

# Sydney Water Corporation Operational Audit 2018

**Report to the Minister** 

Compliance Report Water

December 2018

#### © Independent Pricing and Regulatory Tribunal (2018)

With the exception of any:

- (a) coat of arms, logo, trade mark or other branding;
- (b) third party intellectual property; and
- (c) personal information such as photos of people,

this publication is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia Licence.



The licence terms are available at the Creative Commons website: https://creativecommons.org/licenses/by-nc-nd/3.0/au/legalcode

IPART requires that it be attributed as creator of the licensed material in the following manner: © Independent Pricing and Regulatory Tribunal ([Year of Publication]).

The use of any material from this publication in a way not permitted by the above licence or otherwise allowed under the *Copyright Act 1968* (Cth) may be an infringement of copyright. Where you wish to use the material in a way that is not permitted, you must lodge a request for further authorisation with IPART.

#### Disclaimer

IPART does not guarantee or warrant, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this publication.

Information in this publication is provided as general information only and is not intended as a substitute for advice from a qualified professional. IPART recommends that users exercise care and use their own skill and judgment in using information from this publication and that users carefully evaluate the accuracy, currency, completeness and relevance of such information. Users should take steps to independently verify the information in this publication and, where appropriate, seek professional advice.

Nothing in this publication should be taken to indicate IPART's or the NSW Government's commitment to a particular course of action.

ISBN 978-1-76049-278-6

#### The Independent Pricing and Regulatory Tribunal (IPART)

IPART provides independent regulatory decisions and advice to protect the ongoing interests of the consumers, taxpayers and citizens of NSW. IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website: https://www.ipart.nsw.gov.au/Home.

# **Tribunal Members**

The Tribunal members are:

Dr Peter J Boxall AO, Chair Ms Deborah Cope

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

Erin Cini	(02) 9113 7778
Jamie Luke	(02) 9290 8406
Gudny Palsdottir	(02) 9113 7709

# Contents

Su	nmar	у	1
1	Intro	duction and scope	5
	1.1	Purpose and structure of this report	5
	1.2	Audit scope	6
	1.3	The audit process	7
2	Audi	t findings and recommendations	10
	2.1	Licence and licence authorisation	10
	2.2	Water quality	12
	2.3	Water quantity	17
	2.4	Assets	19
	2.5	Customers and Consumers	22
	2.6	Quality Management	27
	2.7	Performance monitoring	28
	2.8	Memorandum of understanding	30
3	Prog	ress on previous audit recommendations	31
Ap	pendi	ces	37
Α	Com	pliance grades	39
В	2018	audit scope	41
С	Oper	rational audit report 2018 – Sydney Water	43
D	Sydr	ney Water's Statement of Compliance	45

v

# Summary

Customers in NSW rely on safe and reliable water and wastewater services. Operating licences outline the NSW Government's expectations of publicly owned monopoly suppliers of essential services such as Sydney Water Corporation (Sydney Water). The Independent Pricing and Regulatory Tribunal of NSW (IPART) conducts annual licence audits to ensure Sydney Water meets these expectations.

IPART has completed the third operational audit (the 2018 audit) of Sydney Water's compliance with the requirements of the Sydney Water Operating Licence 2015-2020 (the licence). This audit covers the period from 1 July 2017 to 30 June 2018. We engaged specialist auditing firm Viridis Consultants Pty Ltd, in partnership with Cobbitty Consulting Pty Ltd, to undertake the audit. We have prepared this report to summarise our audit findings for the Minister for Energy and Utilities, the Hon. Don Harwin MLC.

## **Our findings**

Sydney Water has shown an overall high level of compliance with its licence, as demonstrated by the 2018 audit findings (see below).

Sydney Water's audit grades for water quality have improved relative to last year. The quality of water produced by Sydney Water continues to be of a high standard and meet public health requirements. Our auditor identified minor shortcomings for drinking water quality, recycled water quality, customers and consumers, and performance monitoring that require attention from Sydney Water to ensure compliance is maintained. We identified no further action for Sydney Water to address the non-compliance for pricing because the non-compliance has been addressed during the audit period.

Sydney Water has made progress towards implementing the recommendations from previous audits. In areas where we assigned less than full compliance, we have made recommendations on how Sydney Water can improve and maintain compliance with its licence.

#### Our recommendations

There were five clauses for which our auditor did not assign a Compliant grade<sup>1</sup>, we make recommendations to Sydney Water for those clauses. Our recommendations are listed below. Our auditor prepared a final report detailing its findings and recommendations (Appendix C). We endorse all of our auditor's findings.

<sup>&</sup>lt;sup>1</sup> Compliant grade does not include Compliant (minor shortcomings) grade.

#### Recommendations to Sydney Water

#### Water quality - drinking water

- 1 By 30 June 2019, ensure reservoir roofs, in particular the Parklea drinking water reservoir, have been inspected safely as per the reservoirs inspection schedule, including with the required safety equipment and associated training.
- 2 By 30 June 2019, have processes in place to document target finish dates, priorities, revised dates and reasons for delay in implementing improvement actions on drinking water.
  15

14

#### Water quality - recycled water

- By 31 March 2019, test all main to meter pipes to prevent cross-connections prior to the supply of recycled water from Sydney Water's main to any properties within Sydney Water's dual reticulation schemes and establish a hold point prior to supply of recycled water.
- By 30 June 2019, have processes in place to document target finish dates, priorities, revised dates and reasons for delay in implementing improvement actions on recycled water product and recycled water schemes.

#### **Customers and consumers**

5 By 30 June 2019, update the pamphlet prepared under clause 5.2.1 to include or refer to information regarding the ability for a customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sydney Water of services to the customer. 24

#### **Performance monitoring**

By 30 June 2019, review data extraction processes for reporting against the
 Wastewater Overflow Standard to ensure an improvement in the reporting of the actual number of events.
 29

The Sydney Water Reporting Manual (Reporting Manual) requires Sydney Water to provide a report on its progress in implementing these recommendations by 31 March 2019.

#### **Overview of audit findings**

The 2018 audit found that Sydney Water had a high level of compliance. This is the third audit in the 5-year term of the licence. The audit identified one non-compliance.

In 2018, we audited 29 clauses of the Sydney Water licence and assigned:

- ▼ 24 clauses ♥ Compliant grade
- ▼ four clauses 🥺 Compliant (minor shortcomings) grade, and
- one clause
   Non-compliant (non-material) grade.

The compliance grades are explained in Appendix A. In summary we assigned:

- Compliant Swith all auditable requirements relating to:
  - licence and licence authorisation (clauses 1.6.1 and 1.6.2)
  - water quality (clauses 2.1.1, 2.2.1 and 2.3.1)
  - water quantity (clauses 3.1.1, 3.2.6 and 3.2.7)
  - assets (clauses 4.1.1, 4.1.5, 4.2.1, 4.2.2 and 4.2.3)
  - customers and consumers (clauses 5.2.3, 5.4.1, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5 and 5.8)
  - quality management (clauses 7.1.2 and 7.1.3), and
  - memorandum of understanding (clause 9.4.2).
- **Compliant (minor shortcomings)** Swith requirements for:
  - water quality relating to drinking water (clause 2.1.2) and relating to recycled water (clause 2.2.2)
  - customers and consumers relating to providing information (clause 5.2.1), and
  - performance monitoring relating to performance indicators and system performance standards (clause 8.4.1).
- Non-compliant (non-material) <sup>(2)</sup> with requirements for licence and licence authorisation relating to pricing (clause 1.9.1). This non-compliance was self-reported by Sydney Water and confirmed by the audit.

Sydney Water's compliance is summarised in Table 1 below.

	Number of	Compliance grade assigned					
Licence part	clauses			8	8		
Part 1 – Licence and licence authorisation	3	2	-	1	-	-	
Part 2 – Water quality	5	3	2	-	-	-	
Part 3 – Water quantity	3	3	-	-	-	-	
Part 4 – Assets	5	5	-	-	-	-	
Part 5 – Customers and consumers	9	8	1	-	-	-	
Part 6 – Environment	-	-	-	-	-	-	
Part 7 – Quality Management	2	2	-	-	-	-	
Part 8 – Performance monitoring	1	-	1	-	-	-	
Part 9 – Memorandum of understanding	1	1	-	-	-	-	
Total	29	24	4	1	-	-	

#### Table 1Sydney Water's compliance in 2018, the third year of its 2015-2020 licence

Note: Section 2 = Compliant; Section 2 = Compliant (minor shortcomings); Section 2 = Non-Compliant (non-material);

In the second second

Source: Viridis Consultants, 2018 Operational Audit Report Sydney Water - Final Audit Report, November 2018.

