period, and that there were no ongoing negotiations of this nature. Accordingly, it is assessed that there was no requirement for compliance with this obligation during the audit period.</p>		
<b>Areas of good practice observed</b> <p>Sydney Water's demonstrated commitment to supporting alternative water supply schemes, and to ensuring that arrangements for the supply of water from alternative sources (principally desalination) remain appropriate to the evolving water servicing strategy for Greater Sydney is considered reflective of good practice.</p>		
<b>Discussion and notes</b> <p>This clause requires Sydney Water to negotiate the provision of services with WIC Act Licensees and other competitors in good faith, where requested.</p> <p>Sydney Water indicated that no WIC Act Licensees or other competitors had sought to negotiate the provision of services during the audit period.<sup>481,482</sup> The list of WIC Act Licence applications and variations published on IPART's website did not suggest anything to the contrary.</p> <p>Although not directly applicable, Sydney Water did provide an overview of liaison /involvement in related or similar schemes, which included:<sup>482</sup></p>		

<sup>481</sup> Sydney Water, *Report on the provision of information and services to WIC Act licensees and potential competitors*, undated (file: *Report on information and provision of services to WIC Act licensees and potential competitors 2022-23\_FINAL.docx*).

<sup>482</sup> Internal email dated 9 August 2023 (re: *Operating Licence Audit evidence - negotiations with WIC Licensees or Potential Competitors*). This email compiles and summarises responses from relevant Sydney Water personnel (refer Appendix C (C.2.8) for details).

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- Ongoing discussions regarding the potential to support the City of Sydney’s stormwater harvesting and recycled water aspirations, with a focus on the provision of services at four potential locations. Sydney Water’s networks, planning, stormwater and sewer mining management team have provided input to discussions and, Sydney Water was successful in winning a bid to provide operation and maintenance services for stormwater harvesting at one location.
  - Regular meetings with the WIC Act Licensees of the Rosehill Camelia Recycled Water Scheme to discuss options to improve value from the scheme.
  - Regular ongoing discussions with Sydney Olympic Park Authority (SOPA) about the potential transfer of the Water Reclamation and Management Scheme (WRAMS) to Sydney Water to service existing and potential future recycled water customers.
  - Regular contact with businesses to develop new and innovative products and services.
  - Ongoing negotiations with Sydney Desalination Plant Pty Limited (SDP) to amend policy and contractual arrangements (under the Greater Sydney Water Strategy) to facilitate flexible operation as a weather independent supply source.

These activities demonstrate a commitment to supporting alternative water supply schemes, and to ensure that contractual arrangements with SDP for the supply of desalinated water remain appropriate to the evolving water servicing strategy for the Greater Sydney area.

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### **Recommendations**

There are no recommendations in respect of this obligation.

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### **Opportunities for improvement**

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

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## 2.6.2 Publications of Servicing Information (clause 8.2)

### 2.6.2.1 Publications of Servicing Information (sub-clause 8.2.5)

Sub-clause	Requirement	Compliance Grade
8.2.5	<p>Sydney Water must review and update the Servicing Information for each major water system and wastewater system at least once between:</p> <p>a) The date that is 12 months after the initial publication of the Servicing Information for that major water system or wastewater system under clause 8.2.2; and</p> <p>b) 30 June 2023 (or another date approved by IPART in writing).</p>	 <b>Compliant</b>

#### Risk if non-compliant

Failure to comply with this obligation presents a moderate risk that current water supply and/or wastewater servicing information may not be available to Sydney Water’s competitors or other parties who may be interested in such information.

#### Evidence sighted

Refer Appendix C (C.2.9).

#### Summary of audit findings/reasons for grade

Sydney Water demonstrated that it has reviewed and updated (where appropriate) the Servicing Information for each major water system and wastewater system as published on its website; the published information indicates that it was updated in June 2023, consistent with the Licence requirement. Although there were some minor observations in respect of the published information, these did not detract from meeting the intent of the obligation, i.e. to provide insight to potential WIC Act and other alternative servicing providers as to where there are potential opportunities to engage with developers regarding servicing.

On this basis, Sydney Water is assessed to have demonstrated compliance with this obligation.

#### Areas of good practice observed

Sydney Water has demonstrated compliance with this obligation. No specific areas of good practice have been identified; however, the proposed development of protocols and other initiatives to streamline the update of published information is commended.

#### Discussion and notes

Servicing Information for each major water system and wastewater system is published on the “Growth servicing and system capacity” webpage of Sydney Water website.<sup>483</sup> Servicing Information is provided in respect of thirteen (13) drinking water systems and twenty-seven (27) wastewater systems. In each case information is provided separately (in pdf format) in respect of the network and associated treatment plant.

<sup>483</sup> “Growth servicing and system capacity” webpage on the Sydney Water website at: <https://www.sydneywater.com.au/plumbing-building-developing/developing/growth-servicing-plan/growth-servicing-system-capacity.html>.



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Review of the published Servicing Information indicates that it was in all cases published on 30 June 2023, which meets the requirement of the obligation.

Sydney Water advised that it reviewed and updated the servicing information for each of the major systems; the information provided includes:

- updated data including new system capacity maps;
- system level capacity mapping and identification of latest investment plans;
- high level dollars (expenditure estimates).

Review of (for example) the *Potts Hill Water Delivery Network Capacity Report*<sup>484</sup> and *North Head Wastewater Network Capacity Report*<sup>485</sup> revealed that each report typically includes:

- System name and link to a map of the network (although the links do not currently work);
- Projected demand (maximum day water demand/average dry weather wastewater flow) in 2026, 2031, 2041 and 2051. Individual supply zone figures are provided, where applicable.
- Infrastructure requirement and capacity restraints, including planning horizon (when infrastructure is required), the type of infrastructure, its purpose (e.g. growth or regulatory), and the approximate capital cost.
- Information sources, where publicly available (information is generally not publicly available).
- Reference to further investigations, where the *Growth Servicing Plan 2022-2027*<sup>486</sup> is referenced.
- Network maps showing capacity by water supply zone or wastewater catchment, and the general location of proposed augmentation works. Capacity is identified as “adequate capacity”, “limited capacity” or “poor capacity” for water networks, and as “capacity not exceeded”, “no available capacity” or “wet weather performance issues” for wastewater networks. An “infrastructure requirement” symbol is used to indicate the general location in which augmentation works are required.

In response to the auditor’s request, Sydney Water provided packages of documentation from which the published information for the Potts Hill Water Delivery Network and the North Head Wastewater Network Capacity Reports was derived. Review of the information provided in respect of the Potts Hill Water Delivery Network revealed that it included (for example):

- *Potts Hill Water Growth Servicing Strategy*,<sup>487</sup> which projects the infrastructure required to service growth for the 2020, 2031 and 2036 planning horizons for the Potts Hill Transfer System.
- Growth Servicing Investment Plans: for example, the *Botany Gravity Water Supply Zone; Growth Servicing Investment Plan 2018*,<sup>488</sup> which describes the infrastructure required to service growth in the Botany Gravity Water Supply Zone for the 2021, 2026, 2036 and 2046 planning horizons.

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<sup>484</sup> Sydney Water, *Potts Hill Water Delivery Network Capacity Report*, 30 June 2023.

<sup>485</sup> Sydney Water, *North Head Wastewater Network Capacity Report*, 30 June 2023.

<sup>486</sup> Sydney Water, *Growth Servicing Plan 2022-2027*, undated (available at: <https://www.sydneywater.com.au/plumbing-building-developing/developing/growth-servicing-plan.html>).

<sup>487</sup> Sydney Water, *Water System Growth Servicing Strategy; Potts Hill Transfer System* (Revision 4), 26 February 2014 (file: *Potts Hill delivery GSS final with signatures.pdf*).

<sup>488</sup> Sydney Water, *Growth Servicing Investment Plan 2018; Botany Gravity Water Supply Zone* (Version 1), 31 October 2018 (file: *GSIP 2018 - Potts Hill - Botany Gravity Water Network.pdf*).

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- Growth Servicing Option Reports: for example, the *Sydenham to Bankstown Growth Servicing Options Assessment*,<sup>489</sup> which identifies the preferred option for integrated water, wastewater, recycled water and stormwater servicing along the Sydenham to Bankstown Metro Corridor.
  - A *Reservoir Capacity Summary Table*,<sup>490</sup> which presents an assessment of the adequacy of the capacity of reservoirs within the Potts Hill network.
  - *Capex Summary Tables*,<sup>491</sup> which collate the expenditure requirements identified in each of the Growth Servicing Investment Plans.

Equivalent documentation was provided in respect of the North Head Wastewater Network. Review of the documentation confirmed that the information presented in the Servicing Information/Capacity Reports is appropriately sourced. As noted by Sydney Water, the need for updates is primarily driven by identified growth; accordingly supporting information is only revised for areas in which growth (or other drivers) is identified.

An assessment was undertaken to confirm that the information to be included in the Servicing Information, as specified in sub-clause 8.2.1, is provided, as follows:

- Current and projected demand – projected demands in 2026, 2031, 2041 and 2051 are provided, however, the current demand is not. As noted by Sydney Water,<sup>492</sup> its planning activities are based on the need to accommodate future demands and generally align with DPE growth forecasts. Its existing assets can be reasonably expected to provide the required level of service for existing demands; such demand information does not provide insight to potential alternative service providers.
  - Current and projected capacity constraints:
    - Information in respect of projected capacity of both water supply and wastewater networks is provided diagrammatically in the maps included with the network capacity reports (Servicing Information) as described above. The descriptive information (infrastructure type, timing and cost) and mapping collectively provide a high-level indication of the nature, scale and location of the deficiencies.
    - The capacity reports include specific information in respect of forecast capacity constraints.
  - Indicative costs of alleviating or deferring capacity constraints:
    - The capacity reports for both water supply and wastewater networks include a table headed “Infrastructure requirement and Capacity Constraints”, which includes the timing (year), infrastructure type (high level), purpose, and approximate capital cost; this information addresses the requirement.
    - The capacity reports for both water filtration plants and wastewater treatment plants include this information.
  - Locations where further investigation is needed:
    - As reported above, the published information for both water supply and wastewater networks typically include a reference to the *Growth Servicing Plan 2022-2027*, which details the level of project development (e.g. strategic planning, option planning, concept planning, design and deliver) that the different growth precincts are at, and consequently what remains outstanding. This information addressed the requirement.
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<sup>489</sup> Sydney Water, *Sydenham to Bankstown Growth Servicing Options Assessment; Options Report Summary (Water, Wastewater and Stormwater)* (Version 1), 15 May 2023 (file: *S2B Options Study Report.pdf*).

<sup>490</sup> MS Excel workbook: *Reservoir Capacity Summary Table 2023.xlsx*.

<sup>491</sup> MS Excel workbook: *GSIP CAPEX Summary Tables 2021-22 - Potts Hill.xlsx*.

<sup>492</sup> Document: *2023 OL Audit - additional response - Publications of Servicing Information.pdf*.

- More specific information regarding locations where further investigation is required is presented in the capacity reports for both water filtration plants and wastewater treatment plants.
- Key sources of information used to develop the servicing information where those sources are publicly available – the published capacity reports typically indicate that information sources are not publicly available; this addresses the requirement.

On the basis of this assessment, there is a minor (technical) shortcoming in that the published Servicing Information does not include the current demand. Nonetheless, it is considered that the intent of the obligation, i.e. to provide insight to potential WIC Act and other alternative servicing providers as to where there are potential opportunities to engage with developers regarding servicing, has been met.

In reviewing the evidence in respect of this obligation, some further minor observations have been made, as follows:

- As noted above, links provided in the published capacity reports to maps of the water and wastewater networks do not work.
- In comparing the information provided in the *North Head Wastewater Network Capacity Report* with that provided in the *Capacity Mapping Investment Table 2023 North Head* screenshot,<sup>493</sup> it is noted that there is an additional line in the “Infrastructure Requirement and Capacity Constraints” table (see extract below), which is superfluous in that it relates to the Water Network System; and is not consistent with the data shown in the screenshot.

2030	wastewater network wastewater main	GROWTH	\$0.045M
2030	Water Network System	Regulatory	\$1.3M

In view of these observations, it is suggested that, as an opportunity for improvement (**OFI-SWC-2023-24**), Sydney Water considers implementing more robust processes for ensuring the quality of Servicing Information published on its website. Such processes should address both the content (in comparison with the specified requirements) and accuracy of the information provided.

It is noted that Sydney Water is developing protocols for continuing to update and maintain this information and is: “... also working on other initiatives like planning output register etc which will help streamlining the input towards published information and also help updating the information on ongoing basis”. The identified opportunity could be considered as part of these proposed improvements.

## Recommendations

There are no recommendations in respect of this obligation.

## Opportunities for improvement

The following opportunity for improvement has been identified in respect of this obligation:

- **OFI-SWC-2023-24:** It is suggested that Sydney Water considers implementing more robust processes for ensuring the quality of Servicing Information published on its website. Such processes should address both the content (in comparison with the specified requirements) and accuracy of the information provided.

<sup>493</sup> Document: *Capacity Mapping Investment Table 2023 North Head.png*.

## 3. Previous Recommendations

### 3.1 Overview

This section sets out the detailed findings in respect of the status of previous recommendations.


In each case the following is provided:

- the reference number for the previous recommendation;
- the previous recommendation;
- the assessed status (Complete, Ongoing or No action taken);
- a summary of the reason for the assessed status;
- a list of the evidence reviewed in assessing the status;
- discussion of the evidence reviewed and how it demonstrates the assessed status;
- any further recommendations; and
- any identified opportunities for improvement.

## 3.2 Detailed Assessment of Status

### 3.2.1 Economic approach to water conservation (clause 3.1)

#### 3.2.1.1 Previous Recommendation 2022-01

Reference	Requirement	Status
2022-01	<p><i>Economic approach to water conservation (clause 3.1.4):</i></p> <p>By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.</p>	 <b>Completed</b>
<p><b>Anticipated completion date</b></p> <p>Not applicable – recommendation has been addressed.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.3.1).</p>		
<p><b>Summary of findings/reasons for assessed status</b></p> <p>Sydney Water demonstrated that it has formally documented a procedure for updating and reporting the current economic level of water conservation as required by paragraph 3.1.3(c) of the <i>Operating Licence</i>.</p> <p>Accordingly, this previous recommendation is considered to have been addressed.</p>		
<p><b>Discussion and notes</b></p> <p>Sydney Water has prepared a procedure<sup>494</sup> for the review and update of the economic level of water conservation. Sydney Water noted that:</p> <p><i>“The procedure reflects historical experience, which shows the value of water does not necessarily vary on a month-to-month basis (eg, dam levels were above 95% for the first 9 months of 2022-23).</i></p> <p><i>If the value of water does not change in the reporting month, the procedure does not require an update of the economic level of water savings.</i></p> <p><i>If the value of water has changed, the procedure provides for an initial screening test to determine if the change in the value of water was material enough to change the ‘economic’ status of each water conservation project – that is, would a previously uneconomic project now be economic, or vice versa.</i></p> <p><i>If the screening test indicates the change in the value of water was not material, then no update of the economic level of water savings is needed. If the change was material, a revised ELWC assessment would be triggered.</i></p> <p><i>The Sydney Water website is then updated as required to reflect the outcome of the above.”</i></p> <p>Review of the procedure confirms that it is reflective of the process outlined above and appropriately outlines the procedure for monthly review and update of the reported value of water.</p>		

<sup>494</sup> Sydney Water, *Monthly update and reporting of the value of water and economic level of water savings* (Version 1), 30 June 2023.

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**Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.

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**Opportunities for improvement**

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

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### 3.2.2 Drinking Water (clause 4.1)

#### 3.2.2.1 Previous Recommendation 2022-02


Reference	Requirement	Status
2022-02	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.</p>	 <b>Completed</b>
<p><b>Anticipated completion date</b></p> <p>Not applicable – recommendation has been addressed.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.3.2).</p>		
<p><b>Summary of findings/reasons for assessed status</b></p> <p>Sydney Water demonstrated that it has completed this recommendation. Sufficient evidence was provided to assess that for the North Richmond Network risk assessment, all risks align with a relevant hazard/hazardous event. This was also demonstrated for the risk assessment reviews undertaken for the WFPs.</p>		
<p><b>Discussion and notes</b></p> <p>Sydney Water reviewed the risk assessment register template and the Hazard and Risk Library document and decided to archive the Drinking Water Quality Risk and Hazard Library (document D0001199). The list of hazards in the library document were transferred to the risk register for the 2022-23 financial year’s risk reviews to better link the risk/hazardous events with hazards. This approach is going to be implemented for future risk assessments.</p> <p>The document D0000799 Operational Risk Assessment Workshop Procedure<sup>495</sup> has been updated to reflect the change with reference to the ‘Risk and Hazard Library’.</p> <p>The North Richmond Network risk assessment review undertaken in 2022-23<sup>496</sup> shows that all risks align with a relevant hazard/hazardous event through a ‘hazard link’. The change has also been applied to risk assessments for the WFPs.</p>		
<p><b>Further recommendations</b></p> <p>There are no further recommendations arising in respect of this previous recommendation.</p>		
<p><b>Opportunities for improvement</b></p> <p>No opportunities for improvement have been identified in respect of this previous recommendation.</p>		

<sup>495</sup> Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.

<sup>496</sup> North Richmond Risk Register 2023.



### 3.2.2.2 Previous Recommendation 2022-03

Reference	Requirement	Status
2022-03	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.</p>	 <b>Ongoing</b>
<p><b>Anticipated completion date</b></p> <p>Sydney Water anticipates that this recommendation will be fully addressed by December 2023.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.3.2).</p>		
<p><b>Summary of findings/reasons for assessed status</b></p> <p>Sydney Water has developed a procedure, Level 0 Reservoir Inspection Process (D0002277 version 1) to track and respond to exceptions to the reservoir roof inspection program. The procedure mentions the use of alternative inspection methods, including drones. The timeframe for implementation is not stated per se but reservoir inspections are on a 6-month repeat cycle, therefore all necessary actions in the procedure should be completed by or checked at the next inspection cycle. Exception reporting to NSW Health is mentioned in the procedure with a quarterly frequency.</p> <p>Evidence was not provided on whether the procedure, or more specifically the appropriate alternative inspection arrangements and timeframes for implementation, have been agreed to by NSW Health. This is needed to fully close out the recommendation</p>		
<p><b>Discussion and notes</b></p> <p>Sydney Water has undertaken an investigation and review of the process to track and respond to reservoir inspections and has identified relevant findings.</p> <p>Based on the findings, a procedure has been developed, Level 0 Reservoir Inspection Process (D0002277 version 1).</p> <p>Alternative inspection arrangements could include drone inspections. Sydney Water has purchased some drones and remote pilot licence training will be completed for the team.</p>		

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There is no clear evidence to suggest that the alternative inspection arrangements and timeframes (or simply the developed procedure) have been agreed to by NSW Health at this stage.

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**Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.


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**Opportunities for improvement**

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

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### 3.2.2.3 Previous Recommendation 2022-04


Reference	Requirement	Status
2022-04	<p><i>Drinking Water (clause 4.1.3):</i></p> <p>By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.</p>	 <b>Completed</b>
<p><b>Anticipated completion date</b></p> <p>Not applicable – recommendation has been addressed.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.3.2).</p>		
<p><b>Summary of findings/reasons for assessed status</b></p> <p>Sydney Water demonstrated that it has reviewed the process of actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers. Sufficient evidence was provided to assess that this recommendation is completed.</p>		
<p><b>Discussion and notes</b></p> <p>The process for actioning priority (P1-P6) for actioning findings from reservoir inspections was reviewed and updated by Sydney Water. Responsibilities were assigned to individual inspection criteria, so identified issues are raised with the correct person for actioning. New guidance on assigning priority levels has been developed, which can be applied to the reservoir site inspection form in Formsite.<sup>497</sup> The new priority timeframes appear appropriate. NSW Health has been kept updated on the status of actions undertaken in relation to this recommendation.<sup>498</sup></p>		
<p><b>Further recommendations</b></p> <p>There are no further recommendations arising in respect of this previous recommendation.</p>		
<p><b>Opportunities for improvement</b></p> <p>No opportunities for improvement have been identified in respect of this previous recommendation.</p>		

<sup>497</sup> CMWI 017 Assessing Job Priorities and Priority Changes.

<sup>498</sup> Email: OL action update 30/06/2023.

### 3.2.3 Recycled Water (clause 4.2)

#### 3.2.3.1 Previous Recommendation 2020-13

Reference	Requirement	Status
2020-13	<p><i>Recycled Water (clause 4.2.1):</i></p> <p>By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.</p>	 <b>Completed</b>
<p><b>Anticipated completion date</b></p> <p>Not applicable – recommendation has been addressed.</p>		
<p><b>Evidence sighted</b></p> <p>Refer Appendix C (C.3.3).</p>		
<p><b>Summary of findings/reasons for assessed status</b></p> <p>Sydney Water demonstrated that it has updated the recycled water audit schedule to audit high risk elements and that each scheme will be audited every 3 years.</p>		
<p><b>Discussion and notes</b></p> <p>Sydney Water has developed an audit plan to audit each scheme every 3 years, ideally.<sup>499</sup> The audit program is reviewed annually and adjusted based on risk using <i>Recycled Water Scoring Tool</i>.<sup>500</sup></p> <p>The audit program is discussed in the JOG meetings and is therefore agreed to by NSW Health.<sup>501</sup> It was noted that the recycled water internal audit program implementation is not regularly discussed in the JOG meetings, as the drinking water ones are. It would be beneficial to include an update on the audit schedule implementation.</p> <p>During the 2022-2023 Financial year, three internal audits were conducted in the following plants:</p> <ul style="list-style-type: none"> <li>▪ Gerringong Gerroa (14 March 2023) (Audit Report N A0000985).<sup>502</sup></li> <li>▪ Blue Mountains Hub (23 &amp; 28 March 2023) (Audit Report N A0001034).<sup>503</sup></li> <li>▪ Camden W Hub (8 &amp; 9 June) (Audit Report N A0001037).<sup>504</sup></li> </ul>		
<p><b>Further recommendations</b></p> <p>There are no further recommendations arising in respect of this previous recommendation.</p>		

<sup>499</sup> Drinking Water and recycled water audit programs 2021 – 2024.

<sup>500</sup> Recycled Water Audit Scoring Tool 2023-26.

<sup>501</sup> Joint Operational Group - Wednesday, 12 May 2021 - Meeting Minutes.

<sup>502</sup> Assurance Summary - Gerringong Gerroa Sewerage Scheme.

<sup>503</sup> Assurance Summary - Blue Mountains Hub - Penrith Recycled Water.

<sup>504</sup> Assurance Summary - West Camden Hub.


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### **Opportunities for improvement**

The following opportunity for improvement has been identified in respect of this previous recommendation:

- **OFI-SWC-2023-25:** Consider including the implementation of the recycled water internal audit program as a standing item in the NSW Health JOG meetings.
-

### 3.2.3.2 Previous Recommendation 2021-09


Reference	Requirement	Status
2021-09	<p><i>Recycled Water (clause 4.2.1):</i></p> <p>By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one flow diagram.</p>	 <b>Completed</b>
<b>Anticipated completion date</b>		
Not applicable – recommendation has been addressed.		
<b>Evidence sighted</b>		
Refer Appendix C (C.3.3).		
<b>Summary of findings/reasons for assessed status</b>		
Sydney Water demonstrated that the work instruction has been updated to include instructions and examples in relation to recycled water.		
<b>Discussion and notes</b>		
<p>The <i>Work Instruction for the Creation of Process Flow Diagrams</i> has been updated to include specific instructions and examples for recycled water WRRFs.<sup>505</sup></p> <p>The process flow diagrams for WRRFs have been updated to be consistent with the revised procedure. Two diagrams have been provided as evidence.<sup>506, 507</sup></p>		
<b>Further recommendations</b>		
There are no further recommendations arising in respect of this previous recommendation.		
<b>Opportunities for improvement</b>		
No opportunities for improvement have been identified in respect of this previous recommendation.		

<sup>505</sup> Creation of Process Flow Diagram - Work Instruction.

<sup>506</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.

<sup>507</sup> EPL 1726 Richmond WRRF - Process Flow Diagram.


### 3.2.3.3 Previous Recommendation 2022-05

Reference	Requirement	Status
2022-05	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.</p>	 <b>Completed</b>
<b>Anticipated completion date</b>		
Not applicable – recommendation has been addressed.		
<b>Evidence sighted</b>		
Refer Appendix C (C.3.3).		
<b>Summary of findings/reasons for assessed status</b>		
Sydney Water demonstrated that the Richmond WRRF PFD has been updated to include all processes.		
<b>Discussion and notes</b>		
The Richmond WRRF PFD <sup>508</sup> has been updated to include the stormwater first flush and the alum dosing into the Equalisation Basin.		
<b>Further recommendations</b>		
There are no further recommendations arising in respect of this previous recommendation.		
<b>Opportunities for improvement</b>		
No opportunities for improvement have been identified in respect of this previous recommendation.		

<sup>508</sup> EPL 1729 St Marys WRRF - Process Flow Diagram.



### 3.2.3.4 Previous Recommendation 2022-06

Reference	Requirement	Status
2022-06	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.</p>	 <b>Completed</b>
<b>Anticipated completion date</b>		
Not applicable – recommendation has been addressed.		
<b>Evidence sighted</b>		
Refer Appendix C (C.3.3).		
<b>Summary of findings/reasons for assessed status</b>		
Sydney Water demonstrated that the Richmond WRRF risk assessment has been updated and includes all hazardous events that could impact water quality have been considered.		
<b>Discussion and notes</b>		
The wording in the <i>Recycled Water Risk Assessment Workshop Procedure</i> <sup>509</sup> has been updated to better reflect the identification of internal sources of recycled water.		
Return flows (Centrate/Filtrate and First Flush Systems) have been added to the Recovered Resources Hazard and Risk Controls Library under System Component - 1. Source. <sup>510</sup>		
The Richmond WRRF risk assessment has been updated to include the plant return flows, risk IDs 34 and 35. <sup>511</sup>		
<b>Further recommendations</b>		
There are no further recommendations arising in respect of this previous recommendation.		

<sup>509</sup> Recycled Water Risk Assessment Workshop SOP – Procedure.

<sup>510</sup> Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.

<sup>511</sup> Richmond WRRF Recycled Water Risk Assessment.


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### **Opportunities for improvement**

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

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### 3.2.3.5 Previous Recommendation 2022-07

Reference	Requirement	Status
2022-07	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.</p>	 <b>Ongoing</b>

#### Anticipated completion date

It is anticipated that the Richmond WRRF filtration turbidity meter will be moved by 31 December 2023. Agreement on how to manage filtration turbidity across all sites is not anticipated to be achieved until 30 June 2024.

#### Evidence sighted

Refer Appendix C (C.3.3).

#### Summary of findings/reasons for assessed status

Sydney Water has agreed to move the turbidity meter, however, it has not yet been undertaken.

Sydney Water also engaged Water Futures to prepare a briefing paper to NSW Health on matters for discussion for the management of its recycled water schemes, including the necessity of moving to individual filter turbidity monitoring in preference to combined filter turbidity monitoring, especially for irrigation schemes. Discussions on this topic are still ongoing.

#### Discussion and notes

Sydney Water has agreed that the turbidity metre needs to be moved to accurately monitor CCP 1 and is planning to complete the action by December 2023.

Sydney Water also engaged Water Futures to prepare a briefing paper to NSW Health<sup>512</sup> on matters for discussion for the management of its recycled water schemes, including the necessity of moving to individual filter turbidity monitoring in preference to combined filter turbidity monitoring, especially for irrigation schemes. Media filtration monitoring was further discussed in a meeting between Sydney Water and NSW Health on the proposed Ropes Crossing dual reticulation scheme.<sup>513, 514</sup>

It should be noted that the turbidity instrument for St Marys WRRF is also in the CCT and should be moved to the outlet of the filters.

<sup>512</sup> Ropes Crossing feeder plant monitoring 2023 - Part 1 – Overview.

<sup>513</sup> Ropes Crossing - Agenda: Monitoring & claiming LRVs - 4 May 2023.

<sup>514</sup> Email: Draft approach to developing the log reduction monitoring for the recycling plants associated with Ropes Crossing.

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### **Further recommendations**

The following new recommendation is made in respect of the location of turbidity instruments:

- **REC-SWC-2023-12:** Move the St Marys WRRF filtration CCP turbidity meter to the outlet of the filters.


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### **Opportunities for improvement**

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

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### 3.2.3.6 Previous Recommendation 2022-08

Reference	Requirement	Status
2022-08	<p><i>Recycled Water (clause 4.2.3):</i></p> <p>By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.</p>	 <b>Completed</b>
<b>Anticipated completion date</b>		
Not applicable – recommendation has been addressed.		
<b>Evidence sighted</b>		
Refer Appendix C (C.3.3).		
<b>Summary of findings/reasons for assessed status</b>		
Sydney Water demonstrated that the procedure has been amended to address the recommendation.		
<b>Discussion and notes</b>		
<p>The procedure for the detailed verification monitoring (PAMWP0001) has been revised to specifically include a range of sampling conditions within the treatment plant's operational envelope.<sup>515</sup></p> <p>The LRV monitoring program request for Penrith WRRF,<sup>516</sup> which is the first to follow the revised protocol, contains instructions specific to the sampling that includes wet weather flows within the operating envelope of the scheme. Specifically, the statement that this is a 'dry weather sampling program' has been replaced with a more carefully worded background statement, and Sydney Water also changed advice on cancelling sampling due to wet weather or excluding data from LRV calculations.</p>		
<b>Further recommendations</b>		
There are no further recommendations arising in respect of this previous recommendation.		
<b>Opportunities for improvement</b>		
No opportunities for improvement have been identified in respect of this previous recommendation.		

<sup>515</sup> Recycled Water Treatment Detailed Verification Monitoring of Pathogen Reduction – Procedure.

<sup>516</sup> Laboratory Services product monitoring request form - Penrith WRRF LRV monitoring 2023-2024.


### 3.2.3.7 Previous Recommendation 2022-12

Reference	Requirement	Status
2022-12	<i>Recycled Water (clause 4.2.1):</i> By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP.	 <b>Completed</b>
<b>Anticipated completion date</b> Not applicable – recommendation has been addressed.		
<b>Evidence sighted</b> Refer Appendix C (C.3.3).		
<b>Summary of findings/reasons for assessed status</b> Sydney Water demonstrated that low flow on the West Camden chlorine disinfection CCP in the Recycled Water Product Specification has been removed.		
<b>Discussion and notes</b> The low flow for the chlorine disinfection CCP at West Camden WRRF has been removed from the product specification. <sup>517</sup>		
<b>Further recommendations</b> There are no further recommendations arising in respect of this previous recommendation.		
<b>Opportunities for improvement</b> No opportunities for improvement have been identified in respect of this previous recommendation.		

<sup>517</sup> Recycled Water Product Specifications.

### 3.2.4 Asset management (clause 5.5)

#### 3.2.4.1 Previous Recommendation 2021-14

Reference	Requirement	Status
2021-14	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.</p>	 <b>Completed</b>

#### Anticipated completion date

Not applicable – recommendation has been addressed.

#### Evidence sighted

Refer Appendix C (C.3.4).

#### Summary of findings/reasons for assessed status

Sydney Water demonstrated that it is currently updating its approach to operational risk management, which is being documented in a new *Operational Risk Management Plan*. As part of this initiative, it has updated its *Risk Matrix* consequence categories in respect of Public Health, providing clearer definitions and a more rigorous understanding of public health risks (to which this recommendation primarily relates).

An example *Risk Assessment/Risk Register* prepared in respect of repairs to be undertaken to the clear water tanks at Prosect Water Filtration Plant demonstrated that health related risks (water quality) have been effectively addressed for this repair/refurbishment project.

Accordingly, this previous recommendation is considered to have been addressed.

#### Discussion and notes

Sydney Water has updated its approach to operational risk management, which has been documented in a new *Operational Risk Management Plan*.<sup>518</sup> The “process overhaul” has involved a review of drivers and opportunities for improvement; piloting elements of the proposed approach as they apply to a water delivery system (network operations) and water resource recovery plant; and developing the approach for full implementation.<sup>519</sup>

Under the new approach, operational risks are being aligned and integrated on a functional basis, and are to be reviewed annually with water quality, water networks, wastewater networks, water filtration plants, and water resource recovery facilities each being considered at a regional level. A new risk management system (software/online platform) is being implemented and is scheduled to go live in December 2023.

As part of the initiative, Sydney Water has updated its *Risk Matrix* consequence categories in respect of Public Health, providing clearer definition and a more rigorous understanding of public health risks (to which this recommendation primarily relates).

On the understanding that the issue that originally gave rise to the recommendation was an apparent loss of focus on operational risk whilst delivery of a refurbishment/upgrade project that was subject to ongoing delays, the auditor sought to understand how risk is managed

<sup>518</sup> Sydney Water, *Operational Risk Management Plan: Sydney Water; Customer Delivery* (Version 1), 29 October 2023 (file: *SW Operational Risk Management Plan\_Final\_291023*).

<sup>519</sup> Sydney Water, *Operational Risk; Process overhaul*, June 2023 (file: *Operational Risk Process Redesign Overview.pptx*).



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across the operational/project interface. It is noted that when reviewing progress against this recommendation at the 2022 Operational Audit, the *IP-IMO Delivery Handbook; Risk Management Plan*,<sup>520</sup> which outlines the approach, process, and requirements in relation to asset lifecycle risk management was provided to demonstrate the action taken.

The guidance presented in both the *Operational Risk Management Plan* and *IP-IMO Delivery Handbook; Risk Management Plan* appear to be closely aligned/consistent. Sydney Water noted that the “Risk Management Overview” presented in the *Operational Risk Management Plan*<sup>521</sup> shows the interfaces between planning, delivery, operations, and maintenance, as well as referencing the *IP-IMO Delivery Handbook*. Furthermore, the risk management processes detailed in the *Operational Risk Management Plan*<sup>522</sup> specifically reference linkages to the asset renewals program, and the requirements in respect of monitoring of actions, delivery progress, reporting and feedback.

An example of a *Project Initiation Business Case* demonstrated that public health (compliance) risk had been considered, as had the risk implications for project deferral. However, it was not fully apparent from this how operational risk continues to be managed in conjunction with upgrade/refurbishment works, particularly when the latter is subject to reprioritisation/deferral.

Sydney Water subsequently provided the *Risk Assessment/Risk Register*<sup>523</sup> prepared in respect of repairs to be undertaken to the clear water tanks at Prosect Water Filtration Plant (as reported in **sections 2.3.1.2** and **2.4.2.2**, the floating membrane cover had failed during a severe storm event). The repair works require bypassing of the clear water tanks; the identified risks related primarily to operational and water quality management and included (for example) an assessment of the adequacy of chlorine contact (Ct calculations) during the period that the repair works were being undertaken.

It is therefore considered that the intent of this ongoing recommendation has been addressed.

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### **Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.

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### **Opportunities for improvement**

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

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<sup>520</sup> Sydney Water, *IP-IMO Risk Management Plan – Delivery Handbook* (Version B/Final), 13 May 2022 (file: *ILAP-IP-IMO-PLN-008-011-B Risk Management Plan.pdf*).

<sup>521</sup> Sydney Water, *Operational Risk Management Plan: Sydney Water Customer Delivery* (Version 1), 29 October 2023 (file: *SW Operational Risk Management Plan\_Final\_291023*), section 2.

<sup>522</sup> Sydney Water, *Operational Risk Management Plan: Sydney Water Customer Delivery* (Version 1), 29 October 2023 (file: *SW Operational Risk Management Plan\_Final\_291023*), section 7.

<sup>523</sup> MS Excel workbook: *RA Operation in CWT By-pass mode\_Oct-Nov.22. Rev 4\_HW.xlsx*.

### 3.2.4.2 Previous Recommendation 2022-09

Reference	Requirement	Status
2022-09	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.</p>	 <b>Completed</b>

#### Anticipated completion date

Not applicable – recommendation has been addressed.

#### Evidence sighted

Refer Appendix C (C.3.4).

#### Summary of findings/reasons for assessed status

Sydney Water indicated that asset maintenance, including corrective maintenance, is managed and implemented in accordance with the *Maintenance Specification*. It also outlined the process that is used to prioritise corrective work orders, having regard to the condition of the equipment or facility and the likely impact of failure. Prioritisation and backlog management is undertaken at forums such as Hub meetings, with escalation to higher level forums if required.

Given that this recommendation was raised in respect of corrective maintenance required in relation to reservoir roofing (loss of vermin barrier/sealing), Sydney Water demonstrated that it has recently reviewed and updated its approach to Level 0 reservoir inspection checklist to give more specific guidance for undertaking inspections and the actions to be taken if issues are identified. The updated process has been documented in a new *Level 0 Reservoir Inspection Process*.

Sydney Water also provided documentation in respect of a roofing issue (repeated failure of fixings) at the Rouse Hill Reservoir (WS0476) to demonstrate that the issue has been actively addressed. Whilst the required repair work has not been fully captured in the maintenance management/work order system, the latter phases of this ‘carryover issue’ have been undertaken in accordance with the new inspection (and follow-up) procedure.

Accordingly, this previous recommendation is assessed to have been addressed.

#### Discussion and notes

Sydney Water outlined the process for managing and implementing maintenance from an overall perspective, noting that it is undertaken in accordance with the *Maintenance Specification*.<sup>524</sup> It also referred to the Asset Performance Tool (APT), a dashboard type tool that has been developed to provide better visibility of asset management performance (refer **section 2.4.2.2** for further discussion), including monitoring of Corrective Maintenance Backlog.

<sup>524</sup> Sydney Water, *Specification; Maintenance Specification* (Version 3), 18 August 2023 (file: D0001441 - *Specification Maintenance.docx*).

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Sydney Water also explained the arrangements for setting priorities and the management of backlogs and delays (for example, due to parts availability), which is undertaken at Hub<sup>525</sup> meetings. Escalation of any broader and more systemic delay reasons is possible via maintenance meetings and the Maintenance Birrang Miya.<sup>526</sup>

Given that this recommendation was raised in respect of corrective maintenance required in relation to reservoir roofing (loss of vermin barrier/sealing), Sydney Water demonstrated that it has recently reviewed its Level 0 reservoir inspection process/checklist to give more specific guidance for undertaking inspections and the actions to be taken if issues are identified (including raising work orders and the priorities to be assigned).<sup>527</sup> The updated process has been documented in a new *Level 0 Reservoir Inspection Process*,<sup>528</sup> which includes an *Inspection Process Map*,<sup>529</sup> clearly outlines the inspection and follow-up process.

Sydney Water provided reports in respect of Level 0 inspections of Rouse Hill Reservoir (WS0476) undertaken on 3 November 2022<sup>530</sup> and 4 May 2023.<sup>531</sup> The November 2022 inspection identified issues in respect of signage, site drainage and insecure roof sheeting; in each case a priority was assigned, and it was indicated that the issue had been reported. The March 2023 report did not identify these issues, which was initially taken to indicate that they had been addressed (subsequently clarified by Sydney Water; see below); a general observation was made in respect of observed slight subsidence around the base of the reservoir.

During the site inspection of the Rouse Hill Reservoir, Sydney Water noted that failure of roof sheet fasteners under extreme wind conditions had been a repeat problem at this site and that, after multiple repairs, the issue has been escalated for further assessment, which is considered appropriate.

Sydney Water provided a collection of documents to demonstrate the progression of the issue (in addition to the L0 inspection reports referenced above):

- Email dated 3 November 2022 from Inspector to Specialised Services Work Programming in respect of the roof sheeting issue. Refers to previous work orders (Nos: 78924078<sup>532</sup> and 79153382<sup>533</sup>) and questions completion of work; questions need to raise an additional work order.<sup>534</sup>
- Email response dated 3 November 2022 from Specialised Services Work Programming to the Inspector advising intent to inspect.<sup>535</sup> It appears that repair works were then added to the program of works to be undertaken by an appropriately skilled contractor under the External Painting Program.
- *External Painting Programme 2022/23*<sup>536</sup> – identifies Rouse Hill WS0476, with note “Add to 23/24 program – roof repairs”. It is understood that the work was deferred due to existing commitments to higher priority work.
- *2023/24 Program - External Painting Contractor* – identifies Rouse Hill WS0476, with note “Roof Repairs from 22/23, base seal repairs required”.<sup>537</sup>

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<sup>525</sup> Local area management forum.

<sup>526</sup> Internal naming for the Asset Performance and Maintenance Control Group.

<sup>527</sup> Document: *FORMSITE question update\_Sep 23.pdf*.

<sup>528</sup> Sydney Water, *Process: Level 0 Reservoir Inspection Process* (Version 1), 31 October 2023 (file: *L0 Reservoir Inspection Process Final.pdf*).

<sup>529</sup> Document: *Res Inspection Process\_Sep 23.pdf*.

<sup>530</sup> Document: *AISReservoirInspectionPassword-16272306.pdf*.

<sup>531</sup> Document: *AISReservoirInspectionPassword-17215006.pdf*.

<sup>532</sup> Document: *Maximo Work order 78924078.pdf* (raised 14 January 2020; closed 26 June 2020).

<sup>533</sup> Document: *Maximo Work order 79153382.pdf* (raised 28 February 2020; closed 3 November 2020).

<sup>534</sup> Document: *WS0476\_Roof\_03.11.22.pdf*.

<sup>535</sup> Document: *E\_Inspector informed of way forward.pdf*.

<sup>536</sup> Document: *2022\_23 Reservoir Paint Contractor\_Works Tracking\_Jun 23.pdf*.

<sup>537</sup> Document: *2023\_24 Reservoir Paint Contractor\_Works Tracking.pdf*.

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- A *Repair Scope of Works*<sup>538</sup> and quotation dated 11 August 2023<sup>539</sup> was provided by an external contractor.
  - *Work Order No: 89485362* (raised 16 August 2023; closed 7 September 2023)<sup>540</sup> was issued for the repair works to be undertaken.
  - It is understood that the repair work was then completed on 18 August 2023 under the management of Sydney Water's Specialised Services Team.
  - A *Post Works Inspection Report*<sup>541</sup> indicated that repairs had been undertaken, but repairs had already failed in some areas by the date of the inspection (6 September 2023).
  - Internal email dated 7 September 2023 from Specialised Services Work Programming escalating the issue.<sup>542</sup> Notes that a work order (No: 89633066) has been raised for Specialised Services to undertake a bespoke repair; it further notes that this recurring issue should be considered for future reservoir roof designs.

This example demonstrates that this corrective maintenance requirement was, in most respects, appropriately managed. It is noted that:

- Although the Inspector was aware of the planned rectification pathway, the roof fixing defect should have been again recorded at the time of the 4 May 2023 inspection given that it had not been repaired. Under the new guidelines, outstanding/repeat issues are to be identified.
- Given its timeframe, the response to this defect has not been managed via Maximo in all respects. Again, under the new guidelines, all defects/repairs of this type are loaded and managed in Maximo from the time they are identified, as has been done in the latter phases.

Full implementation of the *Level 0 Reservoir Inspection Process* is expected to address the deficiency in respect of reservoir maintenance. It is important that the learnings and improvements are implemented across all assets.

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### Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

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### Opportunities for improvement

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

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<sup>538</sup> Document: *Rouse Hill Reservoir WS0476 - Roof Repairs - RMP Scope of Works - 2023.08.11.pdf*.


<sup>539</sup> Document: *CQ28622-108-2023 - Rouse Hill Reservoir WS0476 - Roof Repairs - 2023.08.11.pdf*.

<sup>540</sup> Document: *Maximo Work order 89485362.pdf*.

<sup>541</sup> Document: *Rouse Hill Reservoir WS0476 - Roof Repairs - Inspection - 2023.09.06.pdf*.

<sup>542</sup> Document: *RE Rouse Hill WS0476 - Roof Repairs.pdf*.

### 3.2.4.3 Previous Recommendation 2022-10

Reference	Requirement	Status
2022-10	<p><i>Asset management (clause 5.5.2):</i></p> <p>By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk; any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.</p>	 <b>Completed</b>

#### Anticipated completion date

Not applicable – recommendation has been addressed.

#### Evidence sighted

Refer Appendix C (C.3.4).

#### Summary of findings/reasons for assessed status

Sydney Water demonstrated that the *Production Major Periodic Maintenance Procedure* details the procedure for developing the 5-year Major Periodic Maintenance (MPM) Program, and for undertaking condition assessments prior to approval of and proceeding to undertake programmed MPM. Condition assessments are initiated prior to the scheduled timing of the MPM activity; the decision to proceed (or defer) is based on the findings of the condition assessment.

Examples were provided of cases where condition assessments led to both proceeding with and deferral of scheduled MPM.

Accordingly, this previous recommendation is considered to have been addressed. It is, however, noted that the *Production Major Periodic Maintenance Procedure* was in place at the time that the recommendation was made (having been updated in May 2021); this suggests that the procedure had not been fully implemented in respect of the observation made at the time of the 2022 Operational Audit.

#### Discussion and notes

Sydney Water advised as follows:

*“The Production Major Periodic Maintenance Procedure (D0001843) outlines the steps to deliver the critical asset classes major periodic maintenance (MPM) works defined in the MPM Program.*

*An MPM Plan is developed for 5 years by the Reliability Team in consultation with the Hub team. Identification of assets to be in the MPM plan is based on the frequency of MPM and CaG score. Annual review of the plan is undertaken by the Reliability Team in consultation with the Hub team (typically in Feb / Mar for upcoming FY). Assets will be deferred or brought forward based on the priority.*

*The Production Major Periodic Maintenance Procedure (D0001843) recognises that major periodic maintenance may be deferred and includes an MPM Approval / Deferral Form to record this decision.”*

Review of the *Production Major Periodic Maintenance Procedure* confirms that it outlines the procedure for managing major maintenance (consistent with the above advice) as follows:<sup>543</sup>

<sup>543</sup> Sydney Water, *IMS – Production Major Periodic Maintenance (MPM) Procedure* (Version 2), 26 May 2021 (file: D0001843 *Production Major Periodic Maintenance (MPM) Procedure.docx*).

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- Assets are included in a 5-year MPM program based on MPM frequency and CAG (Condition Assessment Grade). Identified activities are prioritised, funding is allocated, and business cases prepared and approved.
  - Condition assessments are planned and undertaken prior to the scheduled timing of the MPM activity. Programmed activities submitted for approval to proceed or deferral on the basis of the assessed condition.
  - Once approved to proceed, MPM activities are scoped in detail, the works planned and delivered.
  - Both condition assessment and MPM delivery activities are initiated as work orders and managed using the Maximo maintenance management system.

It is noted that forms for “Condition Assessment Initiation” and “MPM Approval/Deferral” are included in the *Production Major Periodic Maintenance Procedure*, thereby indicating that these elements of the process are (or should be) embedded.

Sample documentation was provided in respect of:

- 5-year (2020/21 to 2024/25) MPM Forward Plans for the North, South and West regions.<sup>544</sup>
- ST11 Blowers ST0011BLR6248 at St Marys WRP, including:
  - 20037907 CA Job Plan ST0011BLR6248.pdf – Job Plan for Condition Assessment;<sup>545</sup>
  - Condition Assessment Report;<sup>546</sup>
  - Completed MPM Approval/Deferral Form – recommendation to proceed.<sup>547</sup>
- Further examples were provided for:<sup>548</sup>
  - Centrifugal RAS Pump at Penrith WRP – MPM recommended to proceed (planned timing confirmed against MPM program for West Area).<sup>549</sup>
  - Raw sewage step screen at Liverpool WRP – MPM deferred (unable confirm planned timing against MPM program (presumably in South Area)).<sup>550</sup>

Whilst Sydney Water has demonstrated effective management of MPM in respect of several assets, the auditor expected to see a rolling 5-year program, particularly given Sydney Water’s advice that the MPM program is reviewed annually (which is considered appropriate). The fact that the examples provided cover the 5-year period 2020/21 to 2024/25 suggest that may not be the case. Accordingly, as an opportunity for improvement (**OFI-SWC-2023-26**), it is suggested that Sydney Water considers adopting a rolling 5-year approach to its MPM programming, which would potentially provide better visibility (and management) of the forward program, including deferrals.

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<sup>544</sup> MS Excel workbooks: *P-North Area MPM Forward Plan 2023-24.xlsx*; *P-South Area MPM Forward Plan 2023-24.xlsx* and *P-West Area MPM Forward Plan 2023-24.xlsx*.

<sup>545</sup> Sydney Water, *Job Plan; Major Periodic Maintenance* – completed form for *CA - ST11 Blowers ST0011BLR6248 MPM (Work Order: ST0011BLR6248 – 86468852)*, approved 28 November 2022 (file: *20037907 CA Job Plan ST0011BLR6248.pdf*).

<sup>546</sup> IPA Australia, *Condition Assessment Report; KKK SFOG 7.1 Blower 6248 Condition Assessment*, 17 January 2023 (file: *IPS Job 5073 Report - 6248.AreationBlowerCondition.Assessment.pdf*).

<sup>547</sup> Document: *ST0011BLR6248-MPM Approval Form FY22-23.pdf* (completed MPM Approval/Deferral Form in respect of Blowers at St Marys WRP).

<sup>548</sup> Document: *MPM Process Evidence.pdf* (PowerPoint presentation: *MPM Process Evidence; 2023 Operating Licence Audit*).

<sup>549</sup> Documents: *ST0046PMP5200 - CA Job Plan Bundle.pdf* (Condition Assessment Job Plan); *ST0009SCN3452 - CA Report.pdf* (Condition Assessment Report); and *ST0009SCN3452 - MPM Deferral Form.pdf* (MPM Deferral approved).

<sup>550</sup> Documents: *ST0009SCN3452 - CA Job Plan Bundle.pdf* (Condition Assessment Job Plan); *ST0046PMP5200 - Condition assessment report.pdf* (Condition Assessment Report); *ST0046PMP5200 - Condition assessment report.pdf* (MPM Approval to proceed); *ST0046PMP5200 - MPM Job Plan.pdf* (MPM Job Plan); and *ST0046PMP5200 - MPM Closeout Report.pdf* (MPM Work Completion Report).



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### **Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.

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### **Opportunities for improvement**


The following opportunity for improvement has been identified in respect of this previous recommendation:

- **OFI-SWC-2023-26:** It is suggested that Sydney Water considers adopting a rolling 5-year approach to its MPM (major periodic maintenance) programming, which would potentially provide better visibility (and management) of the forward program, including deferrals.
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### 3.2.5 Family violence policy (clause 6.5)

#### 3.2.5.1 Previous Recommendation 2022-11

Reference	Requirement	Status
2022-11	<p><i>Family violence policy (clause 6.5.2):</i></p> <p>By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of “processes that minimise the reliance on individuals to disclose their family violence” in its Family Violence Policy.</p>	 <b>Completed</b>

#### Anticipated completion date

Not applicable – recommendation has been addressed.

#### Evidence sighted

Refer Appendix C (C.3.5).

#### Summary of findings/reasons for assessed status

Sydney Water demonstrated that it has updated its *Family Violence Policy* to include improved, practice-based guidance in respect of “processes that minimise the reliance on individuals to disclose their family violence”.

Accordingly, this previous recommendation is considered to have been addressed.