#### Annual statement of compliance

In preparing this report we have also reviewed Sydney Water's annual Statement of Compliance (Appendix D). This is an exception-based report<sup>2</sup> certified by the Managing Director and the Chairman of the Board of Directors of Sydney Water. It lists any licence non-compliances that occurred during the year. Any remedial action taken, or in the process of being taken, by Sydney Water is also reported. This year Sydney Water reported one non-compliance with its licence in relation to the pricing clause.

### Progress with previous recommendations

Finally, we note that Sydney Water completed six out of eight relevant outstanding recommendations from previous operating audits (see Chapter 3). Two recommendations are continuing:

- Recommendation 2016-17-5 was partially completed. Our auditor noted that the iterative consultation with NSW Health had not been completed, and revised materials should be finalised within 12 months.
- Recommendation 2016-17-6 is continuing as this recommendation is due in June 2019. We will monitor and report on progress against each of these continuing recommendations during future audits.

#### Our audit approach

We do not audit every licence clause each year, instead we adopt a risk-based audit approach. This means, we audit 'high risk' clauses more frequently and 'low risk' clauses less frequently. Audits are conducted in accordance with our *Audit Guideline – Public Water Utilities* (Audit Guideline) which is available on our website. In our 2018 review of the Audit Guideline we changed the audit grades.

<sup>&</sup>lt;sup>2</sup> This means reporting only on those clauses where Sydney Water considers it is non-compliant.

# 1 Introduction and scope

Sydney Water Corporation (Sydney Water) is owned by the NSW Government. Sydney Water's principal functions are to provide water, sewerage and stormwater services and dispose of wastewater in its area of operations.

These roles and responsibilities, as well as Sydney Water's objectives, are prescribed by the *State Owned Corporations Act 1989* (NSW), the *Sydney Water Act 1994* (NSW) (the Act) and the licence issued to Sydney Water under Part 5, Section 12 of the Act.

We have completed the 2018 audit of Sydney Water's compliance with the obligations imposed on it by its licence for the period 1 July 2017 to 30 June 2018. We did this by reviewing Sydney Water's reports, undertaking and attending audit interviews with Sydney Water staff, and undertaking field verification. We then report our findings to the Minister for Energy and Utilities.

We took a risk-based approach to determine the scope of the Sydney Water audit, and an evidence-based approach to the audit. We also assessed compliance by reviewing an annual Statement of Compliance prepared and certified by Sydney Water (Appendix D). This is an exception-based report listing any licence non-compliances and what remedial action has been taken, or is being taken, to resolve any reported non-compliances.

## 1.1 Purpose and structure of this report

This report informs the Minister for Energy and Utilities of Sydney Water's performance against its audited licence obligations for the audit period and sets out recommendations in response to these findings.

- This chapter (Chapter 1) explains the scope of the audit review and the process followed in undertaking the audit.
- Chapter 2 presents our audit findings and recommendations.
- Chapter 3 summarises the progress by Sydney Water to address and implement recommendations from previous audits.
- Appendix A explains the compliance grades used for the audit.
- Appendix B explains the scope of the 2018 audit in detail.
- Appendix C contains the auditor's audit report.
- Appendix D contains Sydney Water's annual Statement of Compliance.

## 1.2 Audit scope

The 2018 audit covers the period from 1 July 2017 to 30 June 2018.

The audit scope for this year included obligations relating to:

- Licence and licence authorisation (Part 1) requirements relating to connections of services and pricing.
- Water quality (Part 2) requirements relating to drinking water, recycled water and the Fluoridation Code.
- Water quantity (Part 3) requirements relating to roles and responsibilities protocol and economic level of water conservation.
- Assets (Part 4) requirements relating to asset management system and systems performance standards.
- Customer and consumers (Part 5) requirements relating to providing information, assistance options for payment difficulties and actions for non-payments, Customer Council and Customer Council Charter and code of conduct.
- Quality management (Part 7) requirements relating to the certification and implementation of a quality management system consistent with AS/NZS ISO 9001: 2008.
- Performance monitoring (Part 8) requirements relating to performance indicators and system performance standards.
- Memorandum of understating (Part 9) requirements relating to maintaining memorandum of understanding with Fire and Rescue NSW.

No clauses from Part 6 (Environment), Part 10 (End of term review), Part 11 (Notices) and Part 12 (Definitions and interpretations) were audited this year, following the risk-based approach used in the auditing program.

We consulted with Department of Planning and Environment (DPE), NSW Health, NSW Environment Protection Authority (EPA), Department of Industry - Water (DoI - Water) and Fire and Rescue NSW and sought public submissions in determining the scope of the audit. The audit scope is provided in Appendix B. All submissions from stakeholder agencies indicated stakeholders were generally satisfied that Sydney Water had met its obligations under the licence relevant to their portfolio.

DPE, that is responsible for implementing the Metropolitan Water Plan<sup>3</sup>, confirmed that a formal protocol was not required for licence clause 3.1.1 and as a result we did not include the clause in the audit scope.<sup>4</sup> Instead, we audited this clause ourselves.

This year, NSW Health identified the following areas of interest<sup>5</sup> where we included specific instructions to the auditor to assess during the audit:

Cross-connection identification and management (considered in the audit of licence clause 2.2.2).

<sup>5</sup> Letter, Deputy Secretary Population and Public Health and Chief Health Officer, NSW Health, 17 August 2018.

<sup>&</sup>lt;sup>3</sup> Available at: https://www.metrowater.nsw.gov.au/2017-metropolitan-water-plan

<sup>&</sup>lt;sup>4</sup> Email to IPART, Director of Water and Utilities, Division of Energy, Water and Portfolio Strategy, DPE, 13 August 2018.

- Spare parts management program and hazard identification for cross contamination risk between sewage and drinking water shared spare parts (considered in the audit of licence clause 4.1.5).
- Updates on progress of previous audit recommendations for fluoridation of water supplies and various recycled water management actions that required consultation with NSW Health (considered in audit of clause 2.3.1).

We did not change the audit scope after receiving comments from other stakeholders. EPA considered that its Memorandum of Understanding with Sydney Water is performing satisfactorily as a sound basis for understanding and managing the relationship between Sydney Water and the EPA.<sup>6</sup> DoI-Water noted that Sydney Water had demonstrated compliance with the conditions imposed on its access licence and approvals under the *Water Management Act 2000.7* The response from Fire and Rescue NSW was combined with the NSW Government's Sydney Water licence review submission and stated that having a Memorandum of Understanding with Sydney Water has strengthened and improved the relationship between Sydney Water and Fire and Rescue NSW.<sup>8</sup> It did not identify any concerns with Sydney Water's performance on the Memorandum of Understanding.

We sought submissions from the public on matters related to the licence prior to the audit interviews. We advertised for public submissions in the *Sydney Morning Herald*, *Daily Telegraph*, and *Newcastle Herald* on 25 July 2018 and *The Land* on 26 July 2018. We received no public submissions.

## 1.3 The audit process

We assess the risk of non-compliance with a licence obligation to determine an appropriate audit frequency for that requirement. We audit all requirements of the licence at least once during the 5-year term of the licence.

In developing our 5-year audit programs and annual audit scopes we apply IPART's *Compliance and Enforcement Policy, December 2017.* This policy sets out our risk-based regulatory model. Under this policy, we could:

- focus on allocating resources to areas of higher risk
- increase our efficiency, and
- tailor our enforcement response.

We base our risk-based approach on evaluating the risk that each part of our regulatory function aims to reduce. We evaluate the risk 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.

<sup>&</sup>lt;sup>6</sup> Letter, Regional Manager Operations, Metropolitan Infrastructure, NSW EPA, 10 August 2018.

<sup>&</sup>lt;sup>7</sup> Letter, Deputy Secretary Lands and Water, Dol-Water, 24 August 2018.

<sup>&</sup>lt;sup>8</sup> NSW Government (Fire and Rescue NSW) Submission to IPART Issues paper, September 2018, p 24.

We identify and document historical, current and emerging risks. This allows allocation of resources in proportion to the risk and complexity of regulated entities and behaviours.