#### Discussion and notes

This recommendation required Sydney Water to include additional guidance, reflective of the practice that was actually being implemented in respect of “processes that minimise the reliance on individuals to disclose their family violence”, in its *Family Violence Policy*. Review of the updated *Family Violence Policy* revealed that this has been done.<sup>551</sup>

More specifically, the primary revisions to the policy were:

- The policy objective (section 1.3) has been enhanced as follows (changes underlined):

*“Our policy helps you:*

- *keep the water on – regardless of your capacity to pay*
- *explain your circumstances only once by giving you a case manager*
- *to avoid disclosing any personal information other than information about your capacity to pay*
- *keep your personal information, including your location.”*

- Section 2.5 “We’ll give you a respectful, confidential service” has been enhanced to read (changes underlined):

*“Our staff work respectfully with you and care about your privacy. We take it very seriously and comply with NSW privacy laws. We aim to make our process easy to use and our specialist team will not ask you for any personal information other than information about your capacity to pay. The team will then provide advice on support options available to you.”*

These revisions effectively capture the intent of the Licence obligation under sub-clause 6.5.2.

<sup>551</sup> Sydney Water, *Policy; Family violence assistance* (Doc no. 1117163) (Version 5), 27 March 2023 (file: *family-violence-assistance-policy.pdf*).

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### **Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.

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### **Opportunities for improvement**

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

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### 3.2.6 Reporting (clause 10.2)

#### 3.2.6.1 Previous Recommendation 2022-13

Reference	Requirement	Status
2022-13	<p><i>Reporting (clause 10.2.4):</i></p> <p>By 30 June, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents.</p>	 <b>Completed</b>

#### Anticipated completion date

Not applicable – recommendation has been addressed.

#### Evidence sighted

Refer Appendix C (C.3.6).

#### Summary of findings/reasons for assessed status

Notwithstanding advice provided at the time of the 2022 Operational Audit, Sydney Water advised that: “... *the 5% overdue (expired) indicator of our controlled documents is not a key performance indicator or target of the organisation*”. Sydney Water did, however, explain and demonstrate that it has taken action to rationalise its extensive portfolio of controlled and other documents, and more generally to improve its document management; these actions will better ensure the currency of Sydney Water’s controlled documents.

In the absence of the previously referenced KPI, it is not possible to confirm that the quantitative element of the recommendation has been achieved; however, Sydney Water demonstrated that guidance in respect of the requirement to periodically review and update controlled documents is provided in the *Controlled Document Standard* and *Controlled Document Procedure*, and responsibility for doing so is reflected in the position description for System & Assurance Lead personnel.

On this basis, this previous recommendation is considered to have been addressed. However, in the apparent absence of overall/wholistic monitoring of the currency of controlled documents, an opportunity for improvement has been identified.

#### Discussion and notes

At the time of the 2022 Operational Audit, Sydney Water advised the following, which was in part the basis of this recommendation:<sup>552</sup>

*“Sydney Water has about 4,500 controlled documents managed in BMIS and SWIM systems. Based on the current figures, the number of documents overdue for review has increased to approximately 27%. Whilst this can be attributed to the disruptions and unusual challenges eventuated by extreme weather events and flood responses, it is well above the Sydney Water’s KPI of 5% for expired documents.”*

Sydney Water has now advised that it doesn’t actually have such a KPI; however, it has outlined actions that have been taken to rationalise its extensive portfolio of controlled and other documents. These actions have included:

- Establishing a document management working group to review Sydney Water’s enterprise approach to managing controlled documents.

<sup>552</sup> Sydney Water’s response to the 2021/22 Operational Audit of Sydney Water Corporation – Audit Questionnaire (file: REC-22-152-1.0\_Sydney\_Water\_2022\_Questionnaire Final Combined v3.docx).

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- Shifting focus from a quantitative approach of performance assessing all controlled documents to a more qualitative approach by prioritising key (critical) controlled documents, which has allowed teams to concentrate their efforts on important documents. The improved approach is designed to influence good behaviour and help improve overall performance.
  - Rationalising controlled documents by identifying duplicate documents, archiving redundant documents, correcting metadata, downgrading records that were incorrectly classified as controlled documents (reduction of 105 documents), and identifying opportunities to consolidate documents. One initiative resulted in a 6% reduction in policy documents, which also resulted in a 6% reduction in overdue controlled documents. The same initiative also resulted in 35 documents having their ownership metadata updated and an additional 13 documents being archived or having their metadata updated.
  - Reviewing all orphaned documents which included identifying owners and updating system records accordingly. Over a period of 12 months, the number of orphan documents has decreased by 52%.
  - Upskilling document controllers through the conduct of team training sessions to increase their capability of reviewing controlled documents. Sydney Water currently has 177 qualified document controllers.
  - Improving document management technology platforms, including changes to ensure all controlled document types are recorded as controlled documents by mandating required metadata and introduction of a prompt message to minimise the number of records being uploaded as controlled documents.
  - Review and update of the *Controlled Document Standard*,<sup>553</sup> which outlines the type of documents that fall under the controlled document category and the procedure for managing controlled documents, including the minimum review frequency and ownership limit of authority level. The *Controlled Document Procedure*,<sup>554</sup> provides a more detailed procedural description.

On the basis of the information provided, it is apparent that Sydney Water has taken action to ensure the currency of controlled documents; however, in the absence of the previously referenced KPI, it is not possible to confirm that the quantitative element of the recommendation has been achieved. More specifically, there remains a question about the mechanism for ensuring that reviews and updates are undertaken as scheduled.

Review of the *Controlled Document Standard* reveals that it provides high level guidance in respect of document review:

*“All controlled documents require a review cycle to ensure the quality, currency and accuracy of the content while maintaining formatting standards. Every time a controlled document is reviewed, it must be issued as a new version even if no changes have been made.”*

The *Controlled Document Procedure* provides further guidance in respect of overdue documents, including:

*“All controlled documentation must be reviewed at the review frequency specified in the Controlled documents standard and contained within metadata.”*

*“Three months, one months and 7 days prior to the review date a notification is sent from to the workflow participants. A further reminder is sent once the document was not reviewed by the review date.”*

In response to the auditor’s ongoing concern, Sydney Water subsequently advised that:<sup>555</sup>

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<sup>553</sup> Sydney Water, *Standard; Controlled Documents* (Version 2), 17 July 2023 (file: *Controlled Documents Standard.pdf*).

<sup>554</sup> Sydney Water, *Procedure; Controlled Documents* (Version 2), 23 August 2023 (file: *Controlled Documents Procedure.pdf*).

<sup>555</sup> Document: *Rec-2022-13-Providing evidence following preliminary findings meeting - 26\_10\_2023.docx*.

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*“A Lead is assigned to an individual management system, and their position descriptions include supporting the business to monitor, rationalise, keeping content current and fit for purpose.”*

and provided a sample position description for the “Systems & Assurance Lead – Products”, which the requirement to:<sup>556</sup>

*“Monitor product management controlled documents to ensure they remain rationalised, current and fit for purpose. Coordinate and support the document owners to conduct regular reviews.”*

is one of the accountabilities and deliverables of the position.

Although it is apparent that Sydney Water has taken action in response to this recommendation, and that it has mechanisms in place to ensure that the currency of controlled documents is maintained, it appears that there is no overall/wholistic monitoring of the currency of controlled documents. It is therefore suggested, as an opportunity for improvement (**OFI-SWC-2023-27**), that Sydney Water considers adopting a metric or other mechanism for continually monitoring the currency of its portfolio of controlled documents.

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### **Further recommendations**

There are no further recommendations arising in respect of this previous recommendation.

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### **Opportunities for improvement**

The following opportunity for improvement has been identified in respect of this previous recommendation:

- **OFI-SWC-2023-27:** It is suggested that Sydney Water considers adopting a metric or other mechanism for continually monitoring the currency of its portfolio of controlled documents.

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<sup>556</sup> Sydney Water, *Position Description; Systems & Assurance Lead – Products*, last modified 24 May 2023 (file: *Systems & Assurance Lead - Products - ICE1.docx*).



## Appendix A Audit Scope

The audit scope, as defined by IPART, is included in this Appendix.





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# 2023 operational audit scope Sydney Water Corporation

## 2023 audit scope

This document sets out the 2023 operational audit scope for Sydney Water Corporation (Sydney Water). Auditors should note any directions in the comment's column of Table 2.

## Audit period

The audit period is 1 July 2022 to 30 June 2023. Sydney Water will be audited for the full period against the 2019-2023 operating licence. We expect that interviews for the audit will be held in September 2023. However, this is subject to change depending on auditor availability.

## Outstanding audit recommendations

Table 3 outlines outstanding audit recommendations. The auditor is required to review these recommendations to determine progress. We report on outstanding audit recommendations separately within IPART's operational audit report to the Minister.

## Statement of compliance

The utility is required to provide a Statement of Compliance (SC), signed by the CEO and a Board Member, by 1 September. The SC is an exception-based report that outlines any non-compliance with licence clauses during the previous financial year. It also identifies what remedial action has been, or is being taken, with respect to these non-compliances.

The SC covers all licence clauses regardless of whether they are scheduled to be audited in that year. The SC may cause a late variation to the audit scope to allow non-compliances to be reviewed if necessary.

## Interpretation

In the case of any discrepancies between the Sydney Water Operating Licence 2019-2023 (licence) and the audit scope, the licence will prevail.

## Field verification locations

Table 4 lists the locations that we have visited in previous audits. Together with Sydney Water, we will determine the locations that we will visit in the 2023 audit and advise the auditor before the field verification visits are scheduled to commence.

Table 1 Key

Requirement	Meaning
Audit/Internal IPART check	Audit/check clause in 2023 audit
SC	Audit of this clause not required in the 2023 audit unless the utility's Statement of Compliance identifies a non-compliance, or we become aware of other reasons to audit the clause.
NR	No requirement for audit.

Table 2 2023 Audit scope for Sydney Water Corporation

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
1	Licence and licence authorisation		
1.1	Objectives of this licence		
1.1.1	<p>The objectives of this Licence are to:</p> <ul style="list-style-type: none"> <li>a) authorise and require Sydney Water, within its Area of Operations, to: <ul style="list-style-type: none"> <li>i. store or supply water</li> <li>ii. provide sewerage services</li> <li>iii. provide Stormwater Drainage Systems; and</li> <li>iv. dispose of Wastewater; and</li> </ul> </li> <li>b) set efficient and effective terms and conditions, including quality and performance standards, that require Sydney Water to provide services in a way that: <ul style="list-style-type: none"> <li>i. supports its principal objectives under the Act to protect public health and the environment;</li> <li>ii. supports its principal objective under the Act to be a successful business, including by having regard to the interest of the community; and</li> <li>iii. does not prevent or hinder competition.</li> </ul> </li> </ul>	NR	Information clause – does not require audit.
1.2	Area of operations		
1.2.1	This Licence applies to the Area of Operations specified in Schedule A.	NR	Information clause – does not require audit.
1.2.2	Sydney Water must publish on its website a map of its Area of Operations by 31 December 2019 (or another date approved by IPART in writing). Sydney Water must update the map within 30 days of any change to its Area of Operations.	Internal IPART check	This clause is not included in the auditor's scope.
1.3	Term of this licence		
1.3.1	<p>The term of this Licence is four years from the Commencement Date.</p> <p>[Note: On and from the Commencement Date, this Licence replaces any previous version of the operating licence granted to Sydney Water under section 12 of the Act.]</p>	NR	Information clause – does not require audit.
1.4	Licence amendment		
1.4.1	Subject to the Act and clause 1.4.2, the Governor may amend or substitute this Licence by notice in the New South Wales Government Gazette.	NR	Information clause – does not require audit.
1.4.2	<p>Before notice of a proposed amendment to this Licence is tabled in Parliament under section 16 of the Act, the Minister must provide Sydney Water with reasonable notice of the proposed amendment to enable it to comply with the amendment if it takes effect.</p> <p><i>[Note: The Customer Contract may be varied in accordance with section 59 of the Act and clause 14.2 of the Customer Contract. Such a variation is not an amendment to this Licence for the purpose of section 16 of the Act.]</i></p>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor						
1.5	Non-exclusive licence								
1.5.1	This Licence does not prohibit any other person from providing services in the Area of Operations that are the same as, or similar to, the Services, if the person is lawfully entitled to do so.	NR	Information clause – does not require audit.						
1.6	Availability of licence								
1.6.1	Sydney Water must make a copy of this Licence available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.						
1.7	Pricing								
1.7.1	Sydney Water must set the level of fees, charges, and other amounts payable for its Services in accordance with: <ul style="list-style-type: none"> <li>a) the terms of the Licence;</li> <li>b) the Act; and</li> <li>c) any applicable maximum prices or methodologies for fixing maximum prices determined under the IPART Act.</li> </ul>	SC	No audit required this year. Technical non-compliance being addressed through the pricing determination.						
1.8	End of Term Review								
1.8.1	IPART intends to review this Licence in its final year to investigate: <ul style="list-style-type: none"> <li>a) whether this Licence is fulfilling its objectives; and</li> <li>b) any issues that have arisen during the term of this Licence that may impact its effectiveness,</li> </ul> (the End of Term Review).	NR	Information clause – does not require audit.						
1.8.2	To assist IPART with the End of Term Review, Sydney Water must provide IPART with such information as IPART reasonably requires. Sydney Water must provide IPART with such information as IPART requests within a reasonable time.	NR	Information clause – does not require audit.						
1.9	Notices								
1.9.1	Any notice or other communication given under this Licence must be: <ul style="list-style-type: none"> <li>a) in writing addressed to the intended recipient; and</li> <li>b) delivered or sent to one of the addresses specified below (or the last address notified by the recipient), unless otherwise specified in the Reporting Manual.</li> </ul> <table border="1"> <thead> <tr> <th>Sydney Water</th> <th>Minister</th> <th>IPART</th> </tr> </thead> <tbody> <tr> <td>Sydney Water The Managing Director Sydney Water 1 Smith Street Parramatta NSW 2150</td> <td>The Hon. Melinda Pavey MP GPO Box 5341 Sydney NSW 2001</td> <td>The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000</td> </tr> </tbody> </table>	Sydney Water	Minister	IPART	Sydney Water The Managing Director Sydney Water 1 Smith Street Parramatta NSW 2150	The Hon. Melinda Pavey MP GPO Box 5341 Sydney NSW 2001	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000	NR	Information clause – does not require audit.
Sydney Water	Minister	IPART							
Sydney Water The Managing Director Sydney Water 1 Smith Street Parramatta NSW 2150	The Hon. Melinda Pavey MP GPO Box 5341 Sydney NSW 2001	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000							
1.9.2	Any requests for approval under the following clauses must be made by Sydney Water's Managing Director: 1.2.2, 3.1.7, 3.2.1, 3.2.6, 6.5.1, 6.6.6, 8.2.2, 8.2.3, 8.2.5, 8.2.6, 9.1.1, 8 or 9.3.1.	NR	Information clause – does not require audit.						

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
2.1	Licence authorisations		
2.11	<p>This Licence authorises and requires Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems and services for providing the following Services within the Area of Operations:</p> <ul style="list-style-type: none"> <li>a) storing and supplying water;</li> <li>b) providing sewerage services; and</li> <li>c) disposing of Wastewater.</li> </ul>	NR	Licence authorisation clause – does not require audit.
2.12	<p>This Licence authorises and requires Sydney Water to provide, operate, manage and maintain a Stormwater Drainage System as described in section 14(1)(b) of the Act, except to the extent that the Minister is satisfied under sections 14(4) and 14(5) of the Act that satisfactory arrangements have been made for the applicable Service to be provided by another appropriate body.</p>	NR	Licence authorisation clause– does not require audit.
2.13	<p>This Licence authorises (but does not require) Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable Stormwater Drainage Systems (and Services for providing those Stormwater Drainage Systems) within the Area of Operations in excess of the Stormwater Drainage System it is required to provide, operate, manage and maintain under clause 2.12. This includes increasing the capacity of the Stormwater Drainage System included in the business undertaking transferred under Part 3 of the Act from the Water Board to Sydney Water as at the date of the transfer of the business undertaking.</p> <p><i>[Note: For the avoidance of doubt, the provision, management and maintenance of Stormwater Drainage Systems (and Services for providing those Stormwater Drainage Systems) under clause 2.1 may include stormwater quality management and other measures as necessary to manage impacts of stormwater on waterway health.]</i></p>	NR	Licence authorisation clause – does not require audit.
2.2	Obligation to make services available		
2.21	<p>Sydney Water must ensure that Services for the supply of Drinking Water and disposal of Wastewater are available on request for connection to any Property situated in the Area of Operations for which a connection is available.</p>	SC	
2.22	<p>Sydney Water must provide Services for the supply of Drinking Water and disposal of Wastewater on request to any licensee under the WIC Act, where that licensee is connected to (or where a connection is available in respect of that licensee to) Sydney Water's water supply system or sewerage system.</p>	SC	
2.23	<p>Connection to Sydney Water's systems for the provision of Services for the supply of Drinking Water and disposal of Wastewater is subject to any reasonable conditions that Sydney Water may determine to ensure the safe, reliable and financially viable supply of Drinking Water and disposal of Wastewater to Properties.</p>	NR	Authorisation clause – does not require audit.
3.1	Economic approach for water conservation		
3.11	<p>Sydney Water must maintain a water conservation program consistent with the Current Economic Method.</p>	SC	
3.12	<p>Sydney Water must implement water conservation measures that have been assessed as economic as determined by the Current Economic Method.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
3.1.3	<p>Sydney Water must make:</p> <ul style="list-style-type: none"> <li>a) a copy of the Current Economic Method;</li> <li>b) a plain English summary of the Current Economic Method; and</li> <li>c) the economic level of water conservation (expressed as the value of water in dollars per kilolitre and as the quantity of savings in megalitres per day) determined in accordance with the Current Economic Method, available;</li> <li>d) to any person, free of charge upon request made to the Contact Centre; and</li> <li>e) on Sydney Water's website.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
3.1.4	<p>Sydney Water must update the economic level of water conservation using the Current Economic Method:</p> <ul style="list-style-type: none"> <li>a) for the purposes of clause 3.1.1 and 3.1.2—annually; and</li> <li>b) or the purposes of clause 3.1.3(c)—monthly.</li> </ul>	Audit	Audit. Minor shortcomings found in 2022 audit. Auditor to refer to recommendation REC-2022-01.
3.1.5	<p>The Minister may, at any time during the term of this Licence and in writing, direct Sydney Water to revise the Current Economic Method in any way the Minister requires.</p> <p>[Note: The Minister may request IPART to undertake a review of the Current Economic Method during the term of this Licence. Such review may precede a direction given under clause 3.1.5.]</p>	NR	Information clause – does not require audit.
3.1.6	<p>Sydney Water must submit to the Minister the Current Economic Method revised in accordance with the written direction within:</p> <ul style="list-style-type: none"> <li>a) 30 days of receipt of that direction; or</li> <li>b) any other timeframe agreed by the Minister.</li> </ul>	SC	
3.1.7	<p>If the Minister approves the revised Current Economic Method, he or she will give written notice of the approval to Sydney Water.</p>	NR	Information clause – does not require audit.
3.2	Water Planning		
3.2.1	<p>By 1 December 2020 (or another date approved by the Minister in writing), Sydney Water must develop, and submit to the Minister:</p> <ul style="list-style-type: none"> <li>a) a long-term capital and operational plan; and</li> <li>b) an emergency drought response plan.</li> </ul>	Internal IPART check	Fixed deadline requirement. Part (a) audited in 2021. Part (b) to be checked this year – Ministerial approval to defer completion to 1 June 2023.
3.2.2	<p>The plans referred to in clause 3.2.1 must address any written guidance that the Minister provides to Sydney Water</p>	NR	Information clause – does not require audit.
3.2.3	<p>Sydney Water must use its best endeavours to develop the plans referred to in clause 3.2.1 in cooperation with Water NSW.</p>	NR	Information clause – does not require audit.
3.2.4	<p>Sydney Water must implement any action that:</p> <ul style="list-style-type: none"> <li>a) Sydney Water is responsible for delivering under the Metropolitan Water Plan; or</li> <li>b) the Minister directs, in writing, Sydney Water to implement.</li> </ul>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
3.2.5	Sydney Water must participate cooperatively in any review of the Metropolitan Water Plan.	SC	
3.2.6	Sydney Water must develop and enter into a data sharing agreement with DPE by the Commencement Date (or another date approved by the Minister in writing) to assist in the development and review of the Metropolitan Water Plan (the Data Sharing Agreement)	SC	
3.2.7	In addition to any other matters agreed by Sydney Water and DPE, the Data Sharing Agreement must: <ul style="list-style-type: none"> <li>a) set out the roles and responsibilities of Sydney Water and DPE under the Data Sharing Agreement;</li> <li>b) set out the types of data that are covered by the Data Sharing Agreement;</li> <li>c) set out the purposes for the sharing of data and information;</li> <li>d) set out the requirements that shared data and information must meet;</li> <li>e) identify agreed timelines and the format for sharing data and information; and</li> <li>f) identify procedures for resolving matters of conflict in providing data and information.</li> </ul>	SC	
3.2.8	Once Sydney Water has entered into the Data Sharing Agreement it must comply with the Data Sharing Agreement.	SC	
3.2.9	Sydney Water must provide any data or information requested by the Minister in writing: <ul style="list-style-type: none"> <li>a) by the date specified by the Minister; and</li> <li>b) to the Minister or, if the Minister so directs, to DPE.</li> </ul>	NR	Information clause – does not require audit.
3.3	Priority Sewerage Program		
3.3.1	Sydney Water must participate cooperatively in any NSW Government review of the Priority Sewerage Program.	SC	
3.3.2	If required by the Minister, Sydney Water must implement and comply with any outcomes (including timeframes) of any NSW Government review of the Priority Sewerage Program.  <i>[Note: The areas to which the Priority Sewerage Program applies are Austral, Menangle, Menangle Park, Nattai, Scotland Island and Yanderra as listed in Schedule B of this Licence.]</i>	SC	
4.1	Drinking Water		
4.1.1	Sydney Water must maintain a Management System that is consistent with the Australian Drinking Water Guidelines and any requirements relating to Drinking Water specified by NSW Health (the Drinking Water Quality Management System)	Audit	In the 2022 audit, we assigned Sydney Water a Compliant grade for this clause. We audited elements 2-7, 11 and 12. <b>This year we will audit elements 1-6, 8, 9 and 10.</b> The auditor will check the WQMS for adequacy against the ADWG.  We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the ADWG that should be audited.



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
4.1.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.1.1 and the Australian Drinking Water Guidelines, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.
4.1.3	<p>Sydney Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Drinking Water Quality Management System and to the satisfaction of NSW Health.</p> <p><i>[Note: Sydney Water is to apply the Drinking Water Quality Management System to the Drinking Water system under its control, having regard to the entire Drinking Water supply system – from the water catchment to the Consumer.]</i></p>	Audit	<p>In the 2021 audit, we assigned Sydney Water a Non-compliant (non-material) grade for this clause. We audited elements 2, 3, 4, 5, 6, 7, 10,11 and 12.</p> <p><b>This year we will audit implementation of Sydney Water's DWQMS consistent with elements 1-6, 8, 9 and 10.</b></p> <p>The auditor will check completion of non-compliances found in the WQMS against some of these elements in previous audits.</p> <p>We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the ADWG that should be audited.</p> <p><b>Auditor</b> to refer to Recommendations 2022-02 to 2022-04.</p>
4.2	Recycled Water		
4.2.1	Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling and any requirements relating to water recycling specified by NSW Health (the Recycled Water Quality Management System).	Audit	<p>In the 2022 audit, we assigned Sydney Water a Compliant grade for this clause. We audited elements 2 to 9.</p> <p><b>This year we will audit elements 1-6, 10, 11 and 12.</b></p> <p>The auditor will check the WQMS against the AGWR.</p> <p>We will seek comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the AGWR that should be audited.</p>
4.2.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.2.1 and the Australian Guidelines for Water Recycling, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
4.2.3	Sydney Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Recycled Water Quality Management System and to the satisfaction of NSW Health.	Audit	<p>In the 2021 audit, we assigned Sydney Water a Non-compliant (non-material) grade for this clause. We audited elements 2 to 9.</p> <p><b>This year we will audit implementation of Sydney Water's RWQMS consistent with elements 1-6, 10, 11 and 12.</b></p> <p>The auditor will check completion of shortcomings found in the WQMS against some of these elements in previous audits.</p> <p>We sought comment from NSW Health on Sydney Water's performance against this clause and for input into the elements of the AGWR that should be audited. Refer to the submission from NSW Health for further information.</p> <p><b>Auditor</b> should refer to Recommendations 2022-05 to 2022-08</p>
4.3	Fluoridation Code		
4.3.1	Sydney Water must comply with the Fluoridation Code and any requirements for fluoridation specified by NSW Health.	SC	
4.3.2	In the event of inconsistency between the requirements specified by NSW Health referred to in clause 4.3.1 and the Fluoridation Code, the requirements specified by NSW Health prevail.	NR	Information clause – does not require audit.
5.1	Water Continuity Standard		
5.1.1	Sydney Water must ensure that, in each financial year, at least 9,800 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) receive a Drinking Water supply service unaffected by an Unplanned Water Interruption (the Water Continuity Standard).	SC	
5.1.2	<p>Sydney Water must use:</p> <ul style="list-style-type: none"> <li>a) the Water Continuity Optimal Level; and</li> <li>b) the Water Continuity Tolerance Band,</li> </ul> <p>as inputs to decisions regarding the design, construction, operation and maintenance of its water supply system.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.1.3	<p>For the purposes of clause 5.1.2:</p> <p>a) the Water Continuity Optimal Level is 9,840 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) in each financial year receiving a Drinking Water supply service unaffected by an Unplanned Water Interruption; and</p> <p>b) the Water Continuity Tolerance Band is the band of deviations from the Water Continuity Optimal Level between:</p> <p>i. the mandatory Water Continuity Standard (specified in clause 5.1.1 above); and</p> <p>ii. an upper bound of 9,880 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) in each financial year receiving a Drinking Water supply service unaffected by an Unplanned Water Interruption.</p> <p>[Note: Clause 5.1.2 requires Sydney Water to use the Water Continuity Optimum Level and Water Continuity Tolerance Band as inputs into certain decisions. If Sydney Water complies with clause 5.1.2, it will be compliant with this clause 5.1 even if the number of Properties unaffected by an Unplanned Water Interruption exceeds the upper bound of the Water Continuity Tolerance Band. However, IPART may consider the prudence and efficiency of any expenditure related to this level of performance at the next review of Sydney Water's prices.]</p>	NR	Information clause – does not require audit.
5.1.4	Sydney Water must use the best available data (taking account of water pressure data, where available) to determine whether a Property has experienced an Unplanned Water Interruption.	SC	
5.1.5	If a Property experiences an Unplanned Water Interruption that was caused by a Third Party or a power failure, the Property is taken not to have experienced an Unplanned Water Interruption for the purposes of this clause 5.	NR	Information clause – does not require audit.
5.1.6	<p>For the purpose of the Water Continuity Standard, Water Continuity Optimal Level and Water Continuity Tolerance Band:</p> <p>a) each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property; and</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as five separate Properties. However, a block of five flats that only receives one Bill from Sydney Water is to be counted as a single Property.]</p> <p>b) each separate instance, in a financial year, of a single Property experiencing an Unplanned Water Interruption is to be counted as a separate Property that has experienced an Unplanned Water Interruption.</p>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.2	Water Pressure Standard		
5.2.1	Sydney Water must ensure that, in each financial year, at least 9,999 Properties per 10,000 Properties (in respect of which Sydney Water provides a Drinking Water supply service) receive a Drinking Water supply service affected by fewer than 12 Water Pressure Failures (the Water Pressure Standard).	SC	
5.2.2	A Property is taken to have experienced a Water Pressure Failure when: <ul style="list-style-type: none"> <li>a) a person notifies Sydney Water that the Property has experienced a Water Pressure Failure and Sydney Water confirms that the Property has experienced a Water Pressure Failure; or</li> <li>b) Sydney Water identifies that the Property has experienced a Water Pressure Failure (including through its data collection systems and hydraulic analysis).</li> </ul>	NR	Information clause – does not require audit.
5.2.3	A Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of: <ul style="list-style-type: none"> <li>a) water usage in the case of a fire or other abnormal demand; or</li> <li>b) a short term or temporary operational problem (such as a main break), including where caused by a Third Party, that is remedied within four days of its commencement.</li> </ul>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.2.4	<p>For the purpose of the Water Pressure Standard:</p> <ul style="list-style-type: none"> <li>a) where a Property experiences multiple Water Pressure Failures in a day, only one of those Water Pressure Failures is to count as a Water Pressure Failure experienced by that Property;</li> <li>b) where a Property experiences a Water Pressure Failure that affects more than one day, each day affected is to be counted as a separate Water Pressure Failure;</li> <li>c) each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property;</li> </ul> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as five separate Properties. However a block of five flats that only receives one Bill from Sydney Water is to be counted as a single Property.]</p> <ul style="list-style-type: none"> <li>a) each Property that is affected by 12 or more Water Pressure Failures in a financial year is to be counted once only as a Property that has been affected by 12 or more Water Pressure Failures in that financial year; and</li> <li>b) after 30 June 2020, where a Property in, or in the vicinity of, a Property Cluster, is connected for the first time to Sydney Water's Drinking Water supply system and Sydney Water has informed the owner (at the time of connection) of: <ul style="list-style-type: none"> <li>i. the risk of recurring Water Pressure Failures should the Property be connected to that system; and</li> <li>ii. options to reduce that risk;</li> </ul> </li> </ul> <p>that Property is not to be counted for the purposes of the Water Pressure Standard.</p>	NR	Information clause – does not require audit.
5.2.5	<p>For each Property Cluster, Sydney Water must:</p> <ul style="list-style-type: none"> <li>a) by 30 June 2020, review its business processes to ensure that no Property at risk of being affected by recurring Water Pressure Failures from the same cause is connected to Sydney Water's Drinking Water supply system, unless the owner (at the time of connection) is: <ul style="list-style-type: none"> <li>i. informed of that risk; and</li> <li>ii. provided with options to reduce that risk; and</li> </ul> </li> <li>b) by 31 October 2022, take steps to minimise or eliminate the risk of recurring Water Pressure Failures from that cause, in a manner that takes into account its Customers' willingness to pay for Drinking Water supply services.</li> </ul>	Audit	Auditor to check completion of part (b).

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.3	Dry Weather Wastewater Overflow Standard		
5.3.1	<p>Sydney Water must ensure that, in each financial year, at least:</p> <p>a) 9,928 Properties per 10,000 Properties (in respect of which Sydney Water provides a sewerage service but excluding Public Properties) receive a sewerage service unaffected by an Uncontrolled Wastewater Overflow; and</p> <p>b) 9,999 Properties per 10,000 Properties (in respect of which Sydney Water provides a sewerage service but excluding Public Properties) receive a sewerage service affected by fewer than three Uncontrolled Wastewater Overflows,</p> <p>(the Dry Weather Wastewater Overflow Standard).</p>	SC	
5.3.2	<p>A Property is taken to have experienced an Uncontrolled Wastewater Overflow when:</p> <p>a) a person notifies Sydney Water that a Property has experienced a sewage overflow, where Sydney Water later confirms that the sewage overflow is an Uncontrolled Wastewater Overflow; or</p> <p>b) Sydney Water's systems identify that a Property has experienced an Uncontrolled Wastewater Overflow.</p>	NR	Information clause – does not require audit.
5.3.3	<p>For the purpose of the Dry Weather Wastewater Overflow Standard:</p> <p>a) each Multiple Occupancy Property is to be counted as a single Property;</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate Bill from Sydney Water is to be counted as a single Property.]</p> <p>b) for the purpose of clause 5.3.1(a), each separate instance, in a financial year, of a single Property experiencing an Uncontrolled Wastewater Overflow is to be counted as a separate Property that has experienced, in that financial year, an Uncontrolled Wastewater Overflow; and</p> <p>c) for the purpose of clause 5.3.1(b), each Property that experiences three or more Uncontrolled Wastewater Overflows in a financial year is to be counted once only as a Property that has experienced three or more Uncontrolled Wastewater Overflows in that financial year.</p>	NR	Information clause – does not require audit.
5.4	Interpretation of standards		
5.4.1	In the case of any ambiguity in the interpretation or application of the Water Continuity Standard, the Water Pressure Standard, the Dry Weather Wastewater Overflow Standard or clause 5.2.5, IPART's interpretation or assessment of the standard or clause will prevail.	NR	Information clause – does not require audit.
5.5	Asset Management		
5.5.1	Sydney Water must maintain a Management System in relation to Sydney Water's Assets that is consistent with the Australian Standard AS ISO 55001:2014 Asset management – Management systems – Requirements (the Asset Management System).	Audit	The auditor will check the AMS for adequacy against ISO 55001, and against the Service Excellence Roadmap provided by Sydney Water.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
5.5.2	Sydney Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the Asset Management System.	Audit	In the 2022 audit, we assigned Sydney Water a Non-Compliant (Material) grade for this clause.  Auditor to check for progress against Recommendations 2022-09 to 2022-10.
6.1	Customer contract		
6.1.1	The Customer Contract sets out the rights and obligations of Customers and Sydney Water in relation to the Services provided in accordance with this Licence. The Customer Contract is set out in Schedule C of this Licence.	NR	Information clause – does not require audit.
6.1.2	Sydney Water must make a copy of the Customer Contract available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
6.2	Providing information to Customers		
6.2.1	Sydney Water must prepare one or more communications that: <ul style="list-style-type: none"> <li>a) provide a brief explanation of the Customer Contract;</li> <li>b) summarise the key rights and obligations of Customers under the Customer Contract;</li> <li>c) refer to the types of account relief available for Customers experiencing financial hardship;</li> <li>d) outline the rights of Customers to claim a rebate and the conditions that apply to those rights;</li> <li>e) contain information regarding how to contact Sydney Water by telephone, email or post; and</li> <li>f) contain information regarding the ability of a Customer to enter into agreements with Sydney Water separate to the Customer Contract for the provision of Services by Sydney Water to the Customer.</li> </ul>	SC	
6.2.2	Sydney Water must update the communication or communications to reflect any variations made to the Customer Contract.	SC	
6.2.3	Sydney Water must: <ul style="list-style-type: none"> <li>a) provide the communication or communications and any updates, free of charge to: <ul style="list-style-type: none"> <li>i. Customers at least annually with their Bills; and</li> <li>ii. any person upon request made to the Contact Centre; and</li> </ul> </li> <li>b) make the communication or communications and any updates publicly available on its website, free of charge, within 60 days of the commencement of the Customer Contract or any communication update.</li> </ul>	SC	



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.2.4	<p>Sydney Water must publish on its website and advertise at least annually in a manner that Sydney Water is satisfied is likely to come to the attention of members of the public, information as to:</p> <ul style="list-style-type: none"> <li>a) the types of account relief available for Customers experiencing payment difficulty; and</li> <li>b) rights of Customers to claim rebates and the conditions that apply to those rights</li> </ul>	SC	
6.3	Consumers		
6.3.1	<p>Sydney Water's obligations under the following clauses of the Customer Contract are extended to Consumers as though the Consumers were parties to the Customer Contract:</p> <ul style="list-style-type: none"> <li>a) clause 5.1 (Payment difficulties and assistance options for all customers);</li> <li>b) clause 6.5 (Occupiers (tenants) may pay charges to avoid restriction or disconnection);</li> <li>c) clause 12 (If I am unhappy with the service provided by Sydney Water what can I do?);</li> <li>d) clause 13 (Consultation, information and privacy); and</li> <li>e) clause 14 (When does this contract with Sydney Water terminate?).</li> </ul>	SC	
6.4	Assistance Options for Payment Difficulties and Actions for Non-Payment		
6.4.1	<p>Sydney Water must maintain and fully implement:</p> <ul style="list-style-type: none"> <li>a) a payment difficulty policy that assists residential Customers experiencing payment difficulty to better manage their current and future Bills;</li> <li>b) procedures relating to a payment plan for residential Customers who are responsible for paying their Bills and who are, in Sydney Water's reasonable opinion, experiencing payment difficulty;</li> <li>c) procedures for identifying the circumstances under which Sydney Water may disconnect or restrict the supply of water to a Customer's Property; and</li> <li>d) provisions for self-identification, identification by community welfare organisations and identification by Sydney Water of residential Customers experiencing payment difficulty,</li> </ul> <p>(the Assistance Options for Payment Difficulties and Actions for Non-Payment).</p>	SC	
6.4.2	<p>Sydney Water must provide, free of charge, an explanation of the Assistance Options for Payment Difficulties and Actions for Non-Payment on its website and to:</p> <ul style="list-style-type: none"> <li>a) all residential Customers, at least annually with their Bills;</li> <li>b) residential Customers who Sydney Water identifies as experiencing payment difficulty on the date that Sydney Water first identifies that the Customer is experiencing payment difficulty; and</li> </ul> <p>any other person upon request made to the Contact Centre.</p>	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.5	Family Violence		
6.5.1	Sydney Water must develop and implement a family violence policy by 1 July 2020 (or another date approved by IPART in writing).	SC	
6.5.2	The family violence policy must, at a minimum, provide for: <ul style="list-style-type: none"> <li>a) the protection of private and confidential information;</li> <li>b) access to payment difficulty programs;</li> <li>c) processes that minimise the reliance on individuals to disclose their family violence; and</li> <li>d) processes for referrals to specialist services.</li> </ul>	SC	In the 2022 audit this clause was assigned a Compliant (minor shortcomings) grade. The auditor to refer to recommendation 2022-11..
6.6	Customer engagement		
6.6.1	Sydney Water must undertake customer engagement to understand its customers' preferences and willingness to pay for service levels. The customer engagement must be relevant, representative, proportionate, objective, clearly communicated and accurate.	SC	
6.6.2	Sydney Water must establish and regularly consult with its Customer Council	SC	
6.6.3	Sydney Water must provide the Customer Council with information in Sydney Water's possession or under its custody or control necessary to enable the Customer Council to discharge the tasks assigned to it, other than information or documents that are confidential or privileged.	SC	
6.6.4	Sydney Water must keep minutes of proceedings of the Customer Council and make a copy of the minutes available to any person, free of charge, upon request made to the Contact Centre.	SC	
6.6.5	Sydney Water must undertake a review of the operation of the Customer Council. The review must include an assessment of the Customer Council's role, objectives, outcomes and membership, including whether the Customer Council could be used to better support customer engagement, as required by clause 6.6.1.	SC	
6.6.6	Sydney Water must report to IPART on the completed review and its outcomes by 30 June 2020 (or another date approved by IPART in writing).	NR	Fixed deadline requirement (only required to be audited in year of deadline).
6.7	Internal complaints handling		
6.7.1	Sydney Water must maintain a procedure for receiving, responding to and resolving Complaints. The procedure must be consistent with Australian Standard AS/NZS 10002:2014 – Guidelines for complaint management in organizations (the Internal Complaints Handling Procedure).	SC	
6.7.2	Sydney Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the Internal Complaints Handling Procedure	SC	
6.7.3	Sydney Water must provide to Customers, at least annually with their Bills, information concerning internal Complaints handling. The information must explain how to make a Complaint and how Sydney Water will receive, respond to and resolve Complaints.	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
6.7.4	Sydney Water must make the information concerning internal Complaints handling referred to in clause 6.7.3 available to any person, free of charge: <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
6.8	External dispute resolution scheme		
6.8.1	Sydney Water must be a member of the Energy & Water Ombudsman NSW to facilitate the resolution of disputes between Sydney Water and its Customers and Consumers.	Internal IPART check	This clause is not included in the auditor's scope.
6.8.2	Sydney Water must: <ul style="list-style-type: none"> <li>a) prepare a communication that: <ul style="list-style-type: none"> <li>i. lists the dispute resolution services provided by the Energy &amp; Water Ombudsman NSW, including any right to have a Complaint or dispute referred to the Energy &amp; Water Ombudsman NSW; and</li> <li>ii. explains how a Consumer can contact the Energy &amp; Water Ombudsman NSW;</li> </ul> </li> <li>b) provide a copy of that communication, free of charge to Customers at least once a year with their Bills; and</li> <li>c) make a copy of that communication available to any person, free of charge: <ul style="list-style-type: none"> <li>i. on its website; and</li> <li>ii. upon request made to the Contact Centre.</li> </ul> </li> </ul>	SC	
7.1	Memoranda of Understanding with WAMC, NSW Health and EPA		
7.1.1	Sydney Water must maintain the memoranda of understanding entered into under section 35 of the Act with: <ul style="list-style-type: none"> <li>a) the Water Administration Ministerial Corporation (WAMC);</li> <li>b) the Secretary of the Ministry of Health (NSW Health); and</li> <li>c) the Environment Protection Authority (EPA).</li> </ul>	Audit	IPART will contact WAMC, NSW Health and the EPA to comment on Sydney Water's performance against this clause. Auditor to check currency of agreements.
7.1.2	The purpose of the memoranda of understanding referred to in clause 7.1.1 is to form the basis for cooperative relationships between the parties. In particular: <ul style="list-style-type: none"> <li>a) the purpose of the memorandum of understanding with WAMC is to recognise the role of WAMC in regulating water access, use and management and Sydney Water's right to use water vested in WAMC;</li> <li>b) the purpose of the memorandum of understanding with NSW Health is to recognise the role of NSW Health in providing advice to the NSW Government in relation to Drinking Water quality standards and the supply of water which is safe to drink; and</li> <li>c) the purpose of the memorandum of understanding with EPA is to recognise the role of EPA as the environment regulator of New South Wales and to commit Sydney Water to environmental obligations.</li> </ul>	NR	Information clause – does not require audit.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
7.2	Memorandum of Understanding with FRNSW		
7.2.1	Sydney Water must use its best endeavours to maintain a memorandum of understanding with Fire and Rescue NSW (FRNSW).	Audit	
7.2.2	Sydney Water must use its best endeavours to comply with the memorandum of understanding with FRNSW.	Audit	FRNSW notes that Sydney Water has not provided sufficient resource commitment to provide a comprehensive data set detailing the performance of the entire Sydney Water network (as per cl 7.2.4 (b)(ii)).
7.2.3	The purpose of the memorandum of understanding with FRNSW is to form the basis for cooperative relationships between the parties. In particular, the purpose is to: <ul style="list-style-type: none"> <li>a) develop the roles and responsibilities of the parties as they relate to each other;</li> <li>b) identify the needs and constraints of the parties as they relate to each other; and</li> <li>c) identify and develop strategies for efficient and effective provision of firefighting water consistent with the goals of each party.</li> </ul>	NR	Information clause – does not require audit.
7.2.4	The memorandum of understanding with FRNSW must require the maintenance of a working group and must provide that: <ul style="list-style-type: none"> <li>a) the working group must include representatives from Sydney Water and FRNSW and may include representatives from other organisations such as the NSW Rural Fire Service; and</li> <li>b) the working group is to consider the following matters (at a minimum): <ul style="list-style-type: none"> <li>i. information sharing arrangements between Sydney Water and FRNSW;</li> <li>ii. agreed timelines and a format for Sydney Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network);</li> <li>iii. arrangements for Sydney Water to consult with FRNSW in the design of new assets and planning of system maintenance, where planning indicates that minimum available flow and pressure may unduly impact firefighting in the network section under consideration; and</li> <li>iv. other matters as agreed by both Sydney Water and FRNSW</li> </ul> </li> </ul>	Audit	
8.1	Negotiations with WIC Act licensees and Potential Competitors		
8.1.1	Sydney Water must negotiate the provision of Services to WIC Act licensees and Potential Competitors in Good Faith.	Audit	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
8.2	Publications of servicing information		
8.2.1	<p>Sydney Water must, by the dates specified in this clause 8.2, publish electronically (in a form accessible from its website) at least ten years of servicing information for each major water system and wastewater system. The servicing information for each major water system and wastewater system must, at a minimum, include information on:</p> <ul style="list-style-type: none"> <li>a) current and projected demand;</li> <li>b) current and projected capacity constraints;</li> <li>c) indicative costs of alleviating or deferring capacity constraints;</li> <li>d) locations where further investigation is needed; and</li> <li>e) key sources of information used to develop the servicing information where those sources are publicly available,</li> </ul> <p>(the Servicing Information).</p>	NR	Information clause – does not require audit.
8.2.2	Sydney Water must, by 30 September 2020 (or another date approved by IPART in writing), publish electronically the Servicing Information for each major water system and wastewater system that it has available by that date that is in a form suitable for publication.	NR	Fixed deadline requirement. Completed.
8.2.3	Sydney Water must continue to publish Servicing Information for each major water system and wastewater system as it becomes available. Sydney Water must publish all Servicing Information by 30 June 2021 (or another date approved by IPART in writing).	Internal IPART check	This clause is not included in the auditor's scope.
8.2.4	Sydney Water must publish updated Servicing Information for each major water system and wastewater system as soon as practicable after any such updated Servicing Information becomes available in a form suitable for publication.	SC	
8.2.5	<p>Sydney Water must review and update the Servicing Information for each major water system and wastewater system at least once between:</p> <ul style="list-style-type: none"> <li>a) The date that is 12 months after the initial publication of the Servicing Information for that major water system or wastewater system under clause 8.2.2; and</li> <li>b) 30 June 2023 (or another date approved by IPART in writing).</li> </ul>	Audit	Fixed deadline requirement. Due to be reviewed and updated by 30 June 2023.
8.2.6	Sydney Water is not required to comply with clauses 8.2.1 to 8.2.5 in relation to a particular major water system or wastewater system to the extent approved by IPART in writing. Sydney Water may apply to IPART for approval under this clause only where there are critical infrastructure security concerns in relation to a particular major water system or wastewater system.	NR	Information clause – does not require audit.
8.3	Code of Conduct		
8.3.1	Sydney Water must use its best endeavours to cooperate with each WIC Act licensee to establish a code of conduct required by a WIC Act licence where Sydney Water has received a written request from the WIC Act licensee to establish such a code.	SC	

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
8.3.2	Where the Minister administering the WIC Act has established a code of conduct under clause 25 of the WIC Regulation, Sydney Water will be taken to have satisfied its obligation under clause 8.3.1 by applying the code of conduct to the relevant licensee under the WIC Act.	NR	
9.1	<b>Cyber Security Management System</b>		
9.1.1	From the Commencement Date (or another date approved by IPART in writing), Sydney Water must maintain a Management System for cyber security of Sydney Water's Assets (the Cyber Security Management System) that covers: <ul style="list-style-type: none"> <li>a) information technology environments, hardware and systems; and</li> <li>b) operational technology environments, hardware and systems</li> </ul>	NR	Audited separately by Cyber Security specialist auditor.
9.1.2	From the Commencement Date (or another date approved by IPART in writing), Sydney Water must ensure that the Cyber Security Management System is fully implemented and that all relevant activities are carried out in accordance with the Cyber Security Management System.	NR	Audited separately by Cyber Security specialist auditor.
9.2	<b>Critical infrastructure Compliance manager</b>		
9.2.1	Sydney Water must nominate, by notice in writing to IPART and the Commonwealth Representative, an executive level employee as Critical Infrastructure Compliance Manager.  [Note: The reference to an executive level employee is a reference to a Level 3 employee or above under Sydney Water's structure at the Commencement Date.]	NR	Audited separately by Cyber Security specialist auditor.
9.2.2	Sydney Water's Critical Infrastructure Compliance Manager must be responsible for compliance with clause 9 of the Licence and Sydney Water's obligations under the <i>Security of Critical Infrastructure Act 2018</i> (Cth), and must act as the contact person for the Commonwealth Representative.	NR	Audited separately by Cyber Security specialist auditor.
9.3	<b>National Security Clearances</b>		
9.3.1	From 1 January 2020 (or another date approved by IPART in writing), Sydney Water must ensure that National Security Clearances are held by its Critical Infrastructure Compliance Manager, two board members and the executive level employees responsible for each of the following matters: <ul style="list-style-type: none"> <li>a) operational technology security (including cyber security strategy, managing remote access to Assets and delivery of SCADA capability);</li> <li>b) network operations security (including operation, maintenance and physical security of Assets); and c) Personnel security operations (including security of Personnel and security risks posed by Personnel).</li> </ul> [Note: The responsibilities at (a) to (c) above may be held by a single employee or shared between multiple employees. To ensure compliance with this clause when employees resign or are on leave, Sydney Water should ensure that National Security Clearances are held by alternates with relevant experience.]	NR	Audited separately by Cyber Security specialist auditor.

Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
10.1	Operational Audits		
10.11	Sydney Water must cooperate with an audit undertaken by IPART or an Auditor of Sydney Water's compliance with any of the following: <ul style="list-style-type: none"> <li>a) this Licence (including the Customer Contract);</li> <li>b) the Reporting Manual; and</li> </ul> any matters specified by the Minister, (the Operational Audit).	Internal IPART check	This clause is not included in the auditor's scope.
10.12	For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must, within a reasonable period of receiving a request from IPART or an Auditor, provide IPART or the Auditor with all the information in Sydney Water's possession, custody or control that is necessary to conduct the Operational Audit, including any information that is reasonably requested by IPART or an Auditor.	Internal IPART check	This clause is not included in the auditor's scope.
10.13	For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must permit IPART or the Auditor to: <ul style="list-style-type: none"> <li>a) access any works, premises or offices occupied by Sydney Water;</li> <li>b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;</li> <li>c) take on to any such premises or offices any person or equipment necessary for the purpose of performing the Operational Audit or verifying any report on the Operational Audit;</li> <li>d) inspect and make copies of, and take extracts from, any books and records of Sydney Water that are maintained in relation to the performance of Sydney Water's obligations under this Licence (including the Reporting Manual); and</li> <li>e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Sydney Water, including Sydney Water's officers and employees.</li> </ul>	Internal IPART check	This clause is not included in the auditor's scope.
10.2	Reporting		
10.2.1	IPART has the function of determining Sydney Water's reporting and auditing obligations and publishing these obligations in a reporting manual (the Reporting Manual).	NR	Information clause - does not require audit.
10.2.2	Sydney Water must comply with all of its reporting and auditing obligations set out in the Reporting Manual, including in relation to: <ul style="list-style-type: none"> <li>a) water conservation and planning;</li> <li>b) performance standards for water quality; 10 Performance Monitoring and Reporting 26 Operating Licence 2019-2023</li> <li>c) performance standards for service interruptions;</li> <li>d) Customers and Consumers;</li> <li>e) information and services for competitors;</li> <li>f) critical infrastructure security; and</li> <li>g) performance monitoring and reporting.</li> </ul>	SC	



Licence clause	Operating Licence obligation	2023 audit requirement	Comments for the auditor
10.2.3	<p>Sydney Water must:</p> <ul style="list-style-type: none"> <li>a) compile indicators of the direct impact on the environment of Sydney Water's activities (the Environment Performance Indicators). The Environment Performance Indicators must be consistent with the performance indicators specified in the Reporting Manual with an indicator number starting with 'E';</li> <li>b) monitor and compile data on the Environment Performance Indicators, including data that allows a year to year comparison of the Environment Performance Indicators; and</li> <li>c) report on the Environment Performance Indicators in accordance with the Reporting Manual.</li> </ul>	SC	
10.2.4	Sydney Water must maintain sufficient record systems to enable Sydney Water to report accurately in accordance with this clause 10.2.	Audit	Auditor should check progress against recommendation 2022-13.
10.2.5	In the case of any disagreement between IPART and Sydney Water regarding the interpretation or application of any requirements of the Reporting Manual, IPART's interpretation or assessment of the application of the requirements will prevail.	NR	Information clause – does not require audit.
10.3	Provision of information for performance monitoring		
10.3.1	Sydney Water must provide IPART information relating to the performance of any of Sydney Water's obligations under clause 10.2 (including providing IPART physical and electronic access to the records required to be kept under clause 10.2) within a reasonable time of Sydney Water's receiving a request from IPART for that information.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.2	Sydney Water must provide IPART such information as is reasonably required to enable IPART to conduct any review or investigation of Sydney Water's obligations under this Licence within a reasonable time of Sydney Water receiving a request from IPART for that information.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.3	If Sydney Water engages any person (including a subsidiary) to undertake any activities on its behalf, it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such persons provide information and do the things specified in clause 10.1 as if that person were Sydney Water.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.4	If IPART or an Auditor requests information that is confidential, the information must be provided to IPART or the Auditor, subject to IPART or the Auditor entering into reasonable arrangements to ensure that the information remains confidential.	Internal IPART check	This clause is not included in the auditor's scope.
10.3.5	<p>Sydney Water must provide NSW Health with information relating to water quality in the manner and form specified by NSW Health within a reasonable time of receiving NSW Health's request.</p> <p>[Note: Under section 19 of the Public Health Act 2010 (NSW), the Secretary of NSW Health may require Sydney Water to produce certain information.]</p>	Internal IPART check	This clause is not included in the auditor's scope.