We engaged Viridis Consultants Pty Ltd, in partnership with Cobbitty Consulting Pty Ltd, to undertake the 2018 audit of Sydney Water. We required the auditor to undertake the following tasks:

- 1. Receive stakeholder submissions and comments for inclusion in the audit scope.
- 2. Prepare an information request (questionnaire) setting out all the requirements for information and evidence, at least two weeks prior to the commencement of audit interviews.
- 3. Review reports and documents provided by Sydney Water in response to the questionnaire.
- 4. Conduct interviews with Sydney Water staff at its offices.
- 5. Conduct field verification and assess the implementation of Sydney Water's systems and procedures.
- 6. Assess the level of compliance (according to our compliance grades) Sydney Water achieved for each of the identified obligations of the licence and provide supporting evidence for this assessment (Appendix A).
- 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 drafts of the audit report and address our comments and comments from Sydney Water regarding draft audit findings.
- 10. Prepare a final report outlining audit findings (Appendix C).

Our auditor adopted a methodology consistent with *ISO* 19011:2014 *Guidelines for Auditing Management Systems*. This guideline defines the requirements of an audit, ensuring that it is conducted in accordance with an established and recognised audit protocol. Where appropriate, the auditor also sought guidance from *AS/NZS ISO* 9001:2016 *Quality management systems* – *Requirements, New South Wales Code of Practice for Fluoridation of Public Water Supplies* (2018) and the International Standard *ISO* 55001:2014 *Asset management system* – *Requirements.* 

Our auditor also carried out the audit according to our *Audit Guideline - Public Water Utilities, June 2018.*<sup>9</sup> Under this guideline, the auditor can make recommendations or suggest opportunities for improvement.

Where we support an auditor's recommendation, we make our recommendations based on the auditor's recommendation. Where the auditor suggested opportunities for improvement, Sydney Water can decide whether to implement these suggestions. This approach should

<sup>&</sup>lt;sup>9</sup> Available on our website (www.ipart.nsw.gov.au). The latest version of the Audit Guidelines was released in September 2018.

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. As a consequence, while we encourage Sydney Water to consider the auditor's suggestions, we do not follow these up.

We held a project start-up meeting with the auditor on 19 July 2018 to agree on the project milestones, audit timing, and outline our expectations. We also held an audit inception meeting with Sydney Water and the auditor on the first day of the audit interviews, on 19 September 2018. At this meeting, expectations and protocols for the conduct of the audit were agreed. All parties adhered to the agreed protocols throughout the audit.

Our auditor conducted audit interviews from 19 to 21 September 2018 at Sydney Water's office in Parramatta. On 20 September 2018, the auditor also undertook a site visit to the following locations:

- Cascade Water Filtration Plant
- Parklea Drinking Water and Recycled Water Reservoirs, re-chlorination station, and
- Rouse Hill Water Recycling Plant and network.

Our auditor assessed Sydney Water's compliance with the relevant requirements of the licence as per the compliance grades outlined in Appendix A.

# 2 Audit findings and recommendations

This chapter provides a summary of our audit findings and recommendations for each of the audited clauses of the licence. The 2018 audit is the third audit of the licence.

Each section includes a table providing a comparison of Sydney Water's audit performance during the licence period. Appendix A contains the current audit grades that we used for the 2018 audit. It also contains the audit grades from the previous *Audit Guideline for Public Water Utilities – May 2016* that we used for the first and second year of the licence period.

Following each table, we discuss the reasoning for the grade. We also discuss any recommendations and opportunities for improvement.

### 2.1 Licence and licence authorisation

Our auditor assigned Sydney Water Compliant grades for clauses 1.6.1 and 1.6.2, and a Noncompliant (non-material) grade for clause 1.9.1. We agree with these audit grades.

Part 1 of the licence (Licence and licence authorisation) outlines what Sydney Water is authorised to do under the licence, its obligations regarding its stormwater drainage systems, the term of the licence and its obligations regarding the connection of services and pricing matters.

Clause	Requirement	Compliance grading				
1	Licence and licence authorisation	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20
1.6.1	Connection of services to any Property situated in the Area of Operations	-	-			
1.6.2	Connection of services is subject to conditions to ensure the safe, reliable and financially viable supply	-	-			
1.9.1	Pricing	NC	NC	8		

#### Table 2.1 Compliance with Part 1 of the licence – Licence and licence authorisation

a IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister - Compliance Report, 21 December 2017.
b Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018.

Note: NC = Non-compliance

**Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

#### Compliant (clause 1.6.1) with connection of services within area of operations

Our auditor assigned Sydney Water a Compliant grade for clause 1.6.1, which required Sydney Water to ensure services are available on request for connection to any property situated within the area of operations. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it has arrangements in place to assess applications and provide drinking water and wastewater services to properties within the area of operations. There were cases where Sydney Water was unable to provide services (within a reasonable time) due to the property being located beyond the limits of the water supply or wastewater network or there being insufficient system capacity.

The definition of property for the purposes of the licence is limited (amongst other criteria) to property which:

...is connected to, or for which connection is available to Sydney Water's water supply system or the sewerage system...

On this basis, the auditor assessed that Sydney Water is able to ensure that drinking water and wastewater services are available for connection to any property situated within the area of operation upon request.

Our auditor identified no recommendation or opportunities for improvement.

#### Compliant (clause 1.6.2) with conditions relating to connection of services

Our auditor assigned Sydney Water a Compliant grade for clause 1.6.2, which required Sydney Water to provide services subject to conditions to ensure the safe, reliable and financially viable supply of services. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that connections to its water supply and sewerage systems are subject to conditions, which principally relate to compliance with industry standards and existing legislation. All connections are subject to provisions of the Customer Contract and any additional service agreements.

Our auditor identified no recommendation or opportunities for improvement.

#### Non-compliant (non-material) (clause 1.9.1) with setting fees and charges

Our auditor assigned Sydney Water a Non-compliant (non-material) grade for clause 1.9.1, which required Sydney Water to set the level of fees, charges, and other amounts payable for its services subject to the terms of the licence, the Act and the maximum prices and methodologies for fixing maximum prices determined from time to time by IPART under the IPART Act. We agree with this audit grade.

Our auditor noted that Sydney Water self-reported a non-compliance with this clause last year and again this year as the non-compliance had not been fully addressed before the end of the audit period. In its Statement of Compliance, Sydney Water advised that from 1 July 2012 until 31 October 2017 its commercial trade waste customers have been charged an incorrect

(lower) price for substance charges than the determined price. Under section 18 of the IPART Act, Sydney Water is only able to levy a charge that is lower than a determined priced with the approval of the Treasurer.

Sydney Water noted that the non-compliance arose due to the unit price for substances charges being truncated into the billing system, which was configured to two decimal places with prices set prior to 2012. In the absence of the Treasurer's approval this constitutes a non-compliance.

Our auditor noted that the non-compliance, which was the subject of a previous audit recommendation (2016-17-1), was addressed after the first quarter billing in 2017-18, and that a sampling of customer bills issued in the audit period confirmed that Sydney Water calculated in accordance with the relevant IPART Determination and correct prices have been applied. Sydney Water reported in its Statement of Compliance that the total amount underrecovered in the 2012 to 2018 period was \$224,810. Given that the non-compliance resulted in undercharging of customers, it impacted Sydney Water's financial objectives but did not result in any impact on Sydney Water's objectives in respect of public health or the environment. On this basis, the auditor considered the non-compliance to have been non-material during the audit period.

We make no recommendation in relation to clause 1.9.1 since the non-compliance has already been addressed in the audit period.

Our auditor identified one opportunity for improvement for clause 1.9.1. This improvement relates to clarifying reporting in pricing reports. Further details of the opportunity for improvement are available in the auditor's report in Appendix C.

## 2.2 Water quality

Our auditor assigned Sydney Water Compliant grades for clauses 2.1.1, 2.2.1 and 2.3.1, and Compliant (minor shortcomings) grades for clauses 2.1.2 and 2.2.2. We agree with these audit grades.

Part 2 of the licence (Water Quality) requires Sydney Water to maintain and implement water quality management systems that are consistent with the *Australian Drinking Water Guidelines* (ADWG) and *Australian Guidelines for Water Recycling* (AGWR), to the satisfaction of NSW Health. It also requires Sydney Water to comply with the *NSW Code of practice for fluoridation of public water supplies* (Fluoridation Code).