Source: IPART, Sydney Water Corporation five year audit program.

Table 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2020-11:	Recycled water Clause 4.2.1	By 30 September 2021, Sydney Water must update critical control point documentation for the audited WRP to document the basis for the CCT low flow critical control point.	Completed Sydney Water advised that the CCT low flow setpoint is to protect pumps and should not be a critical control point (CCP). It is not related to recycled water quality and Sydney Water has removed it as a CCP. However, it remains in the Recycled Water Product Specification. <b>Replaced by Rec-2022-12</b>	Auditor to check for completion.
2020-13:	Recycled water Clause 4.2.1	By 31 December 2021, Sydney Water must update the recycled water audit schedule to ensure an annual review of high risk AGWR elements at a number of recycled water schemes each year (as agreed with NSW Health). The schedule should be risk-based and consider locations and exposures. All recycled water schemes should be audited within a 3-year cycle.	On track <ul style="list-style-type: none"> <li>Criteria for prioritising recycled water schemes based on risk have been developed</li> <li>All recycled water schemes have been ranked based on the prioritisation criteria and an audit schedule has been developed</li> <li>The proposed audit schedule was presented at the Joint Operational Group (JOG) in May 2021 to engage with NSW Health and seek their agreement to the risk-based schedule.</li> <li>Audit of Rouse Hill and Castle Hill completed Sept 2021.</li> <li>Assurance procedure v7(619010) has been updated to include how the criteria are applied for Water and Recycled Water.</li> </ul>	Auditor to check for completion.
2020-23:	Reporting Clause 10.2.4	By 30 June 2021, Sydney Water must improve document control of the records held in its systems by ensuring that information such as the version date, version number, change history and document author are included in all records.	Completed <b>Replaced by Rec-2022-13</b>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2021-09	Recycled water Clause 4.2.1	By 31 December 2023, Sydney Water must update Work Instruction for Creation of Process Flow Diagrams (D0000685) to include specific instructions and examples for recycled water. Update all recycled water flow diagrams to be consistent with the updated work instruction. Update the Liverpool RWQMP to only include one flow diagram.	On track An updated version of D0000685 has been loaded to BMIS. Rouse Hill PFD update is complete and will be stored in BMIS. Liverpool PFD will be completed by the end of June 2023. Richmond PDF is currently being verified and will be uploaded to BMIS in June 2023. The remaining PFDs are being updated in line with the scheduled reviews of the RWQMPs.	Auditor to check for progress
2021-14	Asset management Clause 5.5.2	By 30 June 2023 Sydney Water reviews any public health related project risks to determine whether the management of these risks is in accordance with its risk management framework.	Complete Sydney Water completed a review of project risk registers associated with the Water program to verify that management of these risks is in accordance with the Risk Management Framework as well as for reporting and escalation per Sydney Water's Risk Matrix response and escalation table. This is being transferred to a BAU activity.	Auditor to check for completion.
2022-01	Water Conservation clause 3.1.4	By 30 June 2023, Sydney Water should formally document a procedure for updating and reporting the current economic level of water conservation, which is to be expressed both as the value of water in dollars per kilolitre (\$/kL) and as the quantity of savings in megalitres per day (ML/day) as required by paragraph 3.1.3(c) of the Operating Licence.	On track Sydney Water has commenced drafting the procedure. On track to finalise by 30 June 2023.	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-02	Drinking water clause 4.1.3	By 30 June 2023, check the North Richmond Network risk assessment to ensure that all risks align with a hazardous event in the Hazard and Risk Library document. A check should be made at the completion of future risk assessments to ensure that all risks in the risk register correspond to a hazardous event in the Hazard and Risk Library. This could be done by including the hazardous event reference number in the risk assessment spreadsheet.	<p>On track</p> <p>Sydney Water has conducted a review of the risk assessment register template and the Hazard and Risk Library document. The Drinking Water Quality Risk and Hazard Library (document D0001199) will be archived and the list of hazards will be transferred to the risk register from the 2022-23 financial year's risk review to better link the risk / hazardous events with hazards. This will provide greater efficiencies and more clarity during the risk reviews.</p> <p>The document D0000799 Operational Risk Assessment Workshop Procedure will be updated to reflect the change with reference to the 'Risk and Hazard Library'.</p> <p>This action was discussed and agreed with NSW Health on 17 March 2023. This change will be in place for all the 2022-23 operational risk reviews, which includes all the water filtration plants and the networks.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-03	Drinking water clause 4.1.3	By 30 June 2023, develop a procedure to track and respond to exceptions to the reservoir roof inspection program, including a process to prioritise delayed inspections and provide alternate inspection arrangements if reservoir roof access is unsafe. Appropriate alternative inspection arrangements and timeframes for implementation should be included in the procedure and agreed to by NSW Health. Performance reporting to NSW Health is to be reviewed as part of this action, including reporting against the Drinking Water Quality Specification reservoir inspection target (90% of six monthly and three yearly inspections being completed annually) and in addition reservoirs that have not been inspected for over 12 months should also be reported.	On track  A deep dive is being undertaken into the processes to manage of reservoir roof inspections and corrective maintenance activities including tracking of delayed work tasks and the reasons why.  Due to be completed 30 June, including consultation with NSW Health, and updated performance reporting.	Auditor to check for completion.
2022-04	Drinking water clause 4.1.3	By 30 June 2023, review the process for actioning priority (P1-P6) findings from reservoir inspections, especially related to water quality contamination barriers (e.g. vermin proof breach), to ensure verifiable audit evidence is maintained to demonstrate that the work is completed as required within a reasonable timeframe. Consider consulting with NSW Health to solicit their input.	On track  A deep dive is being undertaken into management of reservoir roof condition. The review is in progress and covers the process to program inspections and arrange corrective maintenance through the MAXIMO (maintenance management / work order) system. The description of the priorities (P1-P6) is included in the review and how prioritisation for managing defects found during routine inspections is undertaken.	Auditor to check for completion.
2022-05	Drinking water clause 4.1.3	By 30 June 2023, review the Process Flow Diagram (PFD) and undertake field verification of the revised diagram. The Richmond Water Resource Recovery Facility (WRRF) PFD must include all processes that could impact water quality, including the stormwater first flush and the alum dosing into the Equalisation Basin.	Complete  The Richmond PFD has been updated to include the changes identified by the auditor. The PFDs for all remaining plants are being reviewed as part of the scheme Recycled Water Quality Management Plan review process.	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-06	Drinking water clause 4.1.3	By 31 December 2023, review the risk assessment process for the Richmond WRRF. The Recycled Water Risk Assessment Workshop Standard Operating Procedure (SOP) requires all hazardous events that can compromise recycled water quality are considered in the risk assessment process. The Richmond WRRF risk assessment did not include a risk assessment of the supernatant return or stormwater first flush system. Sydney Water must ensure that the Recycled Water Hazard Library has appropriate hazardous event documentation to cover these processes and that they are considered at the Richmond WRRF. The Richmond WRRF risk assessment was conducted using the recently developed risk assessment process, this should also be reviewed to understand how these were missed and the Recycled Water Risk Assessment Workshop SOP revised as necessary.	On track  The Richmond Water Resource Recovery Facility (WRRF) risk assessment has been reviewed and updated to include the supernatant and first flush returns. The Recycled Water Risk Assessment Workshop SOP is in the process of being updated to ensure this type of hazard is captured and reviewed across all recycled water schemes. The Recycled Water Hazard Library is part of this review.	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-07	Drinking water clause 4.1.3	By 31 December 2023, CCP 1 turbidity monitoring at the Richmond WRRF is to be moved to monitor combined filter effluent. The status of recycled water tertiary filter turbidity monitoring is ambiguous across a number of Sydney Water recycled water plants, in relation to the use of individual online filter turbidity monitoring. A decision should be made for all plants, based on risk, and a program of implementation developed and agreed to by NSW Health.	<p>On track</p> <p>A discussion paper on providing sufficient assurance to NSW Health on the monitoring of key treatment barriers such as turbidity out of media filters was sent to NSW Health in early April 2023. An online meeting was held on 4 May to further understand NSW Health's suggested improvements to monitoring and claiming microorganism log reductions.</p> <p>Sydney Water is planning a winter log reduction monitoring plan for Penrith Water Resources Recovery Facility to implement agreed changes, including those necessary to provide assurance about the performance of media filters. A discussion of the planned monitoring program will be held with NSW Health in late May 2023.</p>	Auditor to check for completion.
2022-08	Drinking water clause 4.1.3	By 30 June 2023, the sampling process for the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure is to be reviewed. This should ensure that wet weather flows within the operating envelope of recycled water schemes are not systematically omitted from being sampled. The monitoring program should ensure that over a number of monitoring cycles that all operating conditions are included in the sampling program. This may also need to consider some targeted event monitoring.	<p>On track</p> <p>Water Futures has been engaged to review recycled water quality management processes, including the verification monitoring program. The Recycled Water Treatment Detailed Verification Monitoring program for St Marys Advanced Water Treatment Plant and feeder plants will be developed in May 2023 for discussion with NSW Health and will include improved wet weather monitoring within the specified operating window for delivering recycled water.</p>	Auditor to check for completion.



Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-09	Asset management clause 5.5.2	By 30 June 2023, Sydney Water should implement processes to ensure that all corrective maintenance is managed through the maintenance management/work order system, prioritised on the basis of assessed risk and any delay to implementation is justified and clearly documented.	<p>On track</p> <p>Corrective maintenance decisions are made in the multi-function ROMP (reliability, operations, maintenance, process) or equivalent forum, including prioritisation of works based on asset performance metrics.</p> <p>Work is also underway to ensure an appropriate budget is allocated for future years.</p> <p>Processes have been implemented to ensure all corrective maintenance (CM) work is managed through the maintenance work order system in Maximo. Process reviews are underway to validate the implementation of these processes in the critical stream. A system review to look across asset classes is also underway. Linked with Rec 2022-03, this review is to be completed by 30 June 2023</p>	Auditor to check for completion.
2022-10	Asset management clause 5.5.2	By 30 June 2023, Sydney Water should implement processes to ensure that major periodic maintenance is prioritised on the basis of assessed risk, any deferment from the planned timeline should be based on condition/performance assessment and be clearly documented.	<p>On track</p> <p>A new process for MPM (major periodic maintenance) has been developed and is being implemented for the 2023/24 period. This process enables improved planning and prioritisation of MPM work at the start of the year. A dashboard has been created that tracks performance. The process requires deferrals to be based on the assessed risk and the reasons documented.</p>	Auditor to check for completion.
2022-11	Customers Clause 6.5.2	By 30 June 2023, Sydney Water should include additional practice-based guidance in respect of "processes that minimise the reliance on individuals to disclose their family violence" in its Family Violence Policy.	<p>Complete</p> <p>The revised Family Violence Policy (dated 12/12/22) has been published and is available on our website. Refer to section 2.5 of the policy for details.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	Progress on Audit findings (Status as reported by Sydney Water in audit recommendations update on 31 May 2023 <sup>a</sup> )	Guidance for 2023 audit
2022-12	Recycled water Clause 4.2.1	By 30 June 2023 update the Recycled Water Product Specification to remove the low flow on the West Camden chlorine disinfection CCP	On track The table of scheme Critical Control Points (CCPs) and critical limits will be removed from the Recycled Water Product Specification to remove version control issues with the individual scheme plans.	Auditor to check for completion.
2022-13	Reporting clause 10.2.4	By 30 June, Sydney Water should take action to ensure that the currency of controlled documents complies with its Key Performance Indicator (KPI) target of 5% for expired documents	On track A Document Management Working Group is reviewing the definition of what constitutes critical/ key controlled documents as well as KPIs that support the business.	Auditor to check for completion.

**a** Sydney Water is required to provide a report on progress by 31 March 2023 or a later date agreed by IPART. Due to the timing of the audit, the Tribunal has agreed to a later date of 31 May 2023 for Sydney Water to report on its progress with the audit recommendations

**Source:** IPART, *Report to the Minister - Sydney Water Corporation Operational audit 2020-21, February 2023*

Table 4 Previous field verification locations for Sydney Water Corporation

Audit year	Location	Facility
<b>2023</b>	TBA	Water Recycling Plant
		Water Filtration Plant
		Water Reservoir
		Maintenance Issue
<b>2022</b>	Richmond	Water Recycling Plant
	North Richmond	Water Filtration Plant
	South Windsor	Water Reservoir
	St Mary's	Maintenance Depot
<b>2021</b>	NA	Pipe repair
	Macarthur	Water Filtration Plant
	Liverpool	Water Recycling Plant
<b>2020</b>	Nepean	Water Filtration Plant
	West Camden	Water Recycling Plant
	Prospect	Water and sewer pump stations - maintenance
	Camellia	Sewer pump station - maintenance
<b>2019</b>	Oak Flats	Re-chlorination Plant
	Wollongong	Water Recycling Plant
	Helensburgh	Reservoir
	Woronora	Water Filtration Plant
<b>2018</b>	Cascade	Water Filtration Plant
	Parklea	Drinking and Recycled Water Reservoirs, and rechlorination station
	Rouse Hill	Water Recycling Plant and network
<b>2017</b>	Nepean	Water Filtration Plant
	Prospect	Water Filtration Plant
	Campbelltown	Reservoir
	Liverpool	Water Recycling Plant
	Guildford	Water main renewal - maintenance
<b>2016</b>	Orchard Hill	Water Filtration Plant
	Prestons	Maintenance Depot
	Cronulla	Wastewater Treatment Plant
<b>2015</b>	Parklea	Reservoir
	Box Hill	Pumping Station
	North Richmond	Water Filtration Plant
	Rouse Hill	Water Recycling Plant

<b>Audit year</b>	<b>Location</b>	<b>Facility</b>
<b>2014</b>	West Camden	Water Recycling Plant
	Warragamba	Water Filtration Plant
		South West Growth Area
<b>2013</b>	Macarthur	Water Filtration Plant
	Liverpool	Customer Service Centre
	Liverpool	Water Recycling Plant
	West Hoxton	Priority Sewage Project
<b>2012</b>	Wollongong	Water Recycling Plant
	Woronora	Water Filtration Plant
	Heathcote	Reservoir
<b>2011</b>	N/A	Three treated water reservoirs
	Orchard Hills	Water Filtration Plant
	Drummoyne	Mains flushing



## Appendix B Field Verification Report

### B.1 Overview

As part of this audit, field verification site visits were made to a number of sites/facilities to verify how effectively Sydney Water is implementing the requirements of the *Operating Licence* in practice. These visits involved inspection of facilities, observation of activities being undertaken and discussions with field personnel.

Sites/facilities inspected for the purposes of this audit included:

- Rouse Hill Water Reservoir (WS 0476);
- A field maintenance activity;
- Prospect Water Filtration Plant; and
- St Marys Water Resource Recovery Facility.

A summary of the assets and/or activities inspected at each site, the issues reviewed and/or identified and the observations made are set in the following sections. More detailed discussion of specific aspects or issues is presented in **Section 2**.

### B.2 Rouse Hill Water Reservoir (WS 0476)

#### B.2.1 Facility description

The Rouse Hill Water Reservoir site accommodates the water storage reservoir and a re-chlorination facility. Whilst the reservoir was the primary focus of the inspection, the re-chlorination facility was also inspected.

The reservoir is a ground-level welded steel tank fitted with lightweight aluminium sheet roofing with a steel support structure. It was constructed in the early-mid 2000s and has a storage capacity of 40 megalitres.

The reservoir is fitted with separate inlet and outlet pipework. A mixer is located near the inlet; a chlorine injection point is located behind the mixer. The tank walls are protective coated and cathodic protection is fitted to further protect the internal walls and roof support structure.

The roof is fitted with access hatches for reservoir entry, vents, chlorine dosing points (for manual dosing), and points for access to the cathodic protection system/anodes. Both perimeter and radial walkways facilitate movement around/across the roof.

The re-chlorination facility is accommodated within a building and comprises two tanks and dosing pumps. As-delivered chlorine (12.5%) is stored in one of the tanks whereas the other is the batched one, diluted to 0.6%. The dilution amount is calculated via SCADA.

## B.2.2 Inspection overview

The inspection comprised of a briefing by Sydney Water personnel followed by a ‘walk-around’ the base of the reservoir. The reservoir roof was accessed, and the roof and appurtenances inspected.

The re-chlorination facility was separately inspected, with chemical storage and dosing arrangements being observed. The online total chlorine analysers and the IICATS system were also observed.

## B.2.3 Asset management

Observations made in respect of the reservoir included:

- External coating of the tank walls was in generally good condition. There was some minor peeling along the top of the second of four strakes, however, this was not of concern.
- The roof observed to be in generally good condition, with sheet end sealing in place at inspected locations. Notwithstanding, Sydney Water advised that there has a recurring issue with sheared fixings due to expansion of the aluminium sheeting. This issue is further discussed in **sections 2.4.2.2 and 3.2.4.2**.
- Facilities are in place for manual chlorine dosing using tablets, or by a liquid dosing truck (preferred) if the re-chlorination facility is out of service or chlorine boosting is otherwise required. The method used is dependent upon the expected chlorination plant repair time and availability of the liquid dosing truck.
- A roof vent located at the central high point was well sealed and fitted with mesh having appropriately sized openings/aperture.
- Wall penetrations include the inlet pipework, chlorine dosing injection point, emergency dosing point, sampling point and vacuum connection point (for tank cleaning by divers using a vacuum truck).
- The outlet and common overflow/scour outlet are installed through the tank floor.

Discussions in respect of reservoir maintenance revealed the following:

- Sydney Water advised in respect of external coating that it has commenced use of an overpaint to prevent lichen growth.
- The reservoir inspection regime comprises:
  - 6-monthly (L0) inspections, which are essentially visual only; and
  - 5-yearly (L1) inspections which are detailed internal and external inspections, typically undertaken using remotely operated vehicles (ROVs).
- Internal inspections are undertaken primarily using ROVs, although some inspections are undertaken from a boat lowered into the reservoir. Sydney Water advised that inspections using Lidar type equipment are also starting to be used.

Whilst the re-chlorination facility was not closely inspected from an asset management perspective, it was noted that relevant chemical/safety management facilities were in place. These included a safety shower/eye wash; relevant signage; bunding of the chemical delivery hard stand area; and bunding of the chemical storage and dosing facilities (the floor level within the building is lower than the outside ground level, thereby in effect bunding the whole of the facility).



## B.2.4 Water quality

Observations made in respect of the re-chlorination facility included:

- The tanks are inside a locked building, away from direct sunlight.
- The reservoir has a separate inlet/outlet, but both towards the bottom. However, there is a mixer in the reservoir to promote chlorine mixing.
- IICATS showed the chlorine reading, tank levels and mixer status, and associated alarms.

Discussions in respect of the re-chlorination facility revealed the following:

- Chlorine deliveries are attended by an operator onsite.
- The 12.5% tank can last up to 6-8 weeks, or lower over summer.
- The diluted tank can last around 10 days.
- An operator visits the site weekly, checks the equipment and calibrates the chlorine analyser via titration test. Record sheet was observed onsite.
- There are about 15 members of the team responsible for the weekly checks to provide contingency.
- The reservoir mixer has a fault alarm in SCADA.
- For out-of-specification high chlorine results, the chlorine system shuts down automatically and sends an alarm notification. The team investigates the issue and depending on chlorine residual, chlorine tablets or a portable chlorine dosing tank can be used to maintain chlorine residual.

## B.3 Field Maintenance Activity

### B.3.1 Activity/inspection overview

The field maintenance activity inspected comprised the response to reported “water on footpath” at a location in Girraween. The work was undertaken by a Sydney Water maintenance contractor pursuant to Work Order No: 89640098.

The Work Order reported the failure as:

Problem – *Water on footpath;*

Remedy – *Repair main breaks;*

Cause – *Broken main/pipe failure – longitudinal.*

Further detail identifies the actual work done and observations as: “*leak under drive, rip driveway up, and dug to main and replace 4.5m on pipe to stop leak, and back filled hole and resto driveway*”. This is consistent with the observations made during the inspection.

### B.3.2 Asset management

Work allocation and site activities were managed using a handheld Toughbook. The field crew demonstrated:

- Job scheduling/allocation
- The SWMS (Safe Work Method Statement), which provided overall guidance for completion of the site work.

- Implementation of safety measures, including sign-in to site and completion of a risk assessment.
- Network isolation process (shut-off valves identified from online GIS records).

The field crew appeared to follow the documented procedures, including the implementation of required safety measures such as the erection of site barriers.

### B.3.3 Water quality

When the audit team arrived on site, the earth around the pipe had already been excavated and the crew was preparing to isolate the main and undertake the repair. It was a small cast iron pipe, and they were going to replace the entire section of pipe, as it was under a driveway and did not want to risk it leaking again.

The following observations were made:

- Network Services inspect the site before the crews arrive and map out the job and ensure the correct assets are sent to the job and prioritise it.
- The pipe was earthed prior to work been undertaken to reduce the risk of electric shock or electrocution for the crew.
- The local residents were notified of the shutdown using the Whisper system that sends SMS messages to those affected.
- The crew had access to the work order and procedures through their Toughbook. They could also access details of the network to location isolation valves and know which properties would be affected.
- As this main was less than 250 mm, the Water Quality Scientist only attends the site and takes water quality on a risk basis. Usually, the crew would only flush the main after completing the work.
- The truck had 1% sodium hypochlorite solution on board and all the tools and fittings were sprayed.
- The excavation was drained and there was clearance at the locations the pipe was to be cut.

## B.4 Prospect Water Filtration Plant

### B.4.1 Facility description

The Prospect Water Filtration Plant, which commenced operation in September 1996, provides drinking water to approximately 85% of the Sydney population. The plant has the capacity to treat up to 3,000 ML/day, and has warranty capacity points of 1,500, 2,600 and 3,000 ML/day depending on colour and turbidity of incoming raw water.

The treatment process comprises essentially three stages:

- Pre-treatment consisting of pre-oxidation, pH correction and coagulation-flocculation.
- Filtering particles from the pre-treated water. A “side stream” residual waste system manages the waste product from the filtration process; and
- Post-treatment involving pH correction, fluoridation, and disinfection.

The pre-treatment and post treatment stages involve the dosing of chemicals.

Raw water is supplied from a combination of three sources managed by WaterNSW: Warragamba Dam (Lake Burragorang) raw water system, Upper Canal System (water from the Upper Nepean Dams), and Prospect Reservoir raw water system. The source used at any point in time is dependent upon water availability and raw water quality.

Treated water is stored in two basins (“clear water tanks”), each of 70 ML nominal capacity, which normally operate in series; both are fitted with membrane liners and floating covers. The clear water tanks can be bypassed or can operate independently, in which case they effectively “float” on the outlet system.

The Prospect Water Filtration Plant is operated and maintained by SUEZ under an extended “Build and Operate” type contract.

#### **B.4.2 Inspection overview**

The site inspection comprised a ‘walk through’ of the treatment plant, generally following the process flow. This was followed by a review of critical control point settings in the SCADA system and observing of the onsite water testing laboratory and result sheets.

#### **B.4.3 Asset management**

Under the terms of the Build and Operate contract, SUEZ is responsible for all operation and maintenance activities at the facility. Accordingly, all asset management related decisions are primarily the responsibility SUEZ.

SUEZ prepares and submits for approval annual maintenance plans and 5-year maintenance /renewal plans. Additional payment for capital expenditure associated with asset renewals; upgrades are subject to discussion and agreement with Sydney Water.

SUEZ reports Sydney Water on its asset management activities as part of its monthly performance reporting. Sydney Water conducts periodic audits to assess the implementation and performance of the asset maintenance management system as required by the contractual agreement.

Observations made during the site inspection from an asset management perspective included the following:

- The facility appeared to be generally well maintained, with no obvious deficiencies.
- Given its critical role in the supply of water for Sydney, the plant is subject to an 8-hour shutdown limit.
- The chemical storage area appeared to be in order. Chemical SDS (Safety Data Sheets), safety shower/eye washes, tanker bunding and storage bunding were all in place. SUEZ noted that corroded acid storage tanks had been replaced and fitted with dehumidifiers to prevent recurrence.
- SUEZ noted that a sodium hypochlorite dosing system is being installed as a backup to the existing chlorine gas dosing system. This work is being undertaken at Sydney Water additional expense. The new system will operate under a slow trickle turnover arrangement unless called to duty, thereby avoiding the need for total plant shutdown.

- It was noted that the floating membrane cover of the western clear water storage was damaged during a storm event in July 2022. Design of a replacement cover is in hand, with installation expected to commence in March 2024.

Both storages remain in service; ROV inspections have been undertaken several times since the failure. Some failed concrete is still in place but is not impacting water quality.

This issue is further discussed in **section 2.3.1.2** (from a water quality incident management perspective).