Clause	Requirement	Compliance	Compliance grading				
2	Water quality	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20	
2.1.1	Drinking water quality management system – consistent with ADWG	Full	High				
2.1.2	Drinking water quality management system - implementation	Full	High	0			
2.2.1	Recycled water quality management system consistent with AGWR	Full	High				
2.2.2	Recycled water quality management system - implementation	High	Adeq	0			
2.3.1	Compliance with Fluoridation Code	-	Adeq	$\bigcirc$			

 Table 2.2
 Compliance with Part 2 of the licence – Water Quality

**a** IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister – Compliance Report, 21 December 2017, Erratum issued on 8 February 2018.

b Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018.

**Note:** Full = Full Compliance; High = High Compliance; Adeq = Adequate Compliance

**Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

# Compliant (clause 2.1.1) with maintaining a drinking water quality management system

Our auditor assigned Sydney Water a Compliant grade for clause 2.1.1, which required Sydney Water to maintain a drinking water quality management system that is consistent with the ADWG, except to the extent that NSW Health specifies otherwise. We agree with this audit grade.

Our auditor assessed consistency with each of the 12 elements of the ADWG. The auditor noted that Sydney Water's Drinking Water Quality Management System (DWQMS) addresses each of the elements and is consistent with the ADWG. Sydney Water also communicates regularly with NSW Health to maintain the DWQMS to NSW Health's satisfaction.

Our auditor noted that Sydney Water has a Drinking Water Management Manual that describes Sydney Water's approach to managing drinking water quality in a manner that is consistent with the framework prescribed by the ADWG. The DWQMS overall is underpinned by a number of key supporting documents, processes and procedures to fully define drinking water management practices undertaken by Sydney Water.

Incident management (Element 6) is a key component of maintaining a DWQMS. Sydney Water updated its incident management procedure that followed its new business resilience framework. The auditor noted the updated incident management procedure has mandatory requirements for incident prevention, including Threat and Vulnerability analysis, Business Impact Assessment, Risk Assessment and the identification of critical customers. Sydney Water participated in a joint exercise with NSW Health and WaterNSW during the audit period that tested communication between the organisations. NSW Health confirmed it has

engaged with Sydney Water to help ensure appropriate communication and incident management protocols are maintained and understood by all staff.

Even though the auditor has assigned Sydney Water a Compliant grade for clause 2.1.1, the auditor identified six opportunities for improvement. These improvements are related to strengthening the DWQMS with enhanced risk identification and capture, continuing to develop scheme level drinking water quality management plans, strengthening procedures for each activity from catchment to consumer, finalising incident management gap analysis, and ensuring staff has and maintain the training requirements. Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

# Compliant (minor shortcomings) (clause 2.1.2) with implementing a drinking water management system

Our auditor assigned Sydney Water a Compliant (minor shortcomings) grade for clause 2.1.2, which required Sydney Water to fully implement and carry out all relevant activities in accordance with the drinking water quality management system, and to the satisfaction of NSW Health. We agree with this audit grade.

Our auditor noted that the DWQMS is being largely implemented based on reviewing relevant samples across the 12 elements and observations during site visits. These minor shortcomings did not impact on product delivery or public health.

Our auditor identified minor shortcomings in relation to preventive measures for drinking water quality management (Element 3) and review and continual improvement (Element 12).

In particular, the auditor found that:

- For Element 3, inspection for the Parklea drinking water reservoir was only done from ground level and the reservoir roof was not inspected for more than 12 months. Sydney Water had not completed the installation of the required safety equipment and not provided associated training to complete roof inspections. Roof inspections are important for maintaining distribution system integrity and water quality.
- For Element 12, some high priority drinking water operational improvement actions had not been completed within the target dates and no revised dates were identified, such as the Nepean Clearwater pump 2 overhaul had a target date of January 2018 and a high priority in the Produce Management Improvement Register, but the task was not completed by that date.

We make two recommendations in relation to clause 2.1.2, based on the auditor's recommendations<sup>10</sup>.

#### Recommendations to Sydney Water

1 By 30 June 2019, ensure reservoir roofs, in particular the Parklea drinking water reservoir, have been inspected safely as per the reservoirs inspection schedule, including with the required safety equipment and associated training.

<sup>&</sup>lt;sup>10</sup> Further details of the auditor's recommendations are available in the auditor's report in Appendix C.

2 By 30 June 2019, have processes in place to document target finish dates, priorities, revised dates and reasons for delay in implementing improvement actions on drinking water.

Our auditor identified one opportunity for improvement for clause 2.1.2. This improvement is related to making critical control point alert levels viewable on the supervisory control screens. Further details of the opportunity for improvement are available in the auditor's report in Appendix C.

# Compliant (clause 2.2.1) with maintaining a recycled water quality management system

Our auditor assigned Sydney Water a Compliant grade for clause 2.2.1, which required Sydney Water to maintain a Management System that is consistent with the AGWR, except to the extent that NSW Health specifies otherwise. We agree with this audit grade.

Our auditor noted that Sydney Water's Recycled Water Management Manual (RWMM) and Recycled Water Quality Management Plans (RWQMPs) cover the requirements of the AGWR adequately. Together the RWMM, scheme specific RWQMPs and a number of companion documents, constitute a comprehensive Recycled Water Quality Management System (RWQMS) package that closely follows the structure and content of the 12 elements of the AGWR. The auditor noted that NSW Health indicated that Sydney Water has effectively managed incidents over the audit period.

Our auditor noted that the risk assessments have been undertaken using the corporate risk management framework which allows for risks to be escalated and be comparable across the business. This ensures that significant risks are given the priority they require. The auditor made no recommendations but identified seven opportunities for improvement for the risk assessment process that would assist the subsequent implementation of the RWQMS.

These improvements are related to clarifying operator's roles and responsibilities at handover points on flow diagrams, strengthening the evidence available for use in risk assessments, and distinguishing between consequences of biological and chemical consequences in risk assessments. The auditor also suggested improvements in clarifying why verification monitoring is split into compliance and operational monitoring, calculating sodium absorption ratio in recycled water for irrigation end use risk assessments, ensuring gap analysis for the incident management procedure is finalised, and developing an improved training needs matrix. Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

# Compliant (minor shortcomings) (clause 2.2.2) with implementing a recycled water quality management system

Our auditor assigned Sydney Water a Compliant (minor shortcomings) grade for clause 2.2.2, which required Sydney Water to ensure the RWQMS is fully implemented and that all relevant activities are carried out in accordance with the RWQMS, and to the satisfaction of NSW Health. We agree with this audit grade.

Our auditor noted that in general Sydney Water has good systems in place and manages recycled water schemes well. The minor shortcomings relate to preventative measures for recycled water management (Element 3) and review and continuous improvement (Element 12) of the AGWR framework. In particular, the auditor found that:

- For Element 3, Sydney Water had a delay in implementing the preventative measure of cross-connections in the network. The preventative measure required flow testing and inspecting all properties prior to installation of the recycled water flow meter. Sydney Water had a backlog of inspections for over two years. In clearing the backlog, a cross-connection was found that identified a residential property had been supplied with recycled water instead of drinking water for over two years. The incident report stated that the residents had no noticeable health issues and were given contact details for NSW Health as per NSW Health's requirements.
- For Element 12, the improvement plans for recycled water did not appear to be actively maintained and there were a number of action items that have exceeded their due date. These action items had no priority ranking, no revised due date or explanation for the delay. It is possible that priority issues could be missed with the current system.

In the implementation of RWQMS for dual reticulation schemes, it is inevitable that crossconnections with drinking water will occur. There are a number of barriers and preventive measures that are now in place to manage this issue. The main control is the high treatment standard that is required for the supplied water. The auditor noted that although crossconnections were identified, it did not exceed the anticipated level of exposure as specified in the AGWR.

Our auditor noted that at the Rouse Hill scheme the quality of water is good and the plant is well maintained. However, control measures must be implemented as specified in the site specific RWQMP and the auditor recommended the identification of an appropriate hold point for network flow testing prior to supply of recycled water.

On balance, we agree with the overall grade of Compliant (minor shortcomings) for this clause as the delay in flow testing and inspection was mitigated by other preventive measures, such as the appropriate treatment level of recycled water. Having considered the auditor's finding, if applying an element-by-element approach, we would have assigned a Non-compliant (nonmaterial) grade for Element 3 for the delay in flow testing and inspecting all properties prior to installation of the recycled water flow meters and compliant grades for all other elements.

We make two recommendations in relation to clause 2.2.2, based on the auditor's recommendations<sup>11</sup>.

#### Recommendations to Sydney Water

- 3 By 31 March 2019, test all main to meter pipes to prevent cross-connections prior to the supply of recycled water from Sydney Water's main to any properties within Sydney Water's dual reticulation schemes and establish a hold point prior to supply of recycled water.
- 4 By 30 June 2019, have processes in place to document target finish dates, priorities, revised dates and reasons for delay in implementing improvement actions on recycled water product and recycled water schemes.

<sup>&</sup>lt;sup>11</sup> Further details of the auditor's recommendations are available in the auditor's report in Appendix C.

Our auditor identified six opportunities to improve clause 2.2.2. These improvements are related to Sydney Water identifying and documenting triggers for risk register review outside the scheduled 4-year period, specifying time delays in critical and operational control limits in online monitoring, clarifying UV validation envelope, improving documentation of recycled water cross-connection complaints, expanding the quality performance indicators used to inform the RWQMP review process, and ensuring relevant guidelines are followed when making pathogen reduction claims. Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

## Compliant (clause 2.3.1) with the Fluoridation Code

Our auditor assigned Sydney Water a Compliant grade for clause 2.3.1, which required Sydney Water to comply with the Fluoridation Code. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated compliance with the Fluoridation Code<sup>12</sup> from the evidence provided and sighted, and observations during the site visit to Cascade Water Filtration Plant. Compliance with relevant aspects of the Fluoridation Code were considered and work done by Sydney Water to address and close out previous recommendation (see Chapter 3).

Our auditor noted that Sydney Water has implemented changes relating to requirements for design controls for fluoridation facilities identified in the last operational audit. Sydney Water maintains regular communications with NSW Health on levels of fluoride in the drinking water through regular performance reporting of critical control points, operational targets and routine performance. Exceptions reports are also provided to NSW Health if required. A fluoride overdose plan was prepared in consultation with NSW Health, and training sessions provided for all fluoride plant operators.

Our auditor identified no recommendations or opportunities for improvement.

## 2.3 Water quantity

We audited clause 3.1.1 and assigned a Compliant grade. Our auditor assigned Sydney Water Compliant grades for clauses 3.2.6 and 3.2.7. We agree with auditor's assigned grades.

Part 3 of the licence (Water Quantity) outlines Sydney Water's water security and conservation obligations. It obliges Sydney Water to use its best endeavours to develop a roles and responsibilities protocol with the Metropolitan Water Directorate (MWD) for the development and implementation of the Metropolitan Water Plan and also required the implementation and reporting on the economic level of water conservation (ELWC).

<sup>&</sup>lt;sup>12</sup> The Fluoridation Code (2011) was revised during the audit period (April 2018). For auditing purpose, the new version of the code is not materially different from the previous version.

Clause	Requirement	Compliance grading				
3	Water quantity	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20
3.1.1	Roles and responsibilities protocol with the Metropolitan Water Directorate	-	Full	0		
3.2.6	Water conservation program consistent with economic level of conservation methodology (ELWC)	-	-			
3.2.7	Reporting on water conservation in accordance with the Reporting Manual	-	-			

#### Table 2.3 Compliance with Part 3 of the licence – Water Quantity

a IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister – Compliance Report, 21 December 2017. Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018. Note: Full = Full Compliance

**Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

# Compliant (clause 3.1.1) with using best endeavours to develop a roles and responsibilities protocol with DPE

We audited clause 3.1.1 ourselves and assigned a Compliant grade.

The licence requires Sydney Water to use its best endeavours to develop and maintain a Roles and Responsibilities Protocol with the MWD for the development and implementation of the Metropolitan Water Plan.<sup>13</sup> DPE now has the responsibility of the MWD. As noted in our 2016-17 audit report, Sydney Water has formed a cooperative relationship with DPE in the absence of a signed protocol. DPE confirmed that a formal protocol was not required.<sup>14</sup> We have therefore concluded that Sydney Water used its best endeavours to develop the protocol as required by the licence clause despite DPE no longer requiring the protocol.

We identified no recommendations or opportunities for improvement.

#### Compliant (clause 3.2.6) with developing a water conservation plan

Our auditor assigned Sydney Water a Compliant grade for clause 3.2.6, which required Sydney Water to develop a water conservation program, by 1 September 2017, consistent with its ELWC and in accordance with the methodology previously approved by IPART. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it had developed a Water Conservation Plan consistent with the approved ELWC. The Plan is documented in the *Water Conservation Report 2016-2017*, which also details how the ELWC was applied, a description of

<sup>&</sup>lt;sup>13</sup> 2017 Metropolitan Water Plan available at: https://www.metrowater.nsw.gov.au/2017-metropolitan-water-plan

Email to IPART, Director Water and Utilities, Division of Energy, Water and Portfolio Strategy, Department of Planning and Environment, 13 August 2018.

the planned projects and an estimate of the expected water savings (based on the current value of water).

Our auditor identified no recommendations or opportunities for improvement.

### Compliant (clause 3.2.7) with reporting on water conservation

Our auditor assigned Sydney Water a Compliant grade for clause 3.2.7, which required Sydney Water to report to IPART, in accordance with the Reporting Manual<sup>15</sup>, on water conservation. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it had reported to IPART with respect to water conservation (Water Conservation Report) during the audit period as required by the Reporting Manual. Review of the 2016-17 and 2017-18 water conservation reports <sup>16</sup> confirmed that Sydney Water addressed each reporting requirement to the extent applicable and that the report was submitted in accordance with the specified timeline.

Our auditor identified no recommendations or opportunities for improvement.

## 2.4 Assets

Our auditor assigned Sydney Water Compliant grades for clauses 4.1.1, 4.1.5, 4.2.1, 4.2.2, and 4.2.3. We agree with these audit grades.

Part 4 of the licence (Assets) outlines the obligation for Sydney Water to develop an Asset Management System (AMS) that is consistent with the *International Standard ISO 55001:2014 Asset Management System – Requirements* (ISO 55001) by 30 June 2018. Until the AMS has been developed and certified, Sydney Water must continue to maintain and implement the current Asset Management Framework. It also specifies the system performance standards for water pressure, water continuity and wastewater overflows that Sydney Water must comply with in a financial year.

<sup>&</sup>lt;sup>15</sup> Sydney Water Reporting Manual, August 2017, revised in July 2018 with amended performance indicators.

<sup>&</sup>lt;sup>16</sup> These two water conservation reports are both relevant to the audit period because these reports were completed on 1 September each year as required by the Sydney Water Reporting Manual.

Clause	Requirement	Compliance	Compliance grading				
4	Assets	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20	
4.1.1	Develop an AMS	-	Full				
4.1.5	Maintenance of current AMS	Full	Full				
4.2.1	Water pressure standard	-	Full				
4.2.2	Water continuity standard	-	Full				
4.2.3	Wastewater overflow standard	-	Full				

#### Table 2.4 Compliance with Part 4 of the licence – Assets

a IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister – Compliance Report, 21 December 2017.
 b Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018.

Note: Full = Full Compliance

**Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

#### Compliant (clause 4.1.1) with development of an asset management system

Our auditor assigned Sydney Water a Compliant grade for clause 4.1.1, which required Sydney Water to develop an AMS that is consistent with ISO 55001 by 30 June 2018. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated it has developed its AMS such that it is consistent with the requirements of ISO 55001. The AMS, which encompasses a portfolio of processes and supporting documentation, effectively details the manner in which Sydney Water manages its asset management activities in accordance with its Strategic Asset Management Plan, under the umbrella of its adopted Asset Management Framework. The Asset Management Framework is consistent with international asset management practice, thereby demonstrating compliance with this licence clause.

Our auditor identified no recommendations or opportunities for improvement.

# Compliant (clause 4.1.5) with maintenance and implementation of current asset management framework

Our auditor assigned Sydney Water a Compliant grade for clause 4.1.5, which required Sydney Water to maintain and implement the current asset management framework while transitioning to the AMS. Sydney Water may only make changes to the Asset Management Framework<sup>17</sup> that will assist in the transition of the Asset Management Framework to the AMS. Sydney Water must notify IPART, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Asset Management Framework. We agree with this audit grade.

<sup>&</sup>lt;sup>17</sup> Asset Management Framework is the asset management framework that Sydney Water was required to maintain and implement under the licence that was immediate predecessor to the existing licence.

Our auditor noted that Sydney Water has continued to maintain the Asset Management Framework whilst it has developed and transitioned to an AMS consistent with ISO 55001. Any changes to Sydney Water's approach to the management of its assets has been the result of continual improvement and refinement of its system as it has transitioned to be consistent with the requirements of ISO 55001. There have been no significant changes that warranted specific notification to IPART.