#### B.4.4 Water quality

Observations and discussions during the site inspection from a water quality perspective included the following:

- The drinking water polices for Sydney Water and Suez were both displayed at the entrance of the WFP building.
- The Process Flow Diagram appeared current from a walk-through the processes.
- There were alarms for the filters in SCADA at these levels: warning at 0.09 NTU, alert at 0.2 NTU, high alarm at 0.3 NTU (with 15 mins timeframe), filter isolation at 0.4 NTU.
- The chlorine *C.t* low alarm is at 30 mg.min/L and low low alarm is at 25 mg.min/L in SCADA.
- Operators perform grab sample water testing every six hours for raw water and finished water. This is part of the WFPA.
- Operators calibrate the chlorine online analysers weekly (QCP6 analyser calibration record was observed).
- Filter turbidity meters are calibrated/cleaned monthly and calibrated externally annually. All meters are HACH (Ultraturb) now, previous GLI has been replaced.
- The plant does not have filter to waste capacity.
- There is annual depth inspection undertaken for a filter.
- A filter can ripen at value of 0.3 NTU for 60 mins, at 0.4 NTU, the filter will isolate.
- In 2022, due to raw water quality issues, the filters were having issues and triggering a constant backwash sequence. There was a need to change the 0.4 NTU limit (internal critical limit) used by the WFP to 0.5 NTU and have a potential scenario where it would be >0.5 NTU for >15mins. SUEZ informed Sydney Water which gained approval from NSW Health for this change. It was mentioned that the greater than 0.5 NTU was only for a short interval (<15 mins) to bring the filters back online successfully.
- There was a rip in the cover the CWT#1 over the audit period. This was caused by a large storm and stormwater building up on the roof of the tank. At the time, the water level was low in the tank and therefore there was nothing underneath to support the load and the cover ripped and there was also some structural damage.
- There is a project to replace the covers of both CWTs and fix the supporting structure. The process will improve the drainage so this issue will not reoccur.
- While the cover was damaged and also during the works the CWTs will be bypassed. The calculation for CCP 3 will be revised in SCADA, due to the changed detention time. *C.t* can still be met, but the plant flow rate will be reduced to 1,800 L/s.

## B.5 St Marys Water Resource Recovery Facility

### B.5.1 Facility description

The St Marys Water Resource Recovery Facility (WRRF) provides tertiary treatment of wastewater, including additional phosphorus removal and disinfection. It discharges 39.2 ML (nominal) of recycled water per day, which is used internally, for irrigation at the Dunheved Golf Course, or transferred to the St Marys Advanced Water Treatment Plant for further treatment. Some flows discharged to an adjacent unnamed tributary of South Creek.

The treatment train for the recycled water product consists of:

- Primary treatment (screening/grit removal);
- Secondary treatment (BNR<sup>557</sup> and clarification);
- Tertiary treatment (coagulation-flocculation, clarification, tertiary dual media filtration); and
- Disinfection (chlorine).

Appurtenant facilities include odour control; chemical storage; wet weather bypass of the tertiary treatment processes with disinfection; and sludge (biosolids) management.

### B.5.2 Inspection overview

The site inspection comprised a ‘walk through’ of the tertiary components of the treatment plant, generally following the process flow. This was followed by a review of site records and the critical control point settings in the SCADA system.

Significant construction activity was in hand in respect of the primary/secondary components of the plant (under the Quakers Hill and St Marys WRP Treatment Process and Reliability Renewal (PARR) project); apart from time constraints, this contributed to the inspection being constrained to the tertiary components.

### B.5.3 Asset management

Observations made from an asset management perspective included the following:

- The central baffle in one of the tertiary clarifiers was partially submerged. This may be indicative of a compromised structure; it may also be resulting in short-circuiting of flow within the clarifier which may in turn compromise the effectiveness of the treatment process.
- Sydney Water advised that some of the tertiary filters had recently been refurbished under the MPM (major periodic maintenance) program. Such replacement had been informed by a condition assessment.
- Significant plant/weed growth was observed in the open topped chlorine contact tank (channel). This growth, which may be impacting the effectiveness of the chlorination process, is considered reflective of inadequate maintenance.

These issues are further discussed in **sections 2.4.2.2** (from an asset management perspective) and **2.3.2.2** (from a water quality perspective).

Inspected assets otherwise appeared to be in reasonable condition. Details of some instruments and equipment were noted for subsequent review within the Maximo asset management system,

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<sup>557</sup> Biological Nutrient Removal.

and a sample of instrument readings associated with the chlorine contact tank were recorded for check against SCADA, both of which are further discussed in **section 2.4.2.2**.

The site inspection was followed by a discussion of maintenance management and delivery arrangements, which are also further discussed in **section 2.4.2.2**.

#### B.5.4 Water quality

The St Mary's WRRF was inspected, and the following observations were made:

- In the secondary treatment a ferrous coagulant is dosed and in the tertiary treatment alum is used.
- The tertiary filters are backwashed at a fixed time of day.
- There is a hydraulic bypass of the clarifiers and filters to stop them washing out. When either of the bypasses operate the recycled water pumps are interlocked.
- Alum dosing is not flow paced. Jar tests can be done if it is considered the chemical dosing needs to be adjusted.
- Sludge blankets in the clarifier are measured and the amount of sludge removed is adjusted accordingly.
- Daily lab sheets were viewed onsite. Results are entered into the Hub draft meeting minutes for the upcoming meeting for discussion. They are also entered into the SCADA Central.
- The turbidity meter for the tertiary filters is in the centre of the CCT. It was considered that this was adequate to manage the filtration process. It was noted that this would be moved following recommendation 2022-07 from last year's Operating Licence audit at the Richmond WRRF.
- A new free chlorine instrument had been installed for CCP 2, but it had not been commissioned. This means that the CCP will be changed to free chlorine from total chlorine.
- On inspection of the site, the CCT was completely overgrown with vegetation. There were established trees in the channels. A shade cloth had been installed on the top and this has done little to limit the growth. There is currently an augmentation project underway and the CCT is being duplicated. Cleaning of the CCT has been delayed until this is complete, and it can be drained. However, that project was delayed, and it looks like the growth is several years old.
- The calibration logs onsite were reviewed, and it appeared that the records at the plant were either incomplete or calibration of some of the instruments were incomplete. Including the Laboratory Potable pH meter HACH/HQ40D.

## Appendix C List of Evidence

### C.1 Introduction

A list of the evidence sighted in undertaking the audit is presented in this Appendix.

Evidence includes:

- Evidence initially provided is as referenced in Sydney Water's response to the Audit Questionnaire (filename: #20041 - 2023 Sydney Water Audits - Questionnaire (Version 2.0) SW final.docx).
- Evidence provided in response to requests from auditors during the audit interviews and field verification visits.
- Evidence provided in response to specific requests for information.
- Evidence provided in response to the Summary of Audit Findings Report (Cobbitty Consulting/Viridis, 2023 Operational Audit of Sydney Water; Summary of Audit Findings Report (Version 2.0), 13 October 2023).

The evidence sighted is listed by document title and/or filename for each audited clause and previous recommendation in the following sections.

### C.2 Detailed Audit Findings

#### C.2.1 Economic approach to water conservation (clause 3.1)

Sub-clause 3.1.4:

- MS Excel workbook: 3034668.xlsx.
- MS Excel workbook: ELWC template v1.9 - FINAL DRAFT - WaterFix Res.xlsx.
- Sydney Water, *Determining Sydney Water's Economic Level of Water Conservation; Part A: The ELWC Methodology*, undated (file: *determining-sydney-water's-economic-level-of-water-conservation.pdf*).
- MS Excel workbook: 3034667.xlsx.
- Sydney Water, *Annual Water Conservation Report 2022-2023*, August 2023 (file: *Water Conservation Report 2022-23\_Preliminary Draft.pdf*).
- Sydney Water, *Monthly update and reporting of the value of water and economic level of water savings* (Version 1), 30 June 2023.
- Documents (internal email correspondence):  
*New request submitted\_ Monthly update of ELWC data on our website – 0076\_22-23.msg*,  
*New request submitted\_ Monthly update of ELWC - value of water – 0253\_22-23.msg*,  
*New request submitted\_ Value of Water - Monthly Website Data Update – 0306\_22-23.msg*,  
*New request submitted\_ Monthly update of ELWC - value of water – 0403\_22-23.msg*, and  
*New request submitted\_ Value of Water - Monthly Website Data Update – 0560\_22-23.msg*.
- Document: *OL RFI 03 Oct23\_Water Conservation.pdf*.

#### C.2.2 Drinking Water (clause 4.1)

Sub-clause 4.1.1:

- Drinking Water Management – Policy.
- Drinking Water Quality Management Plan.



- Compliance Accountability Register 2022.
- Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.
- External Stakeholder Engagement Map – Masterfile.
- Enterprise Government, Stakeholder & Community Engagement Plan 2023-25.
- Stakeholder Accountabilities Matrix.
- External Stakeholder Engagement Map – Masterfile.
- Annual Water Quality Risk Review Summary Report 2023 - Prospect North Delivery System.
- PWWP - Drinking Water Quality Joint Risk Assessment Workshop & Induction.
- Prospect WFP Process Flow Diagram; Process Flow Diagram - Orchard Hills WFP; Process Flow Diagram - Warragamba WFP.
- Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report; Prospect North Delivery System - Briefing Paper - Network Water Quality Risk Review 2023.
- Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.
- Creation of Process Flow Diagram - Work Instruction.
- Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.
- Water Quality Risk Management Plan - Prospect Water Filtration Plant.
- Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.
- Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.
- Prospect WFP - 2023 Water Quality Risk Assessment Workshop Report.
- North Richmond Risk Register 2023; Prospect North Risk Register 2023; C2C Risk Register.
- Water Quality Risk Assessment and CCPs – PWWP.
- Drinking Water Quality Management Plan.
- Water Quality Risk Assessment and CCPs – Prospect Water Filtration Plant, Prospect North Risk Register 2023, and C2C Risk Register.
- Risk Matrix.
- Sydney Water Drinking Water Quality Improvement Plan.
- Drinking Water Product Specification.
- Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes; Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.
- Email: Updated Drinking Water Product Specification.
- Process Monitoring & Chemical Regimes.
- Incident Response Options Table.
- Water Quantity & Quality Failure - Incident Notification.
- Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.
- Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.
- Water Quality Risk Management Plan - Prospect Water Filtration Plant.
- Process Monitoring & Chemical Regimes.

- Incident Response Options Table.
- Drinking Water Quality Event Management Plan – Procedure.
- Incident Management Contact List.
- Annual Drinking Water Quality Compliance Monitoring Plan 2022-23; Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.
- Determination of Chlorine Residuals in the Field - Test Method.
- WTW Instruments - Field Measurements of Dissolved Oxygen, pH, Conductivity and ORP Test Method.
- PWWP Goods Specification - Chemical Specification - Aqueous Ammonia.
- PWWP Goods Specification - Chemical Specification - Sodium Silicofluoride.
- PWWP Technicians' Manual - Chemical Procurement.
- Evaluation of Suppliers.
- Annual Drinking Water Quality Compliance Monitoring Plan 2022-23.
- Prospect North Delivery System - compliance sampling points 2022-23.
- Managing Water Quality Customer Complaints – Procedure.
- Drinking Water Quality Management Plan.
- Use of Limnos Actions Database - Integrated Management System.
- IMS Work Instruction for Creating and Managing LabWare Product Specification.
- Use of Limnos Actions Database - Integrated Management System.
- Water Quality Hazards & Incidents (SWIRL) 2022-23.
- Drinking Water Quality Event Management Plan – Procedure.
- Quarterly Drinking Water Quality Monitoring Report to NSW Health - Third Quarter 2022-23.
- Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.
- Controlled Documents – Procedure.
- Controlled Documents - Standard.
- IMS Steering Group Meeting Presentation.
- D0000454 - Preparing Annual DWMS and RWMS reports for IPART which supports the Annual Compliance Report.
- MP0017 v6 - Producing Quarterly Drinking Water Quality Monitoring Reports to NSW Health.
- MP0023 Ver 5 - Preparation of the Quarterly Drinking Water Quality Report (Sydney Water website).

Sub-clause 4.1.3:

- Drinking Water Management – Policy.
- SUEZ Drinking Water Quality Policy.
- Prospect WFP – Water Quality Risk Management Plan Awareness – Training Assessment (Chris Shi).
- Water Quality Awareness Drinking Water Quality Management. Drinking Water Quality Event Management Fluoride CoP.

- Sydney Water Legislative Update 19 June – 16 July 2023.
- Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.
- Joint Operational Group – Meeting Minutes.
- Sydney Water and Environment Protection Authority Strategic Liaison Group.
- Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.
- PWWP – Drinking Water Quality Joint Risk Assessment Workshop & Induction.
- Prospect Operational Protocol.
- Sydney Water and Water NSW Access Protocol.
- Prospect Water Filtration Plant Water Quality Risk Assessment Background Information Report.
- Prospect North Delivery System - Briefing Paper - Network Water Quality Risk Review 2023.
- Prospect WFP Process Flow Diagram.
- Annual Water Quality Risk Review Summary Report 2023 - Prospect North Delivery System.
- Annual Water Quality Risk Review Summary Report 2023 – North Richmond Delivery System.
- Operational Risk Register for Sydney Water Plants.
- Prospect WFP - 2023 Water Quality Risk Assessment Workshop Report.
- Backflow device register – Prospect.
- Template - You need to install a backflow containment device letter.
- Annual testing reminder for backflow containment device.
- You haven't tested your backflow device.
- Process Flow Diagram – Warragamba WFP.
- Process Flow Diagram – Orchard Hills WFP.
- Operations of Orchard Hills WFP Stage 1 Sedimentation Tank Work Procedure.
- Temporary Work Instructions – Actiflo Unit.
- Warragamba Actiflow (high rate Clarifier) Risk Assessment.
- AIS Reservoir Inspection – Rouse Hill WS0476.
- Safe Work Method Statement - Network Maintenance - Repair Replace Main/Pipe Fittings.
- Prevention of water quality contamination following water main breaks - Work Instruction.
- Water Quality Management During Operational Activities – Procedure.
- Managing WQ during Planned Isolation of Trunk Mains Certification - Raglan St, Waterloo.
- Managing WQ during Planned Isolation of Trunk Mains Certification - Victoria Rd, West Ryde.
- Civil Delivery Contractor Induction Training.
- Dirty trucks.
- Water Quality Register.
- Prospect WFP Upgrade Alternative Options Feasibility Assessment.
- Process Monitoring & Chemical Regimes.

- Process Flow Diagram – Orchard Hills WFP.
- Disinfection of reservoirs in drinking and recycled water networks.
- Monitoring Plan - Drinking Water Quality Operational Monitoring Plan 2022-2023.
- Triggers, Notifications and Actions for Adverse Water Quality Results – Procedure.
- Incident Response Options Table.
- Drinking Water Quality Event Management Plan – Procedure.
- Water Quantity & Quality Failure - Incident Notification.
- Calibration Records for PWFP CCP.
- Chemical Dosing Team - On-site Form for Calibration of ProMinent Dulcometer DIC - Total Cl<sub>2</sub> - Rouse Hill.
- 2022 Chlorine Colorimeter – calibration records.
- PWFP Technicians Manual - Incoming Chemical Inspection Sheet – 17 Feb 23.
- Delivery Dockets Rouse Hill WX0158\_1.
- Analysis of Calcium Hypochlorite Tablets.
- Approval of Klorman Calcium Hypo batch SW0059 and SW0060.
- Prospect North THM.
- Email: Water Quality Incident Record INC-41661 - E. coli detected at drinking water compliance site 55 Lords Ave in Asquith has been created.
- E. coli Investigation Report - 55 Lords Ave – Asquith.
- CRM 8002198345 4 Agnew Cl Kellyville.
- Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.
- Email: Automated email notification from AMD's Actions Database - 160058.46.
- Email: Automated email notification from AMD's Actions Database - 155624.849.
- E. coli Investigation Report - 19 Division St – Coogee.
- E. coli Investigation Report - 55 Lords Ave – Asquith.
- Water Quality Management Contacts.
- Incident Management Contact List.
- Strategic Liaison Group 29 March 2023 - Agenda Item 5.1 - Tripartite Exercise 2023 Update.
- Water Quality Hazards & Incidents (SWIRL) 2022-23.
- Incident Debrief & Investigation – Procedure.
- Incident Details – Prospect WFP Clear Water Tank No. 1 cover failure.
- Prospect Water Filtration CWT Cover Failure.
- Prospect WFP - Cover Support Structure Structural Assessment & Rehabilitation.
- Incident Management Procedure.
- Incident Debrief & Investigation – Procedure.
- Water Quality Hazards & Incidents (SWIRL) 2022-23.
- After-Action Review Sydney Water July 2022 Flood Event.
- CCRG New Arrivals Flyers.
- Water Literacy Tracker Wave 6 Report April-June 2023 Quantitative Findings.

- Research horizon priorities - Innovation Research & Deployment Plan.
- PWWP R&D 8th Triennium - Brief D - Preparing for emergency operations during a severely deteriorated raw water quality event.
- Adapting catchment monitoring and potable water treatment to climate change.
- Ballasted Sedimentation (Actiflo) and Direct Filtration Pilot Plant Trials at Orchard Hills WFP.
- Sydney Water Drinking Water Quality Improvement Plan.
- Temporary Work Instructions – Actiflo Unit.
- Ballasted Sedimentation (Actiflo) and Direct Filtration Pilot Plant Trials at Orchard Hills WFP.
- Annual Drinking Water Quality Compliance and Performance Report 2021 – 2022.
- Email: Annual DWQ and RWQ Compliance and Performance Reports - 2021-22.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - Fourth Quarter 2022-23.

### C.2.3 Recycled Water (clause 4.2)

#### Sub-clause 4.2.1:

- Compliance Accountability Register 2022.
- Environmental External Requirements Register.
- External Stakeholder Engagement Map – Masterfile.
- Sydney Water Legislative Update 19 June - 16 July 2023.
- External Stakeholder Engagement Map – Masterfile.
- Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.
- Dunheved Golf Club statutory declaration 2023.
- Recycled Water Management Policy.
- Recycled Water Quality Management Plan St Marys Recycled Water Scheme.
- Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme - June 2023.
- St Marys WRRF Recycled Water Risk Assessment.
- St Marys Recycled Water Risk Report - September 2023.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- Creation of Process Flow Diagram - Work Instruction.
- Recycled Water Risk Assessment Workshop SOP – Procedure.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.
- Risk Appetite Statements.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- St Marys WRRF Recycled Water Risk Assessment.
- Risk Appetite Statements.

- Memorandum of Understanding between Sydney Water and Crown in right of the State of New South Wales (represented by the NSW Fair Trading of the Department of Customer Service).
- Minutes and Actions: Memorandum of Understanding Renewal of MOU.
- Cross connection report - 37-41 Serpentine Ave, North Kellyville.
- Incident on Serpentine Ave North Kellyville - SWIRL Record.
- CRM Extract - 8002510614 12 Nightcap St North Kellyville.
- Email: Incident: Prospect North - Hills Suburbs - 0051-2023 - Plumbing anomaly identified on private potable service at a residential property located at 12 Nightcap Street in Kellyville.
- Technical Review for the cross connection at 14 Nightcap St North Kellyville - Backflow Prevention Team.
- Noggin Record: Plumbing anomaly identified on private potable service at a residential property located at 12-14 Nightcap Street in Kellyville.
- Managing Water Quality Customer Complaints – Procedure.
- Recycled Water Product Specifications.
- Recycled Water Quality Management Plan - St Marys.
- WTHQ5022 – Rapid and High Rate Filtration Generic Unit Process Guide.
- D0001305 St Marys WRRF Plant Operations Manual.
- D0001267 - St Marys WRRF Process Specification.
- D0001344 - Water Resource Recovery Common Laboratory Methods & Analysis Manual.
- D0001334.10 – Wianamatta Hub Sampling and Analysis.
- D0001267 - St Marys WRRF Process Specification.
- WTHQ5022 – Unit Process Guideline Rapid and High Rate Filtration.
- Recycled Water Quality Management Plan - St Marys.
- Recycled Water Quality Event Management Plan - Integrated Management System.
- Approved List of Chemicals in Sydney Water and Change Management Process – Procedure.
- D0001388 - Wastewater and Recycled Water Bulk Chemical Delivery.
- Recycled Water Product Specifications.
- Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.
- Recycled Water Treatment Detailed Verification Monitoring of Pathogen Reduction procedure.
- Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.
- Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.
- Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.
- Complaint Procedure.
- Managing Water Quality Customer Complaints.
- Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - Fourth Quarter 2022-23.

- Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.
- St. Marys Irrigation Scheme Monthly Report v2 - Operational Compliance Report: June 2023.
- Monitoring Plan - Recycled Water Quality: Compliance & Operational 2022 – 2023.
- Recycled Water Quality Event Management Plan.
- Water Quality Management Contacts.
- St Marys WRP Incident Response Manual.
- Incident Debrief & Investigation Procedure.
- Recycled Water Quality Management Plan.
- Controlled Documents – Procedure.
- Controlled Documents – Standard.
- 1MS Steering Group Meeting Presentation.
- External Stakeholder Engagement Map – Masterfile.
- Offboarding Checklist (Team Member).
- Preparing the Annual DWMS & RWMS Compliance Reports for IPART - Work instruction.
- Compliance Accountability Register 2022.
- Recycled Water Risk Assessment Workshop SOP – Procedure.
- Second Line of Assurance – Procedure.
- Drinking Water and recycled water audit programs 2021 – 2024.
- Recycled Water Audit Scoring Tool 2023-26.
- Management Review Procedure.

Sub-clause 4.2.3:

- Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.
- Sydney Water and Environment Protection Authority Strategic Liaison Group.
- External Stakeholder Engagement Map - Masterfile May 2022.
- Compliance Accountability Register 2022.
- Sydney Water Legislative Update 19 June - 16 July 2023.
- External Stakeholder Engagement Map - Masterfile May 2022.
- Controlled Documents – Standard.
- Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.
- Sydney Water and Environment Protection Authority Strategic Liaison Group.
- Minutes and Actions: Memorandum of Understanding Renewal of MOU.
- External Stakeholder Engagement Map - Masterfile May 2022.
- Recycled Water Supply Agreement - Irrigation - Sydney Water Corporation and Dunheved Golf Club Ltd.
- Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.
- Dunheved Golf Club statutory declaration 2023.
- Recycled Water Management Policy.
- Learning and Development - Mandatory Training.



- Recycled Water Quality Management Plan - St Marys.
- St Marys Recycled Water Risk Report - September 2023.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- Recycled Water Risk Assessment Workshop SOP – Procedure.
- Recycled Water Management System Update - JOG 14 November 2022.
- Recycled Water Management System Update - Item 7.3 JOG 15 May 2023.
- Recycled Water Quality Management Plan - St Marys.
- Recycled Water Risk Assessment Workshop SOP – Procedure.
- Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme - June 2023.
- St Marys Recycled Water Risk Report - September 2023.
- Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.
- Dunheved Golf Club backflow testing compliance status.
- Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.
- Dunheved Golf Club statutory declaration 2023.
- Trade Waste Agreement Routine Inspection Report Results id 14042023.
- Recycled Water Product Specifications.
- Wianamatta Hub Check-in - 3/08/2022.
- Wianamatta Hub Check-in - 15/08/2022.
- St Marys - Plant Diary - 11 & 12/08/2023.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.
- WQ0008.01 - St Marys Recycled Water Briefing Paper.
- St Marys\_LRV\_raw\_data Log values 2023 Final.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 - First Quarter 2022-23.
- Irrigation Water Quarterly report Dunheved Golf Course Supply Scheme Fourth Quarter.
- Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.
- Training Record Business Customer Consultant Complaints Handling.
- Recycled water customer meeting form - Dunheved Golf Club - 30 June 2023.
- CRM Extract - 8002510614 12 Nightcap St North Kellyville.
- Drinking Water Quality - Callout Report OCR4NM-AM134771 - Kellyville North.
- Managing Water Quality Customer Complaints – Procedure.
- Email: Incident: Prospect North - Hills Suburbs - 0051-2023 - Plumbing anomaly identified on private potable service at a residential property located at 12 Nightcap Street in Kellyville.
- Water Quality Management Report: August 2023.
- Corporate Performance Report - June 2023 - EOFY Close Out Report - Q4 Quarterly Business Review.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.
- Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.

- Water Quality Management Report: August 2023.
- St. Marys Irrigation Scheme Monthly Report v2 - Operational Compliance Report: June 2023.
- JOG Meeting Minutes 15 Aug 22.
- Wianamatta Hub Check-in 3/8/2022 & 15/8/2022.
- Drinking Water Quality - Callout Report OCR4NM-AM134771 - Kellyville North.
- Incident on Serpentine Ave North Kellyville - SWIRL Record.
- Memorandum of Understanding between the NSW Ministry of Health and Sydney Water Corporation.
- Quarterly Recycled Water Quality Monitoring Report for NSW Health 2022-23 – First, Second, Third & Fourth Quarters 2022-23.
- Annual Recycled Water Quality Compliance and Performance Report - 2021 – 2022.
- Irrigation Water Quarterly report - Dunheved Golf Course Supply Scheme - Fourth Quarter 2022-23.
- <https://www.sydneywater.com.au/content/dam/sydneywater/epa-documents/epa-yearly-summaries/rouse-hill-wwtp-2022-23-year-summary-epa-report.pdf>.
- Annual Recycled Water Quality Compliance and Performance Report - 2021 – 2022.
- Email: Transmittal to IPART - Sydney Water Operating Licence Compliance & Performance Reports 2021-22 (1 September reports).
- Risk Assessment Briefing Paper - Bombo Recycled Water Irrigation Scheme - June 2023.
- Risk Assessment Briefing Paper - St Marys Recycled Water Irrigation Scheme.
- Assurance Summary - Gerringong Gerroa Sewerage Scheme.
- Assurance Summary - Blue Mountains Hub - Penrith Recycled Water.
- Assurance Summary - West Camden Hub.
- Email: Gerringong Gerroa Sewerage Scheme Audit Actions Table.
- Minutes and actions - PAMF (Water) - August 2023.
- Joint Operational Group - Monday, 13 February 2023 - Meeting Minutes.
- Joint Operational Group - Wednesday, 15 May 2023 - Meeting Minutes.
- Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.
- Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes.
- 1MS Steering Group Meeting - Annual Management Review 2022.
- Sydney Water Recycled Water Quality Improvement Plan.
- Joint Operational Group - Monday, 13 February 2023 - Meeting Minutes.
- Joint Operational Group - Wednesday, 15 May 2023 - Meeting Minutes.
- Joint Operational Group - Monday, 15 August 2022 - Meeting Minutes.
- Joint Operational Group - Monday, 14 November 2022 - Meeting Minutes..