Our auditor observed that during both the audit interviews and field verification visits, Sydney Water has continued to implement sound asset management practices consistent with the arrangements detailed in the Asset Management Framework. Our auditor noted that field staff, principally members of the reliability, operability and maintenance team, demonstrated a high level of ownership and pride in their work and it was apparent that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

In response to NSW Health's submission about spare parts management, we asked the auditor to consider this matter. The auditor noted that operational and maintenance personnel are sufficiently aware of the identification of potential risks to water quality arising from sharing mechanical spare parts used in different conditions. Sydney Water identified a potential cross-contamination risk to water quality from a mixer motor that was used in wastewater condition. The motor was subsequently not installed. The incident and risk management processes have been appropriately implemented.

Our auditor identified no recommendations or opportunities for improvement.

## Compliant (clause 4.2.1) with meeting the water pressure standard

Our auditor assigned Sydney Water a Compliant grade for clause 4.2.1, which required Sydney Water to ensure that it met the system performance standard for water pressure, as set out in its licence, in any financial year. We agree with this audit grade.

Our auditor noted that Sydney Water reported that 152 properties had experienced a Water Pressure Failure<sup>18</sup> during the 2017-18 financial year and demonstrated that the process used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence. As the number of properties that had experienced a Water Pressure Failure was less than the specified limit of 6,000 properties, Sydney Water is assessed to have been fully compliant with this obligation.

Our auditor identified no recommendations or opportunities for improvement.

#### Compliant (clause 4.2.2) with meeting the water continuity standard

Our auditor assigned Sydney Water a Compliant grade for clause 4.2.2, which required Sydney Water to ensure that it met the system performance standard for water continuity, as set out in its licence, in any financial year. We agree with this audit grade.

A Water Pressure Failure means a situation in which a property experiences a pressure of less than 15 metres head of pressure for a continuous period of 15 minutes or more.

Our auditor noted that Sydney Water reported that during the 2017-18 financial year 39,308 properties had experienced an Unplanned Water Interruption<sup>19</sup> for more than five continuous hours and that 7,491 properties had experienced three or more Unplanned Water Interruptions of more than one hour, and demonstrated that the processes used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence. As the number of properties that had experienced an Unplanned Water Interruption was less than the specified limits of 40,000 properties for a single event and 14,000 properties for multiple events respectively, Sydney Water is assessed to have been fully compliant with this obligation.

Our auditor identified no recommendations or opportunities for improvement.

### Compliant (clause 4.2.3) with meeting the wastewater overflow standard

Our auditor assigned Sydney Water a Compliant grade for clause 4.2.3, which required Sydney Water to ensure that it met the wastewater overflow system performance standard as set out in its licence in any financial year. We agree with this audit grade.

Our auditor noted that Sydney Water reported that during the 2017-18 financial year 7,816 properties had experienced an Uncontrolled Wastewater Overflow<sup>20</sup> in dry weather and that 50 properties had experienced three or more Uncontrolled Wastewater Overflows in dry weather, and demonstrated that the processes used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence. As the number of properties that had experienced an Uncontrolled Wastewater Overflow(s) was less than the specified limits of 14,000 properties for a single event and 175 properties for multiple events respectively, Sydney Water is assessed to have been fully compliant with this obligation.

Our auditor identified no recommendations or opportunities for improvement.

## 2.5 Customers and Consumers

Our auditor assigned Sydney Water Compliant (minor shortcomings) grade for clause 5.2.1, and Compliant grades for clauses 5.2.3, 5.4.1, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5 and 5.8. We agree with these audit grades.

Part 5 of the licence (Customers and Consumers) outlines the obligations for Sydney Water relating to customer and consumer protection, customer engagement, and cooperative relationships with stakeholders.

<sup>&</sup>lt;sup>19</sup> Unplanned Water Interruption is an event which commences when the supply of drinking water of a property is interrupted without the customer or consumer having received prior notice of that interruption from Sydney Water.

<sup>&</sup>lt;sup>20</sup> Uncontrolled Wastewater Overflow is a sewage overflow that is not a controlled wastewater overflow (overflow that is directed via a designed structure to a predetermined location).

Clause	Requirement	Compliance grading				
5	Customers and Consumers	2015-16ª	2016-17ª	2017-18 <sup>ь</sup>	2018-19	2019-20
5.2.1	Prepare an information pamphlet	-	-	0		
5.2.3	Provide the pamphlet to customers, and make available free of charge	-	-			
5.4.1	Assistance options for payment difficulties and actions for non-payment	Full	-	0		
5.5.1	Maintain and consult with Customer Council	Full	-			
5.5.2	Utilise the Customer Council to obtain advice	Full	-			
5.5.3	Membership of Customer Council	Full	-			
5.5.4	Content of Customer Council Charter	Full	-			
5.5.5	Provision of information to the Customer Council	Full	-			
5.8	Code of conduct	-	Full	$\bigcirc$		

Table 2.5 Compliance with Part 5 of the licence – Customers and Consumers

a IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister – Compliance Report, 21 December 2017.
b Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018.
Note: Full = Full Compliance

Note: Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

# Compliant (minor shortcomings) (clause 5.2.1) with providing information about customer rights

Our auditor assigned Sydney Water a Compliant (minor shortcomings) grade for clause 5.2.1, which required Sydney Water to prepare an information pamphlet about specific aspects of customer rights. We agree with this audit grade.

Our auditor noted that Sydney Water prepared a pamphlet that summarises the provisions of the Customer Contract consistent with the specified requirements in clause 5.2.1(a) to (e), and in part clause 5.2.1(f). Clause 5.2.1(f) requires the pamphlet to contain information regarding the ability of customers to enter into separate agreements to the Customer Contract for services. Whilst information is provided in respect of pressure sewer service agreements, information in respect of other additional services agreements was not provided.

The intent of clause 5.2.1(f) is to provide information to customers who may seek different level of service to those services provided in the Customer Contract, such as for large commercial and industrial customers who may want to negotiate alternative service agreements with Sydney Water.

Accordingly, Sydney Water is assessed to be compliant with the requirements of this obligation, albeit with minor shortcomings.

We make one recommendation in relation to clause 5.2.1, based on the auditor's recommendation<sup>21</sup>.

#### Recommendation to Sydney Water

5 By 30 June 2019, update the pamphlet prepared under clause 5.2.1 to include or refer to information regarding the ability for a customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sydney Water of services to the customer.

Our auditor identified no opportunities for improvement for clause 5.2.1.

#### Compliant (clause 5.2.3) with making the information pamphlet available

Our auditor assigned Sydney Water a Compliant grade for clause 5.2.3, which required Sydney Water to make the pamphlet prepared under clause 5.2.1 available to customers at least annually with their bills, and make it available to any person upon request to the Customer Centre and on the Sydney Water website. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that the pamphlet is provided free of charge to customers in conjunction with the August-October billing cycle each year and upon request to the Customer Centre; it is also available on the Sydney Water website for downloading free of charge. Sydney Water is assessed to have been fully compliant with this obligation.

Our auditor identified no recommendations and one opportunity for improvement for clause 5.2.3. This improvement is related to making the pamphlet more readily identifiable on the Sydney Water website. Further details of the opportunity for improvement is available in the auditor's report in Appendix C.

#### Compliant (clause 5.4.1) with managing customer experiencing financial hardship

Our auditor assigned Sydney Water a Compliant grade for clause 5.4.1, which required Sydney Water to maintain and fully implement arrangements for assisting residential customers who are experiencing financial hardship to better manage their current and future bills. We agree with this audit grade.

Our auditor noted that Sydney Water provided evidence to demonstrate that it has maintained and fully implemented arrangements for assisting residential customers who are experiencing financial hardship. These arrangements, which are summarised in the Payment Assistance Policy, include both Government funded and Sydney Water sponsored programs. They include, but are not limited to, payment assistance plans.

<sup>&</sup>lt;sup>21</sup> Further details of the auditor's recommendations are available in the auditor's report in Appendix C.

The Payment Assistance Policy and Overdue Payments Policy identify the circumstances under which Sydney Water may disconnect or restrict the supply of water; these documents emphasise that Sydney Water is to exhaust all available debt recovery approaches before action is taken to disconnect or restrict a service. Sydney Water is proactive in promoting the availability of assistance programs and information is available on the Sydney Water website.

Our auditor identified no recommendations or opportunities for improvement.

# Compliant (clause 5.5.1) with consulting with customers and consumers through the Customer Council

Our auditor assigned Sydney Water a Compliant grade for clause 5.5.1, which required Sydney Water to regularly consult with organisations representing a broad cross-section of its Customers and Consumers through the Customer Council. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that, during the audit period, it had regularly consulted with its Customer Council, which represents a broad cross-section of its customers and consumers. Meetings were held quarterly, consistent with the requirements under the Customer Council Charter. Sydney Water also engaged with Customer Council members through their involvement in workshops, forums and other out of session meetings.

Our auditor identified no recommendations or opportunities for improvement.

# Compliant (clause 5.5.2) with obtaining advice on the interests of the customers and consumers through Customer Council

Our auditor assigned Sydney Water a Compliant grade for clause 5.5.2, which required Sydney Water to use the Customer Council to obtain advice on the interests of Sydney Water's customers and consumers, the Customer Contract and such other key issues related to Sydney Water's planning and operations as Sydney Water may determine. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that, during the audit period, it had consulted with the Customer Council in respect of a range of issues including for example, Sydney Water's long-term strategy, the Customer Engagement Program, the licence review and a review of the Customer Contract.

Our auditor identified no recommendations or opportunities for improvement.

# Compliant (clause 5.5.3) with using best endeavours to include representatives of the nominated categories as members of the Customer Council

Our auditor assigned Sydney Water a Compliant grade for clause 5.5.3, which required Sydney Water to ensure membership of the Customer Council is appointed in accordance with the Customer Council Charter, and that Sydney Water has used its best endeavours to include representatives of the nominated categories. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that all nominated interest groups continued to be represented on the Customer Council throughout the audit period, notwithstanding that there were some changes in the individual representatives of some member organisations.

Our auditor identified no recommendation or opportunities for improvement.

# Compliant (clause 5.5.4) with maintaining a Customer Council Charter that addresses all of the nominated issues

Our auditor assigned Sydney Water a Compliant grade for clause 5.5.4, which required Sydney Water and the Customer Council to maintain a Customer Council Charter that addresses all of the nominated issues. We agree with this audit grade.

Our auditor noted that Sydney Water advised that the Customer Council Charter was last revised in 2015, and that it had been maintained throughout the audit period. Detailed review of the Customer Council Charter confirmed that it addresses the required matters listed in part (a) to (j) of clause 5.5.4.

Our auditor identified no recommendations or opportunities for improvement.

#### Compliant (clause 5.5.5) with providing information to the Customer Council

Our auditor assigned Sydney Water a Compliant grade for clause 5.5.5, which required Sydney Water to provide information in its possession or under its control necessary to enable the Customer Council to discharge the tasks assigned to it. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it had provided the Customer Council with information necessary to enable the Customer Council to discharge the tasks assigned to it. Information provided include presentations to Customer Council meetings and email correspondence.

Our auditor identified no recommendations or opportunities for improvement.

#### Compliant (clause 5.8) with establishing a code of conduct with licensees

Our auditor assigned Sydney Water a Compliant grade for clause 5.8, which required Sydney Water to use its best endeavours to co-operate with each licensed network operator and licensed retail supplier within the area of operations that seeks to establish with Sydney Water a code of conduct of the kind referred to in clause 25 of the *Water Industry Competition (General) Regulation 2008* (WIC Regulation). We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it has used its best endeavours to cooperate with WIC Act licensees that have sought to establish a code of conduct of the kind referred to in clause 25 of the WIC Regulation. Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

There appears to be a difference in understanding as to what instruments (agreements or protocols) may fulfil the requirements of a code of conduct<sup>22</sup> of the kind referred to in clause 25 of the WIC Regulation.

An agreement or protocol or other instrument may be considered a code of conduct only if there is interconnecting infrastructure. We have amended this clause in the draft operating licence for Sydney Water to clarify this obligation.<sup>23</sup>

Our auditor identified one opportunity for improvement for clause 5.8. This improvement is for determining whether an agreement or protocol between the parties is deemed to constitute a code of conduct. Further details of the opportunity for improvement are available in the auditor's report in Appendix C.

## 2.6 Quality Management

Our auditor assigned Sydney Water Compliant grades for clauses 7.1.2 and 7.1.3. We agree with these audit grades.

Part 7 of the licence (Quality management) outlines the obligation for Sydney Water to certify, maintain certification and implement a management system that is consistent with the *Australian Standard AS/NZS ISO 9001:2008: Quality Management Systems - Requirements* (the Quality Management System or the QMS).

Clause	Requirement	Compliance	Compliance grading				
7	Quality Management	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20	
7.1.2	Certification of QMS to AS/NZS ISO 9001:2008 Quality Management Systems – Requirements by 30 June 2018, and maintain certification	-	-				
7.1.3	Implementation of QMS by 30 June 2018	-	-				

 Table 2.6
 Compliance with Part 7 of the licence – Quality Management

a IPART, Sydney Water Operational Audit 2016-17 - Report to the Minister - Compliance Report, 21 December 2017.

**b** Viridis Consultants, *2018 Operational Audit Report Sydney Water – Final Audit Report*, November 2018. **Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

- a) responsibility for water quality
- b) liability in the event of the unavailability of water
- c) liability in the event of infrastructure failure
- d) fees and charges payable in respect of the use of infrastructure, and
- e) responsibility for handling customer complaints.

<sup>23</sup> Draft Sydney Water Operating Licence 2019-2023, Clause 8.3.

A code of conduct establishes the respective responsibilities of licensed network operators, licensed retail suppliers and public water utilities (WIC Regulation, clause 25(1)). WIC Regulation, clause 25(3) provides that a code of conduct may make provisions with respect to the following:

### Compliant (clause 7.1.2) with certification of the quality management system

Our auditor assigned Sydney Water a Compliant grade for clause 7.1.2, which required Sydney Water to certify that its QMS is consistent with the *Australian Standard AS/NZS ISO 9001:2008: Quality Management Systems - Requirements* by 30 June 2018, and maintain the certification. We agree with this audit grade.

Our auditor noted that Sydney Water has developed a QMS consistent with the current international standard released in 2015, rather than the 2008 international standard stated in the licence. The international standard was updated in 2015 and we consider the 2015 standard the appropriate standard for Sydney Water to achieve.

On 10 May 2018 the QMS was certified, by a JAS-ANZ<sup>24</sup> certified entity, to ISO 9001:2015 for Sydney Water to plan, deliver, operate, manage, maintain and improve the systems, services and products for water, wastewater, recycled water and storm water for Sydney Water customers throughout its area of operations. The certification covers overarching corporate processes that impact the whole organisation. Sydney Water plans to gradually include additional corporate processes.

Our auditor noted that certification to ISO 9001:2015 was achieved within the audit period by a JAS-ANZ certified organisation, and it was maintained for the remaining period.

Our auditor identified no recommendations or opportunities for improvement.

## Compliant (clause 7.1.3) with implementation of the quality management system

Our auditor assigned Sydney Water a Compliant grade for clause 7.1.3, which required Sydney Water to fully implement its QMS and that all relevant activities are carried in accordance with the QMS by 30 June 2018. We agree with this audit grade.

Our auditor noted that the QMS was being implemented based on the evidence provided and the staff interviews. This was confirmed based on the certification achieved for the expanded scope of the QMS in May 2018.

Our auditor identified no recommendations or opportunities for improvement.

## 2.7 **Performance monitoring**

Our auditor assigned Sydney Water a Compliant (minor shortcomings) grade for clause 8.4.1. We agree with this audit grade.

Part 8 of the licence (Performance monitoring) outlines the obligation for Sydney Water to measure accurately its performance against the performance indicators and system performance standards specified in the Reporting Manual.

<sup>&</sup>lt;sup>24</sup> The Joint Accreditation System of Australia and New Zealand (JAZ-ANZ) provides accreditation services.

Clause	Requirement	Compliance grading				
8	Performance monitoring	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20
8.4.1	Maintain records systems to measure performance indicators and system performance standards	-	High	<u> </u>		

 Table 2.7
 Compliance with Part 8 of the licence – Performance monitoring

a IPART, Sydney Water Operational Audit 2016-17 – Report to the Minister – Compliance Report, 21 December 2017.
b Viridis Consultants, 2018 Operational Audit Report Sydney Water – Final Audit Report, November 2018.
Note: High = High Compliance

Note: Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

# Compliant (minor shortcomings) (clause 8.4.1) with measuring performance indicators and system performance standards

Our auditor assigned Sydney Water a Compliant (minor shortcomings) grade for clause 8.4.1, which required Sydney Water to maintain record systems that are sufficient (to IPART's satisfaction) to enable Sydney Water to measure accurately its performance against the performance indicators and System Performance Standards specified in the Reporting Manual. We agree with this audit grade.