## C.2.4 Water Pressure Standard (clause 5.2)

### Sub-clause 5.2.5:

- Document: *2023 Water Pressure Audit presentation.pdf* (PowerPoint presentation: *Water Pressure; 2023 Operating Licence; Clause 5.2.5*).
- Sydney Water, *Low Pressure Investigation; Options Summary; Project No. 20038630*, 20 October 2022 (file: *20038630 Low Pressure Properties Options Summary V3.1\_Final\_Signed.pdf*).
- MS Excel workbook: *Low water pressure areas - costs and WTP - updated Oct 2022.xlsx*.

## C.2.5 Asset management (clause 5.5)

### General:

- Document: *2023 Asset Management Presentation.pdf* (PowerPoint presentation: *Asset Management; 2023 Operating Licence Audit*).

### Sub-clause 5.5.1:

- Sydney Water, *Strategic Asset Management Plan*, April 2023 (file: *D0000876\_Strategic Asset Mgmt. Plan.pdf*).
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (file: *D0000876\_Strategic Asset Mgmt. Plan.pdf*).
- BSI, *Assessment Report; Sydney Water Corporation*, 27 February 2023 to 15 March 2023 (file: *2303 Sydney Water QA Cav ES RES Assessment Report V1 (1).pdf*).

### Sub-clause 5.5.2:

- Sydney Water, *Policy; Asset Management Policy*, February 2023 (file: *AMQ0033\_Asset Management Policy.pdf*).
- Sydney Water, *Strategic Asset Management Plan* (Version 6), March 2023 (file: *D0000876\_Strategic Asset Mgmt. Plan.pdf*).
- Sydney Water, *Asset Class Plan; Wastewater Treatment Plants (WWTP)* (Version 1), 1 July 2022 (file: *D0002159\_Wastewater Treatment Plant ACP 2022.pdf*).
- Sydney Water, *Asset Class Plan; Reservoirs* (Version 6), 2 September 2022 (file: *AMQ0120 Reservoir Asset Class Plan.pdf*).
- Sydney Water, *Water Filtration Plant Asset Master Plan* (Version 5), 2019 (file: *AMQ0123 WFP Master Plan.pdf*).
- Sydney Water, *Asset Class Plan; Water Filtration Plants* (under development) (file: *ACP WFP.docx*).
- SUEZ, *Asset and Energy Management Policy* (Version 1), 1 March 2022 (file: *SZ-PO-006 SUEZ ANZ Asset Management Policy.pdf*).
- SUEZ, *Strategic Asset Management Plan; Prospect Water Filtration Plant O&M* (Version 3), 2 August 2022 (file: *AM-P-001 PWFPP SAMP. V3.pdf*).
- Document: *Helix extract - Approve Project Investments - Process Overview.png*.
- Sydney Water, *Business Case Guideline* (Version 3), 1 July 2023 (file: *2936429 Business Case Guideline.docx*).
- Document: *D0000732 Planning Decision Framework.docx*.
- Sydney Water, *Engineering Competency Standard* (Version 4), 19 February 2021 (file: *D0000833 Engineering Competency Standard.docx*).

- Document: *Quakers Hill and St Marys PARR DABC and PS\_22 September 2017.pdf*.
- Document: *20031056 - 20031057 - Quakers Hill- St Marys PARR VBC for Kevin J sign off.pdf*.
- Document: *20031056 - 20031057 - Reference - Quakers Hill- St Marys PARR VBC\_Ver 4.0.pdf*.
- Document: *Weekly Interface Meeting Agenda - St Marys 16 Jan 23.docx*.
- Document: *2023 Jan - 110A-PROMGT-Y-MRP-0001-0120\_A – Program.pdf*.
- Document: *Report Action\_RA09672.pdf*.
- Document: *St Marys and Quakers Hill projects.pdf*.
- Document: *QMP-P-100A PWF Process Flow Diagram. Issue 3.pdf*.
- Document: *2924442 - St Marys WRRF PFD.pdf*.
- Document: *AIS Reservoir Inspection Password-17215190.pdf*.
- Sydney Water, *Policy; Asset Maintenance Policy* (Version 2), 21 November 2018 (file: *AMQ0002 - Asset Maintenance Policy.docx*).
- Sydney Water, *Standard; Maintenance Strategy* (Version 3), December 2022 (file: *D0000654 Maintenance Strategy.docx*).
- Sydney Water, *Standard; Maintenance Management Framework* (Version 1), 19 February 2021 (file: *D0001854 Maintenance Management Framework.pdf*).
- Sydney Water, *Standard; Condition Assessment Standard* (Version 1), February 2022 (file: *D0002014 Condition Assessment Standard.docx*).
- Sydney Water, *IMS – Production Major Periodic Maintenance (MPM) Procedure* (Version 2), 26 May 2021 (file: *D0001843 Production Major Periodic Maintenance (MPM) Procedure.docx*).
- Sydney Water, *Procedure for Production’s treatment plant facilities: 5 Year Investment Plan (5YIP) Review* (Version 3), 2 November 2018 (file: *D0000365-Procedure-5YIP Review.docx*).
- MS Excel workbooks: *Major Maintenance Schedule 2022 - V2.xlsx* and *Major Maintenance Schedule 2023\_Rev 5.xlsx*.
- Document: *JAM Minutes 29 06 2023.pdf*.
- Document: *St Marys Monthly Maintenance Meeting minutes July 2023.pdf*.
- Document: *St Marys - Site Checksheet 2.pdf*.
- Document: *St Marys - Site Checksheet 1.pdf*.
- MS Excel workbook: *ST0011 - BM\_CM\_PM Completed Workorder List 22\_23.xlsx*.
- Sydney Water, *Policy; Asset Maintenance Policy* (Version 2), 21 November 2018 (file: *AMQ0002 - Asset Maintenance Policy.docx*).
- Sydney Water, *Facility Assets Renewal, Reliability & Business Efficiency Decision Framework* (Version 5), undated (file: *AMQ0116 Facility Assets Renewal Reliability and Business Efficiency Decision Framework.docx*).
- Sydney Water, *Standard; Consequence of Failure* (Version 7), 30 August 2021 (file: *DOC0297 Consequence of Failure Standard.docx*).
- MS Excel workbook: *DOC0328 Mechanical and Electrical Like for Like filed based decision framework.xlsx*.
- MS Excel workbook: *Asset Replacements and Upgrades 2019 to 2023.xlsx*.
- Document: *CT1689-ST11 Renew Bio 3 Air header- SIGN OFF.pdf*.
- Document: *CT1648 ST11 Inlet Works Rel. Impr. SCREENS -V4 -Seed Form-APPROVED.pdf*.

- PowerPoint presentation: *Sydney Water Asset Management System (AMS); Awareness training* (file: *AMS - Training module\_Incl maintenance.pptx*).
- Document: *D0000859 Competency training process for WT16 Authorised Maintenance Providers.docx*.
- Document: *Darryl Foster GB #00659.pdf*.
- Document: *KT Presentation August 2023 SR SP Final.pdf* (PowerPoint presentation: *Warriewood clarifier #5 wheel failure' August 2023*).
- PowerPoint presentation: *1MS Steering Group Meeting; Annual Management Review; 7 December 2022* (file: *2022 12 1MS Steering Committee\_Slide pack incl Annual Management Review.pptx*).
- Document: *2022 12 1MS Steering Committee\_Minutes.docx*.
- Document: *A0001007 - 2022 Internal Audit - 2LoA - NW Hub - AMS, WHSMS and QMS.docx*.
- Document: *Service Excellence Roadmap-Year 2.jpg*.
- Document: *Service Excellence Links to ISO55K as at June 22.pdf*.
- Sydney Water, Asset Service Excellence; Progress Report on Deliverables, September 2023 (file: *Final Report - Service Excellence IPART Response.pdf*).
- Document: *FORMSITE question update\_Sep 23.pdf*.
- Sydney Water, Process; *Level 0 Reservoir Inspection Process* (Version 1), 31 October 2023 (file: *L0 Reservoir Inspection Process Final.pdf*).
- Document: *Res Inspection Process\_Sep 23.pdf*.
- Document: *MAXIMO Work Order 89640098.pdf*.
- Document: *Safe Work Method Statement (SWMS) - number 11.pdf*.
- MS Excel workbook: *SW Course Completions v2 - TBowden and DPettit.xlsx*.
- SUEZ, *Prospect Water Filtration Plant; Monthly Performance Report* (for February 2023), 15 March 2023 (file: *PWFP-03-03-SWC Monthly Report Feb 2023*).
- Document: *Audit 2023 AMS Additional Information.docx*.
- Document: *Tertiary Clarifier #3 - Baffle Tilt First detection email.pdf*.
- Document: *St Marys Key Assets Out Of Service timeline.pdf*.
- Document: *Tertiary Clarifier TIBCO Information.pdf*.
- Document: *Tertiary Clarifiers #3 Maximo BM & CM.pdf*.
- Document: *ST Marys Monitoring Data 20-Jul & 27-Jul-2020.pdf*.
- Document: *St. Marys General Check Sheet 20Feb22 (1).pdf*.
- Document: *ST Marys 1x Lab Checksheet (Mon, Wed, Fri) May 23.pdf*.
- Document: *Tertiary Clarifiers #3 Preventative Maintenance.pdf*.
- Sydney Water, *St Marys WRP Filter Assessment – Initial Report*, undated (file: *St Marys WRP Filter Assessment Report.docx*).
- Document: *Audit 2023 AMS Additional Information.docx*.
- Document: *Bundle Filters West DABC Approved.pdf*.
- Document: *Email - Cronulla Filters Priority for EPA Action.pdf*.
- Document: *20035875 ST11 St. Marys Change Request Form.pdf*.
- Document: *St Marys WRP Filter Assessment Report 2020 Final.pdf*.



- Sydney Water, *IMS – Production Major Periodic Maintenance (MPM) Procedure* (Version 2), 26 May 2021 (file: *D0001843 Production Major Periodic Maintenance (MPM) Procedure.docx*).
- Document: *Audit 2023 AMS Additional Information.docx*.
- Document: *CT1420 ST11 Renew Shade Cloths – TIBCO.pdf*.
- Document: *CT1420 ST11 Renew Shade Cloths - Seed Fund Approved.pdf*.
- Documents: *CT1420 ST11 Renew Shade Cloths DABC.pdf* and *CT1420 - ST11 - Renew Shade Cloths DABC - Approved LB.pdf*.
- Documents: *110A-PROMGT-Y-MRP-0001-0092\_A\_MR\_Jul21.pdf*, *110A-PROMGT-Y-MRP-0001-0092\_A\_MR\_Jun22.pdf* and *110A-PROMGT-Y-MRP-0001-0132\_A\_MR\_Jul23.pdf*.
- Documents: *110A-PROMGT-Y-MIN-0001-0616\_A\_WM\_230921.pdf* and *110A-PROMGT-Y-MIN-0001-0680\_A\_WM\_020323.pdf*.
- MS Excel workbook: *110A-PROMGT-Y-MIN-0001-0680\_A\_WM\_020323.xlsx*.
- Document: *WQ0008.01 - St Marys Recycled Water Briefing Paper.docx*.

## C.2.6 Memoranda of Understanding with WAMC, NSW Health and EPA (clause 7.1)

### Sub-clause 7.1.1:

- “Reports and publications” webpage on the Sydney Water website at: <https://www.sydneywater.com.au/about-us/our-publications/reports-publications.html> (Select “Memorandums of Understanding”).
- Sydney Water/WAMC, *Memorandum of Understanding: Between Sydney Water Corporation and the Water Administration Ministerial Corporation*, 1 June 2011.
- Sydney Water/NSW Health, *Memorandum of Understanding between the NSW Ministry of Health and Sydney Water Corporation*, 2 August 2021.
- Sydney Water/NSW EPA, *Memorandum of Understanding between Sydney Water Corporation and The Environment Protection Authority*, 10 June 2015.
- SLG and JOG meeting agenda and minutes for meetings held during 2019/20, 2020/21, 2021/22 and 2022/23 (46 documents in total, not all specifically referenced for the purposes of this report/observation).
- Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 12 June 2020 (file: *200612 EPA SWC SLG Meeting minutes\_FINAL.pdf*).
- Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 11 September 2020 (file: *200911 EPA SWC SLG meeting minutes\_FINAL.pdf*).
- Sydney Water/EPA, *Strategic Liaison Group; Final Minutes* of meeting held on 2 September 2021 (file: *210902\_EPA SWC SLG Meeting Minutes\_FINAL.pdf*).
- Sydney Water/EPA, *Strategic Liaison Group; Minutes* of meeting held on 21 September 2022 (file: *220921 EPA SWC SLG Meeting Minutes\_FINAL.pdf*).
- Sydney Water/EPA, *Strategic Liaison Group; Minutes* of meeting held on 5 April 2023 (file: *230504 EPA SWC JOG Meeting Minutes\_FINAL.pdf*).

## C.2.7 Memoranda of Understanding with FRNSW (clause 7.2)

### General:

- Document: *2023 Audit\_Fire and Rescue NSW MOU.pdf* (PowerPoint presentation: *Fire and Rescue NSW MOU; 2023 Sydney Water Operating Licence Review – Clause 7.2*).

Sub-clause 7.2.1:

- “Reports and publications” webpage on the Sydney Water website at: <https://www.sydneywater.com.au/about-us/our-publications/reports-publications.html> (Select “Memorandums of Understanding”).
- Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015).

Sub-clause 7.2.2:

- Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015).
- Document: *Minutes SLG\_Working group\_17 Nov 22.pdf*.
- Document: *Meeting Notes Internal\_Working group\_23 Aug 22.pdf*.
- Document: *Meeting Notes Internal\_Working group\_21 Sep 22.pdf*.
- Document: *Meeting Notes Internal Working Group 25 July 23.docx*.
- Sydney Water, *Sydney Water external site sharing disclaimer*, signed 17/22 October 2018 (file: *Share Point - Sydney Water External Site Sharing Disclaimer.pdf*).
- Email dated 22 August 2023 from Sydney Water to FRNSW (re: *Sydney Water Fire Hydrant Work Orders 2023-08-22*) (file: *EMAIL - SWC Fire Hydrant Work Orders 2023-08-22 – 280823.pdf*).
- MS Excel workbook: *EXCEL - SydneyWaterHydrant\_Weekly\_Work\_Order\_20230822.xlsx*.
- Document: *IPART FRNSW Audit Additional Question - 18Sep23.pdf*.
- Email dated 14 November 2022 from Sydney Water to FRNSW (re: *Fire Hydrants Download*) (file: *E mail\_From SWC to FRNSW\_Fire Hydrants Download\_141122.pdf*).
- Email dated 21 November 2022 from Sydney Water to FRNSW and response dated 12 December 2022 (re: *FRNSW - LGA and/or Address/Suburb Priorities for Water Network Model Updates*) (file: *EMAIL - FW RE [EXTERNAL] RE FRNSW - LGA and\_or Address\_Suburb Priorities for Water Network Model Updates – 121222.pdf*).
- MS Excel workbook: *EXCEL - LGA Details for FFWG Priorities Feedback.xlsx*.
- Document: *Audit FRNSW Add.docx* (additional information provided in response to the *Summary of Audit Findings Report*).
- Sydney Water, *Scoping Water Model Builds*, December 2022 (file: *Scoping Water Model Builds - Rev C – 2022.pdf*).
- Document: *Water Model Rebuild - Rebuild 2023 - Seed Funding Form – 290823.docx*.
- Document: *1 Water Network Model Rebuild (BAU) - 2023\_24.pdf*.
- Letter (reference: FRN14/2786-001) dated 16 August 2023 from FRNSW to IPART (re: *FRNSW comments on Sydney Water’s Performance against its operating licence*).
- Email dated 28 August 2023 from Sydney Water to FRNSW (re: *FRNSW - WSA 03 Consultation*) (file: *EMAIL2 - FW [FRNSW MOU 2023July25 - 5] RE FRNSW - WSA03 Consultation 280823.pdf*) and attachments: *WSA 03 Water Code - 8.8 Hydrants.pdf* and *WSA 03 Water Code - Appendix H - Hydrant Spacings.pdf*.
- Document: *EMAIL1 - Automation of Data Transfer - FRNSW IT Rep - 4May23.pdf*.
- Document: *Meeting Notes Internal - SWCIT & FRNSW IT\_ API Meeting\_100823.docx*.



- Email dated 17 August 2023 from FRNSW to Sydney Water and response dated 18 August 2023 (re: *Hydrant App*) (file: *EMAIL 2 - [FRNSW MOU REF 2023]July15 - 2] RE [External] Hydrant App – 180823.pdf*).
- Document: *JIRA - [WRS-7480] - Sharing Hydrant WO information & Asset Information with FireNSW.pdf*.

Sub-clause 7.2.4:

- Sydney Water/FRNSW, *Memorandum of Understanding between Sydney Water Corporation and Fire and Rescue NSW*, October 2015 (signed 1 December 2015).

## C.2.8 Negotiations with WIC Act licensees and Potential Competitors (clause 8.1)

Sub-clause 8.1.1:

- Sydney Water, *Report on the provision of information and services to WIC Act licensees and potential competitors*, undated (file: *Report on information and provision of services to WIC Act licensees and potential competitors 2022-23\_FINAL.docx*).
- Internal email dated 9 August 2023 (re: *Operating Licence Audit evidence - negotiations with WIC Licensees or Potential Competitors*). This email compiles and summarises responses from relevant Sydney Water personnel as provided in the following:
  - *Email - Anna Forni acting Head of Innovati & Product Dev related negs – 090823.msg*;
  - *Email - Dan Cooper Head of Innovati & Product Dev related negs – 020823.msg*;
  - *Email - Duncan Laurie Planning and tech manager no requests – 280723.msg*;
  - *Email - Jenny Graham Commercial Manager related negs – 030823.msg*;
  - *Email - Nav Tharathon Major Projects Director no requests 020823.msg*;
  - *Email - Wayne Jackson Mgr Grwth Plan & Comm Framenwks no requests – 310723.msg*; and
  - Document: *Teams chat - Roopen Nichba WICA request for information – 020823.docx*.

## C.2.9 Publications of Servicing Information (clause 8.2)

Sub-clause 8.2.5:

- “Growth servicing and system capacity” webpage on the Sydney Water website at: <https://www.sydneywater.com.au/plumbing-building-developing/developing/growth-servicing-plan/growth-servicing-system-capacity.html>.
- Sydney Water, *Potts Hill Water Delivery Network Capacity Report*, 30 June 2023.
- Sydney Water, *North Head Wastewater Network Capacity Report*, 30 June 2023.
- Sydney Water, *Growth Servicing Plan 2022-2027*, undated (available at: <https://www.sydneywater.com.au/plumbing-building-developing/developing/growth-servicing-plan.html>).
- Sydney Water, *Water System Growth Servicing Strategy; Potts Hill Transfer System* (Revision 4), 26 February 2014 (file: *Potts Hill delivery GSS final with signatures.pdf*).
- Sydney Water, *Growth Servicing Investment Plan 2018; Botany Gravity Water Supply Zone* (Version 1), 31 October 2018 (file: *GSIP 2018 - Potts Hill - Botany Gravity Water Network.pdf*).
- Sydney Water, *Sydenham to Bankstown Growth Servicing Options Assessment; Options Report Summary* (Water, Wastewater and Stormwater) (Version 1), 15 May 2023 (file: *S2B Options Study Report.pdf*).
- MS Excel workbook: *Reservoir Capacity Summary Table 2023.xlsx*.
- MS Excel workbook: *GSIP CAPEX Summary Tables 2021-22 - Potts Hill.xlsx*.
- Document: *2023 OL Audit - additional response - Publications of Servicing Information.pdf*.

## C.3 Recommendations

### C.3.1 Economic approach to water conservation (clause 3.1)

#### Recommendation 2022-01:

- Sydney Water, *Monthly update and reporting of the value of water and economic level of water savings* (Version 1), 30 June 2023.

### C.3.2 Drinking Water (clause 4.1)

#### Recommendation 2022-02:

- Operational Risk Assessment Workshop SOP for Drinking Water – Procedure.
- North Richmond Risk Register 2023.

#### Recommendation 2022-03:

- nil.

#### Recommendation 2022-04:

- CMWI 017 Assessing Job Priorities and Priority Changes.
- Email: OL action update 30/06/2023.

### C.3.3 Recycled Water (clause 4.2)

#### Recommendation 2020-13:

- Drinking Water and recycled water audit programs 2021 – 2024.
- Recycled Water Audit Scoring Tool 2023-26.
- Joint Operational Group - Wednesday, 12 May 2021 - Meeting Minutes.
- Assurance Summary - Gerringong Gerroa Sewerage Scheme.
- Assurance Summary - Blue Mountains Hub - Penrith Recycled Water.
- Assurance Summary - West Camden Hub.

#### Recommendation 2021-09:

- Creation of Process Flow Diagram - Work Instruction.
- EPL 1729 St Marys WRRF - Process Flow Diagram.
- EPL 1726 Richmond WRRF - Process Flow Diagram.

#### Recommendation 2022-05:

- EPL 1729 St Marys WRRF - Process Flow Diagram.

#### Recommendation 2022-06:

- Recycled Water Risk Assessment Workshop SOP – Procedure.
- Recycled Water Quality Risk and Hazard Library for Sydney Water Corporation.
- Richmond WRRF Recycled Water Risk Assessment.

#### Recommendation 2022-07:

- Ropes Crossing feeder plant monitoring 2023 - Part 1 – Overview.
- Ropes Crossing - Agenda: Monitoring & claiming LRVs - 4 May 2023.
- Email: Draft approach to developing the log reduction monitoring for the recycling plants associated with Ropes Crossing.

Recommendation 2022-08:

- Recycled Water Treatment Detailed Verification Monitoring of Pathogen Reduction – Procedure.
- Laboratory Services product monitoring request form - Penrith WRRF LRV monitoring 2023-2024.

Recommendation 2022-12:

- Recycled Water Product Specifications.

### C.3.4 Asset management (clause 5.5)

Recommendation 2021-14:

- Sydney Water, *Operational Risk Management Plan; Sydney Water Customer Delivery* (Version 1), 29 October 2023 (file: *SW Operational Risk Management Plan\_Final\_291023*).
- Sydney Water, *Operational Risk; Process overhaul*, June 2023 (file: *Operational Risk Process Redesign Overview.pptx*).
- Sydney Water, *IP-IMO Risk Management Plan – Delivery Handbook* (Version B/Final), 13 May 2022 (file: *ILAP-IP-IMO-PLN-008-011-B Risk Management Plan.pdf*).
- MS Excel workbook: *RA Operation in CWT By-pass mode\_Oct-Nov.22. Rev 4\_HW.xlsx*.

Recommendation 2022-09:

- Sydney Water, *Specification; Maintenance Specification* (Version 3), 18 August 2023 (file: *D0001441 - Specification Maintenance.docx*).
- Document: *FORMSITE question update\_Sep 23.pdf*.
- Sydney Water, *Process; Level 0 Reservoir Inspection Process* (Version 1), 31 October 2023 (file: *L0 Reservoir Inspection Process Final.pdf*).
- Document: *Res Inspection Process\_Sep 23.pdf*.
- Document: *AISReservoirInspectionPassword-16272306.pdf*.
- Document: *AISReservoirInspectionPassword-17215006.pdf*.
- Document: *Maximo Work order 78924078.pdf* (raised 14 January 2020; closed 26 June 2020).
- Document: *Maximo Work order 79153382.pdf* (raised 28 February 2020; closed 3 November 2020).
- Document: *WS0476\_Roof\_03.11.22.pdf*.
- Document: *E\_Inspector informed of way forward.pdf*.
- Document: *2022\_23 Reservoir Paint Contractor\_Works Tracking\_Jun 23.pdf*.
- Document: *2023\_24 Reservoir Paint Contractor\_Works Tracking.pdf*.
- Document: *Rouse Hill Reservoir WS0476 - Roof Repairs - RMP Scope of Works - 2023.08.11.pdf*.
- Document: *Maximo Work order 89485362.pdf*.
- Document: *CQ28622-108-2023 - Rouse Hill Reservoir WS0476 - Roof Repairs - 2023.08.11.pdf*.
- Document: *Rouse Hill Reservoir WS0476 - Roof Repairs - Inspection - 2023.09.06.pdf*.
- Document: *RE Rouse Hill WS0476 - Roof Repairs.pdf*.

Recommendation 2022-10:

- MS Excel workbooks: *P-North Area MPM Forward Plan 2023-24.xlsx*; *P-South Area MPM Forward Plan 2023-24.xlsx* and *P-West Area MPM Forward Plan 2023-24.xlsx*.
- Sydney Water, *Job Plan; Major Periodic Maintenance* – completed form for CA - ST11 Blowers ST0011BLR6248 MPM (Work Order: ST0011BLR6248 – 86468852), approved 28 November 2022 (file: *20037907 CA Job Plan ST0011BLR6248.pdf*).
- IPA Australia, *Condition Assessment Report; KKK SFOG 7.1 Blower 6248 Condition Assessment*, 17 January 2023 (file: *IPStJob5073Report - 6248AerationBlowerConditionAssessment.pdf*).
- Document: *ST0011BLR6248-MPMApprovalFormFY22-23.pdf* (completed MPM Approval /Deferral Form in respect of Blowers at St Marys WRP).
- Document: *MPM Process Evidence.pdf* (PowerPoint presentation: MPM Process Evidence; 2023 Operating Licence Audit).
- Documents: *ST0046PMP5200 - CA Job Plan Bundle.pdf* (Condition Assessment Job Plan); *ST0009SCN3452 - CA Report.pdf* (Condition Assessment Report); and *ST0009SCN3452 - MPM Deferral Form.pdf* (MPM Deferral approved).
- Documents: *ST0009SCN3452 - CA Job Plan Bundle.pdf* (Condition Assessment Job Plan); *ST0046PMP5200 - Condition assessment report.pdf* (Condition Assessment Report); *ST0046PMP5200 - Condition assessment report.pdf* (MPM Approval to proceed); *ST0046PMP5200 - MPM Job Plan.pdf* (MPM Job Plan); and *ST0046PMP5200 - MPM Closeout Report.pdf* (MPM Work Completion Report)..

**C.3.5 Family violence policy (clause 6.5)**

Recommendation 2022-11:

- Sydney Water, *Policy; Family violence assistance* (Doc no. 1117163) (Version 5), 27 March 2023 (file: *family-violence-assistance-policy.pdf*).

**C.3.6 Reporting (clause 10.2)**

Recommendation 2022-13:

- Sydney Water's response to the *2021/22 Operational Audit of Sydney Water Corporation – Audit Questionnaire* (file: *REC-22-152-1.0\_Sydney\_Water\_2022\_Questionnaire Final Combined v3.docx*).
- Sydney Water, *Standard; Controlled Documents* (Version 2), 17 July 2023 (file: *Controlled Documents Standard.pdf*).
- Sydney Water, *Procedure; Controlled Documents* (Version 2), 23 August 2023 (file: *Controlled Documents Procedure.pdf*).
- Document: *Rec-2022-13-Providing evidence following preliminary findings meeting - 26\_10\_2023.docx*.
- Sydney Water, *Position Description; Systems & Assurance Lead – Products*, last modified 24 May 2023 (file: *Systems & Assurance Lead - Products - ICE1.docx*).



## Appendix D Sydney Water Representatives

A list of Sydney Water representatives that attended audit interviews and/or field verification visits is presented in this Appendix.





## Day 1 (Tuesday, 12 September 2023) – Interview sessions

### Inception Meeting

Bernie Sheridan	General Manager, Customer Delivery
Denisha Anbu	General Manager, Governance and Assurance
Carolyn Haupt	Head of Water and Public Health
Steven Blanch	Head of Legal, Compliance and Secretariat
Corinna Doolan	Water Quality Improvement Manager
Darryl Foster	Manager Asset and Systems Management (Network)
Daniel Peacock	Head of Customer Programs
Monika Moutos	Head of Economics and Regulation
Louise Beer	Head of Infrastructure, Investment and Asset Performance
Rebecca Reid	Reporting and Regulatory Manager
David Holland	Head of Work Programming and Optimisation
Ashan Rahsa	Systems and Assurance Manager
Steven Blanch	Head of Legal, Compliance and Secretariat
Simon Granville	Head of Risk and Assurance
Belinda Bright	Head of Engineering and Technical Support
Ravi Raveendran	Water Product Performance Manager
Lyndall Pickering	Strategic Planning Manager
Fernando Gamboa	Manager Integrated Planning North
Lucy Parsons	Water Product Specialist
Jason Sylvester	Product Optimisation Manager
Jenny Rogers	Environmental Regulatory Manager
Tony Venturino	Customer Water Quality Team Lead
Sandra Spargo	Corporate Compliance Manager
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst
Nathan Ragel	Senior Compliance Analyst
Bibiana Agudelo	Senior Compliance Analyst

### Water Conservation and Planning

#### – Economic approach to water conservation

Suhanti Thirunavukarasu	Water Conservation Program Manager
Michael English	Competition and Licencing Manager
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Information and Services for Competitors**

### **– Negotiations with WIC Act licensees and Potential Competitors**

Michael English	Competition and Licencing Manager
Kate Beaty	Senior Analyst
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Information and Services for Competitors**

### **– Publications of Servicing Information**

Fernando Gamboa	Manager Integrated Planning North
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Performance Monitoring and Reporting**

### **– Reporting**

Simon Granville	Head of Risk and Assurance
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Stakeholder Cooperation**

### **– Memoranda of understanding with WAMC, NSW Health and EPA**

Kaye Power	Principal Strategic Public Health Advisor
Chris Knowles	Head of Strategy and Enterprise Planning
Lyndall Pickering	Strategic Planning Manager
Jenny Rogers	Environmental Regulatory Manager
Sharmila Lakshmanaa	Senior Strategic Planning Advisor
Ben Harris	Resilience Programs Team Lead
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Stakeholder Cooperation**

### **– Memoranda of understanding with FRNSW**

Graham Orgill	Asset Analytics Manager
Daryl Foster	Manager Asset and Systems Management (Network)
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## **Performance Standards for Service Interruptions**

### **– Water Pressure Standard**

Ben Harris	Resilience Programs Team Lead
Christine Turner	Operating Licence Lead
Charles Agnew	Head of Sustainability and Climate Change Adaptation
Daryl Foster	Manager Asset and Systems Management (Network)
Warren Paige	Project Manager
Gaetano Illuzzi (GL)	Contractor
Michael English	Competition and Licencing Manager
Sandra Spargo	Corporate Compliance Manager
Jignesh Chudasama	Senior Compliance Analyst

## **Performance Standards for Water Quality**

### **– Drinking Water**

Corinna Doolan	Water Quality Improvement Manager
Carolyn Haupt	Head of Water and Public Health
Lucy Parsons	Water Product Senior Specialist
Darryl Foster	Manager Asset and Systems Management (Networks)
ASM Mohiuddin	Process Manager
Richard Melia	Support and Integrated Assurance Leader
Caleb Furner	Strategic Business Customer Operations Manager
Katie Shield	Water Product Specialist
Richard Mehrtens	Corporate Engagement Manager
Josh Isben	Head of Customer and Strategic Insights
Kaye Power	Principal Strategic Public Health Advisor
Deirdre Burt	Monitor Design and Reporting Specialist Lead
Sandra Spargo	Corporate Compliance Manager
Bibiana Agudelo	Senior Compliance Analyst

## Day 2 (Wednesday, 13 September 2023) – Field Verification Visits

### Rouse Hill Water Reservoir

Jeff Scott	Water Hub Manager Metro
Michael Easton	Customer Water Quality Team Lead
Darren Azzopardi	Operations and Maintenance Coordinator
Daniel Judd	Lead Networks Program Engineer
Darryl Foster	Manager Asset and Systems Management (Network)
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

### Field Maintenance Activity

Stephen Erdi	Networks Team Leader
Peter Sibraa	Area Planning Lead
Sandra Spargo	Corporate Compliance Manager
Bibiana Agudelo	Senior Compliance Analyst

### Prospect Water Filtration Plant

Colum Kearney	Water Hub Manager Warragamba
Haixiang Wang	Operations Team Lead
Alan Furtado (SUEZ)	Technical Coordinator
Ross Chadwick (SUEZ)	Process Coordinator
John Kang (SUEZ)	Process Safety Lead
Peter Slabber (SUEZ)	Plant Manager
Darryl Foster	Manager Asset and Systems Management (Network)
Sandra Spargo	Corporate Compliance Manager
Bibiana Agudelo	Senior Compliance Analyst
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

### **St Marys Water Resource Recovery Facility**

Sinduja Sritharan	Production Manager Wianamatta
Chriss Dumbrell	Manager Rel & Operations Improve Program
Katie Shield	Water Produce Specialist
Jason Sylvester	Product Optimisation Manager
Ravi Raveendran	Water Product Performance Manager
Sajeeve Latif	Process Controller
Tushar Mahida	Production Officer Level 1
Manoj Matthew	Hub Reliability Engineer
Alina Geagea	Production Officer Level 2
Darryl Foster	Manager Asset and Systems Management (Network)
Sandra Spargo	Corporate Compliance Manager
Bibiana Agudelo	Senior Compliance Analyst
Gus Garbers	Senior Compliance Analyst
Jignesh Chudasama	Senior Compliance Analyst

## Day 3 (Thursday, 14 September 2023) – Interview sessions

### Performance Standards for Service Interruptions

#### – Asset management

Ahsan Raza	Systems and Assurance Manager
Sen Vigneswaran	Manager Strategic Asset Management and Performance
Daryl Foster	Manager Asset and Systems Management (Network)
Louise Beer	Head of Infrastructure Investment and Asset Performance
Chris Dumbrell	Manager Reliability and Operations Improvement Program
Belinda Bright	Head of Engineering and Technical Support
Shardul Thapa	Senior Analyst Asset and Systems Management
Sandra Spargo	Corporate Compliance Manager
Bibiana Agudelo	Senior Compliance Analyst

### Performance Standards for Water Quality

#### – Recycled Water

Carolyn Haupt	Head of Water and Public Health
Ravi Raveendran	Water Product Performance Manager
Katie Shield	Water Product Specialist
Lucy Parsons	Water Product Senior Specialist
Jason Sylvester	Product Optimisation Manager
Corinna Doolan	Water Quality Improvement Manager
Shaohua Ye	Monitoring Design and Report Lead
Caleb Furner	Strategic Business Customer Operations Manager
Alex Robertson	Asset and Systems Management Lead
Nicole Schroder	Senior Process Engineer
James Milton	Senior Business Customer Operations Specialist
Sandra Spargo	Corporate Compliance Manager
Gus Garbers	Senior Compliance Analyst
Nathan Ragel	Senior Compliance Analyst



















## F. IPART's checks for the 2023 compliance audit



Table F.1 Audit findings for "IPART check" clauses




Licence clause	Operating licence obligation	Compliance grade	Findings
1.2.2	Sydney Water must publish on its website a map of its Area of Operations by 31 December 2019 (or another date approved by IPART in writing). Sydney Water must update the map within 30 days of any change to its Area of Operations.		<p>Sydney Water has a dedicated <a href="#">webpage</a> which maps out their water network and Area of Operations. The webpage includes an interactive map and search option to assist people in finding what network an address comes under.</p> <p>We note the webpage refers to Sydney Water's Area of Operations as its 'Water Network' but still appears when searched using a search engine.</p>
1.6.1	<p>Sydney Water must make a copy of this Licence available to any person, free of charge:</p> <ul style="list-style-type: none"> <li>a) on its website; and</li> <li>b) upon request made to the Contact Centre.</li> </ul>		<p><b>Sydney Water website</b> Sydney Water has a <a href="#">webpage</a> dedicated to their Operating Licence which includes a copy of the current Licence and Customer Contract. The webpage also contains information on how the Licence is reviewed and issued.</p> <p><b>Contact Centre</b> The Contact Centre was anonymously called at 1:54 pm 4 October 2023. The caller requested a copy of the Operating Licence but was directed to the Sydney Water website, both over the phone and over email.</p> <p>We believe this is a reflection on training and understanding from the operator, and not an unwillingness to provide the information.</p>
3.1.3	<p>Sydney Water must make:</p> <ul style="list-style-type: none"> <li>a) a copy of the Current Economic Method;</li> <li>b) a plain English summary of the Current Economic Method; and</li> <li>c) the economic level of water conservation (expressed as the value of water in dollars per kilolitre and as the quantity of savings in megalitres per day) determined in accordance with the Current Economic Method, available:</li> <li>d) to any person, free of charge upon request made to the Contact Centre; and</li> <li>e) on Sydney Water's website.</li> </ul>		<p><b>Sydney Water website</b></p> <ul style="list-style-type: none"> <li>a) Sydney Water's <a href="#">webpage</a> on its Operating Licence also contains information on its Current Economic Method or Economic Level of Water Conservation (ELWC). It provides a copy of the Current Economic Method as a <a href="#">document</a>.</li> <li>b) The webpage includes a plain English summary of the Current Economic Method as a <a href="#">document</a>.</li> <li>c) The <a href="#">webpage</a> presents the most recent economic level of water conservation (expressed as the value of water in dollars per kilolitre and as the quantity of savings in megalitres per day), with comparative data from the last two months (August 2023 and September 2023, as at 4 October 2023).</li> </ul> <p><b>Contact Centre</b> The Contact Centre was anonymously called at 1:54 pm 4 October 2023.</p> <p>When provided leading information, the Contact Centre was able to locate and find the copy of the Current Economic Method (once suggested it might be under the name Economic Level of Water Conservation).</p> <p>The Contact Centre was unable to provide:</p> <ul style="list-style-type: none"> <li>a) a plain English summary of the Current Economic Method (the caller was told this didn't exist), or</li> </ul>

Licence clause	Operating licence obligation	Compliance grade	Findings
			<p>b) the economic level of water conservation (requested as "the value of water") (the caller was directed to IPART).</p> <p>The caller specifically asked for these three items but was only provided a copy of the Current Economic Method. We believe this is a reflection on training and understanding from the operator, and not an unwillingness to provide the information.</p>
3.14	<p>Sydney Water must update the economic level of water conservation using the Current Economic Method: for the purposes of clause 3.1.1 and 3.1.2—annually; and or the purposes of clause 3.1.3(c)—monthly.</p>		<p>Sydney Water updates its <a href="#">website</a> monthly with the current value of water under ELWC (or the economic level of water conservation using the Current Economic Method), as noted above in relation to clause 3.1.3(c).</p> <p>It also provides information on its annual Water Conservation Report (provided as a document on the website) which details its annual plan for how it plans to conserve water. The report linked in this section of the website provides a plan for the economic level of water conservation using the Current Economic Method across a 4-year period. The most recent <a href="#">Water Conservation Report</a> available in this section of the website is from 2019-2020 and details the future plan from the 2020/21 to 2024/25.</p> <p>Under Sydney Water's Reports and Publications webpage, the <a href="#">Water conservation report 2021-22</a> is the most recent available. This version of the report, or the most recent (which would be the 2022/23 report, are not available under the section of the website dedicated to the Current Economic Method, or ELWC.</p>
3.2.1	<p>By 1 December 2020 (or another date approved by the Minister in writing), Sydney Water must develop, and submit to the Minister:</p> <ol style="list-style-type: none"> <li>a long-term capital and operational plan; and</li> <li>an emergency drought response plan.</li> </ol>		<p><b>Long-term capital and operational plan</b></p> <p>In a <a href="#">Statement of Expectations</a> issued 26 April 2022 by the then NSW Treasurer, Sydney Water was requested to "contribute to and support the finalisation of the Greater Sydney Water Strategy and implement the relevant actions through its long-term capital and operations planning, consistent with the water security risk profile identified in the Strategy" in the interest of aligning with the Government's strategic planning.</p> <p>Sydney Water has since published its long-term capital and operations plan (referred to as <a href="#">Growth Servicing Plan 2022-27</a>) which outlines its infrastructure and development priorities between 2022-27 in the interest of long-term growth.</p> <p><b>Emergency drought response plan</b></p> <p>In a <a href="#">Statement of Expectations</a> issued 26 April 2022 by the then NSW Treasurer, Sydney Water was requested to 'contribute to and support the finalisation and implementation of the State Drought Plan' (Greater Sydney Drought Response Plan).</p> <p>The Greater Sydney Drought Response Plan serves as the emergency drought response plan for the purposes of clause 3.2.1 and is contributed to and maintained by Sydney Water, WaterNSW, and Hunter Water. A copy can be found <a href="#">here</a>.</p>
6.1.2	<p>Sydney Water must make a copy of the Customer Contract available to any person, free of charge:</p> <ol style="list-style-type: none"> <li>on its website; and</li> </ol>		<p><b>Sydney Water's website</b></p> <p>Sydney Water publishes information on its <a href="#">Customer Contract</a> on its <a href="#">website</a>, including a link to the document. They also provide a <a href="#">summary of the contract</a> as a document.</p>

Licence clause	Operating licence obligation	Compliance grade	Findings
	b) upon request made to the Contact Centre.		<p><b>Contact Centre</b></p> <p>The Contact Centre was anonymously called at 1:54 pm 4 October 2023. The caller requested a copy of the Customer Contract but was directed to the Sydney Water website, both over the phone and over email. We believe this is a reflection on training and understanding from the operator, and not an unwillingness to provide the information.</p>
6.7.4	<p>Sydney Water must make the information concerning internal Complaints handling referred to in clause 6.7.3 available to any person, free of charge:</p> <p>a) on its website; and</p> <p>b) upon request made to the Contact Centre.</p>		<p><b>Sydney Water's website</b></p> <p>Sydney Water publishes its <a href="#">complaint policy</a> on its website under its 'Policies'; it does not have a section of its website which specifically explains how it manages complaints. It otherwise directs customers to its Contact Centre to make a complaint or find out further information.</p> <p><b>Contact Centre</b></p> <p>The Contact Centre was anonymously called at 1:54 pm 4 October 2023. The operator was asked for information on the internal complaints handling process and whether there was a policy.</p> <p>The operator directed the caller to the website for information on the policy. The caller advised they couldn't find the information on the website and was directed to the 'contact us' area where they could submit an enquiry. The caller was not provided information relating to the process beyond this. We believe this is a reflection on training and understanding from the operator, and not an unwillingness to provide the information.</p> <p>The operator was not able to locate and provide the policy upon request.</p>
6.8.1	Sydney Water must be a member of the Energy & Water Ombudsman NSW to facilitate the resolution of disputes between Sydney Water and its Customers and Consumers.		Sydney Water is a member of the Energy & Water Ombudsman NSW (confirmed through the Ombudsman <a href="#">member list</a> ). Sydney Water publishes information on its membership and external dispute resolution options within their <a href="#">complaint policy</a> .
8.2.3	Sydney Water must continue to publish Servicing Information for each major water system and wastewater system as it becomes available. Sydney Water must publish all Servicing Information by 30 June 2021 (or another date approved by IPART in writing).		<p>Sydney Water has published its <a href="#">Growth Servicing Plan</a> on its <a href="#">website</a> which details the long-term growth plan for Greater Sydney's water-related infrastructure.</p> <p>Sydney Water also publishes a summary of available servicing plans per area on webpage dedicated to <a href="#">Servicing growth and release areas</a>.</p>
10.1.1	<p>Sydney Water must cooperate with an audit undertaken by IPART or an Auditor of Sydney Water's compliance with any of the following:</p> <p>a) this Licence (including the Customer Contract);</p> <p>b) the Reporting Manual; and</p> <p>c) any matters specified by the Minister, (the Operational Audit).</p>		Sydney Water was compliant with clause 10.1.1 and cooperated with an audit undertaken by IPART and independent Auditors. The Audit for the 2023/24 financial year occurred on 12 to 14 September 2023.

Licence clause	Operating licence obligation	Compliance grade	Findings
10.1.2	<p>For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must, within a reasonable period of receiving a request from IPART or an Auditor, provide IPART or the Auditor with all the information in Sydney Water's possession, custody or control that is necessary to conduct the Operational Audit, including any information that is reasonably requested by IPART or an Auditor.</p>		<p>Sydney Water has provided relevant materials, upon request, to both IPART and the Auditors to assist with Operational Audit. Where requested information is not available, or does not exist, Sydney Water has provided explanation as to why or alternative material.</p>
10.1.3	<p>For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must permit IPART or the Auditor to:</p> <ul style="list-style-type: none"> <li>a) access any works, premises or offices occupied by Sydney Water;</li> <li>b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;</li> <li>c) take on to any such premises or offices any person or equipment necessary for the purpose of performing the Operational Audit or verifying any report on the Operational Audit;</li> <li>d) inspect and make copies of, and take extracts from, any books and records of Sydney Water that are maintained in relation to the performance of Sydney Water's obligations under this Licence (including the Reporting Manual); and</li> <li>e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Sydney Water, including Sydney Water's officers and employees.</li> </ul>		<p>During the 2023/24 Operational Audit, Sydney Water permitted IPART and the Auditor to:</p> <ul style="list-style-type: none"> <li>a) access any works: permitted</li> </ul> <p>During the 2023/24 Operational Audit, Sydney Water provided access to the Rouse Hill Reservoir, a maintenance location in Bankstown, the Prospect Water Filtration Plant. And St Marys Water Recycling Plant.</p> <ul style="list-style-type: none"> <li>b) carry out inspections, measurements and tests: permitted</li> </ul> <p>Inspections at the Rouse Hill Reservoir, a maintenance location in Bankstown, the Prospect Water Filtration Plant and St Marys Water Recycling Plant were carried out across all sites visited, with test results provided upon request.</p> <ul style="list-style-type: none"> <li>c) take any necessary person or equipment onto a premises: permitted</li> </ul> <p>Sydney Water allowed IPART and the Auditors to take any necessary person or equipment onto premises under the condition they complied with site safety standards.</p> <ul style="list-style-type: none"> <li>d) inspect and copy any books or records: permitted</li> </ul> <p>Sydney Water permitted the inspection and copying of books or records. This was noted at St Marys Water Recycling Plant and throughout the Audit interviews.</p> <ul style="list-style-type: none"> <li>e) discuss any matters relating to the Audit or any report: permitted</li> </ul> <p>Sydney Water did not restrict the discussion of the Audit or related matters throughout the Operational Audit period.</p>

Licence clause	Operating licence obligation	Compliance grade	Findings
10.3.1	<p>Sydney Water must provide IPART information relating to the performance of any of Sydney Water's obligations under clause 10.2 (including providing IPART physical and electronic access to the records required to be kept under clause 10.2) within a reasonable time of Sydney Water's receiving a request from IPART for that information.</p>		<p>Sydney Water has provided reports and relevant documentation for the reporting and auditing obligations set out in the Reporting Manual. These include:</p> <ul style="list-style-type: none"> <li>a) water conservation and planning</li> </ul> <p>Sydney Water provided the water conservation and planning annual report to IPART and DPE on 1 November 2023.</p> <ul style="list-style-type: none"> <li>b) performance standards for water quality</li> </ul> <p>Sydney Water provided annual reports on both drinking and recycled water quality and performance to IPART on 1 September 2023.</p> <ul style="list-style-type: none"> <li>c) performance standards for service interruptions</li> </ul> <p>Sydney Water provided its annual report for performance standards for service interruptions to IPART on 1 September 2023.</p> <ul style="list-style-type: none"> <li>d) Customers and Consumers</li> </ul> <p>Obligations outlined in the reporting manual relating to customers and consumers have been discussed against the Licence obligations 1.6.1, 6.1.2, and 6.7.4.</p> <ul style="list-style-type: none"> <li>e) information and services for competitors</li> </ul> <p>Sydney Water provided its annual report on the provision of information and services to WIC Act licensees on 1 September 2023.</p> <ul style="list-style-type: none"> <li>f) critical infrastructure security</li> </ul> <p>Sydney Water's annual Cyber Security Audit Report was provided to IPART and the Department of Home Affairs (as the Commonwealth Representative) on 1 September 2023.</p> <ul style="list-style-type: none"> <li>g) performance monitoring and reporting</li> </ul> <p>Sydney Water provided IPART with its annual NWI Performance Indicators Report, annual IPART Performance Indicators and Licence data, annual Statement of Compliance, and annual response to non-compliances from the previous year (not applicable for the 2022-23 compliance year) on 1 September 2023.</p> <p>Sydney Water provided its annual Environmental Performance Indicators Report for 2022-23 to IPART on 25 October 2023.</p>
10.3.2	<p>Sydney Water must provide IPART such information as is reasonably required to enable IPART to conduct any review or investigation of Sydney Water's obligations under this Licence within a reasonable time of Sydney Water receiving a request from IPART for that information.</p>		<p>Sydney Water has been forthcoming and provided IPART with requested information in a timely manner throughout both the 2023 Operating Licence audit and review of the 2024-2029 Operating Licence.</p>

Licence clause	Operating licence obligation	Compliance grade	Findings
10.3.3	If Sydney Water engages any person (including a subsidiary) to undertake any activities on its behalf, it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such persons provide information and do the things specified in clause 10.1 as if that person were Sydney Water.		<p>Sydney Water engages Suez Water in its Prospect location to undertake recycled water functions. During the 2023-24 audit, Suez Water provided any required or requested information to both the auditors and IPART as if they were Sydney Water.</p> <p>No instances of non-compliance against this condition have been identified.</p>
10.3.4	If IPART or an Auditor requests information that is confidential, the information must be provided to IPART or the Auditor, subject to IPART or the Auditor entering into reasonable arrangements to ensure that the information remains confidential.		<p>No confidential information was requested of Sydney Water by IPART or the Auditor during the 2023-24 annual compliance audit.</p> <p>Sydney Water did provide confidential information to IPART in its response to IPART's issues paper for the Sydney Water Operating Licence Review 2023-24. Reasonable arrangements were taken by IPART to ensure the documentation remained confidential, including redaction and maintaining the document as unpublished.</p>
10.3.5	<p>Sydney Water must provide NSW Health with information relating to water quality in the manner and form specified by NSW Health within a reasonable time of receiving NSW Health's request.</p> <p>[Note: Under section 19 of the Public Health Act 2010 (NSW), the Secretary of NSW Health may require Sydney Water to produce certain information.]</p>		<p>NSW Health's submission to IPART in relation to the Sydney Water Operating Licence review did not raise any concerns on the information sharing relationship between Sydney Water and NSW Health. No instances of non-compliance against this condition have been identified.</p>

 = Compliant; 
  = Compliant (minor shortcomings); 
  = Non-compliant (non-material); 
  = Non-compliant (material); 
  = No requirement.



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- i IPART, [Sydney Water operational audit 2022 – Report to the Minister](#), February 2023.
  - ii IPART, [Compliance and Enforcement Policy](#), December 2017.
  - iii IPART, [Public Water Utility Audit Guideline](#), July 2023.
  - iv The audit interviews and site visits were conducted in person.

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