Our auditor noted that whilst the record systems and procedures for reporting against the performance indicators and System Performance Standards are, in general, sufficiently robust to ensure accurate reporting, there appears to be some minor shortcomings in the data extracted for reporting against the Wastewater Overflow Standard. Based on review of the 2017-18 data, the number of wastewater overflow should have been reported as 7,784 properties, rather than 7,816 properties, an error of 32 properties or less than 1% of the total. The auditor consider the impact as minor as Sydney Water is performing well within the required standard level of 14,000 properties. However, it is important to ensure that accurate reporting is not compromised.

We make one recommendations in relation to clause 8.4.1, based on the auditor's recommendation<sup>25</sup>.

#### Recommendation to Sydney Water

6 By 30 June 2019, review data extraction processes for reporting against the Wastewater Overflow Standard to ensure an improvement in the reporting of the actual number of events.

Our auditor identified no opportunities for improvement for clause 8.4.1.

<sup>&</sup>lt;sup>25</sup> Further details of the auditor's recommendations are available in the auditor's report in Appendix C.

### 2.8 Memorandum of understanding

comply with MoU with Fire

and Rescue NSW

Our auditor assigned Sydney Water Compliant grade for clause 9.4.2. We agree with this audit grade.

Part 9 of the licence (Memorandum of understanding) outlines the obligations for Sydney Water to use its best endeavours to comply with a memorandum of understanding (MOU) with Fire and Rescue NSW.

	-					-
Clause	Requirement	Compliance grading				
9	Memorandum of understanding	2015-16ª	2016-17ª	2017-18 <sup>b</sup>	2018-19	2019-20
9.4.2	Use best endeavours to	-	-			

 Table 2.8
 Compliance with Part 9 of the licence – Memorandum of Understanding

a IPART, Sydney Water Operational Audit 2016-17 - Report to the Minister - Compliance Report, 21 December 2017.

b Viridis Consultants, 2018 Operational Audit Report Sydney Water - Final Audit Report, November 2018.

**Note:** Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

# Compliant (clause 9.4.2) with Memorandum of understanding with Fire and Rescue NSW

Our auditor assigned Sydney Water a Compliant grade for clause 9.4.2, which required Sydney Water to use best endeavours to comply with the memorandum of understanding with Fire and Rescue NSW. We agree with this audit grade.

Our auditor noted that Sydney Water demonstrated that it had complied with the requirements of the MOU with Fire and Rescue NSW by participating as members of the Strategic Liaison Group, participating as members of the Fire Fighting Working Group, undertaking studies/investigations in respect of system fire flow capacity, sharing information and otherwise engaging with Fire and Rescue NSW.

Our auditor identified no recommendations or opportunities for improvement.
### 3 Progress on previous audit recommendations

The previous audits in 2016 and 2017 identified areas where Sydney Water were not fully compliant with its licence obligations. We made recommendations to the Minister to address these issues.<sup>26</sup> The following table outlines Sydney Water's progress in implementing these recommended actions.

In June 2018, IPART undertook a review of the performance indicators we collect annually from public water utilities. The review resulted in some performance indicators being no longer required to be reported from the 2017-18 reporting period. This in turn affected three previous audit recommendations where the actions are no longer relevant to the operations of Sydney Water, and therefore we decided not to audit whether these recommendations have been completed in the 2018 audit:

- Recommendation 2016-17–8 was to review the process used to compile performance indicator I5, however, I5 is no longer required to be reported.
- Recommendation 2016-17-9 was an assessment of Sydney Water's process of capturing site evidence for the priority of sewage overflow events in relation to performance indicators I6 and I7, however, I6 and I7 are no longer required to be reported.
- Recommendation 2016-17–10 required Sydney Water to put in place measures to capture sewage overflow duration in relation to performance indicator I8, however, I8 is no longer required to be reported.

Sydney Water demonstrated significant effort in completing the previous audit recommendations. Of the total 11 previous recommendations, three recommendations are no longer relevant as explained above, six has been completed, one is partially complete and one is continuing. The previous recommendations are shown in Table 3.1.

Where a recommendation is partially complete or continuing (see Table 3.1), we will follow it up in our next annual operational audit, together with the recommendations from this year's audit.

<sup>&</sup>lt;sup>26</sup> IPART, Sydney Water Corporation Operational Audit 2016-17 Report to the Minister – Compliance Report, 2017.

	previous audits			
	Recommendation	Progress		
2015-16-2: clause 2.2.2	Sydney Water should review recycled water monitoring requirements in consultation with NSW Health to confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place (by 30 March 2018).	<b>Complete (after due date)</b> Our auditor noted that after a successful trial of UVT monitoring, weekly UVT monitoring has been incorporated into the Recycled Water Annual Monitoring Plan. NSW Health was consulted and regularly updated on progress, and a final presentation was presented to NSW Health in August 2018.		
2016-17-1: clause 1.9.1	<ul> <li>By 30 June 2018:</li> <li>ensure that substance charges for commercial customers are charged to three decimal places in accordance with the IPART, Sydney Water Corporation maximum, prices for water, sewerage, stormwater drainage and other services from 1 July 2016, and</li> <li>develop and implement an auditable quality assurance process to confirm the accuracy of data entry of set fees.</li> </ul>	<b>Complete</b> Our auditor noted that Sydney Water has adjusted the unit rates for substance charges for commercial customers to three decimal places, consistent with the IPART Determination. Sydney Water also demonstrated that it has updated and developed its procedures to ensure that appropriate quality control processes are implemented and recorded. These procedures include a requirement to conduct random audits of calculated prices to ensure consistency with the IPART Determination.		
2016-17-2: clauses 2.1.1 and 2.1.2	Invite NSW Health to all risk assessments (eg, catchment to tap or system risk assessments) undertaken in relation to Sydney Water's systems (whether or not the system is operated by Sydney Water) that will consider public health risks	<b>Complete</b> Our auditor noted that Sydney Water invited NSW Health to all risk assessment workshops convened under the DWQMS during the audit period. Sydney Water formalised the process of inviting NSW Health by including an additional requirement in the relevant procedures.		
2016-17-3: clauses 2.1.1 and 2.1.2	<ul> <li>By 30 June 2018</li> <li>in consultation with NSW Health, update and implement the risk assessment process to ensure adequacy of inputs to, and outputs from, the risk assessment and ensure inputs include a generalised process flow diagram and the attendance of relevant stakeholders</li> <li>in consultation with NSW Health, develop or update all system process flow diagrams against the requirements of Element 2, Component 1, Action 2 (A generalised flow diagram should be constructed describing the water supply system from catchment to consumer) of the Australian Drinking Water Guidelines, and</li> <li>use the process flow diagram currently being developed for the Nepean Water Filtration Plant, to review the risk assessment for that plant.</li> </ul>	<b>Complete</b> Our auditor noted that risk assessment procedures were updated during the audit period that includes preparations for risk workshop, process flow diagram verification and invitation to stakeholders, and also workshop outputs. The work instruction for creating flow diagrams was developed in consultation with NSW Health, and were used to review the risk assessment for each Water Filtration Plant. A risk assessment workshop for the Nepean Water Filtration Plant applied the updated procedure which included stakeholders including NSW Health. Our auditor sighted the final report as evidence.		

# Table 3.1Sydney Water's progress in 2018 to address our recommendations from the<br/>previous audits

	Recommendation	Progress
2016-17-4: clauses 2.2.1 and 2.2.2	By 31 March 2018, complete a desktop review of the most recent compliance inspections for all end user sites to identify any outstanding high risk non-compliances and initiate appropriate action to address non- compliances, including interruption of supply where appropriate.	<b>Complete</b> Our auditor noted that Sydney Water completed the desktop reviews by the 31 March 2018 due date. In carrying out this review, Sydney Water considered that 'high risk' non-compliance areas are limited to backflow prevention and cross-connections, based on the risk of non-compliances in those areas to threaten the drinking water supply.
2016-17-5: clauses 2.2.1 and 2.2.2	<ul> <li>By 30 June 2018:</li> <li>a) in consultation with NSW Health, develop an interruption to supply process where end users are not meeting their obligations under their end user agreement or the Recycled Water Quality Management Plan</li> <li>b) in consultation with NSW Health, review the preventive measures for end user sites (on-site preventive measures) as documented in the recycled water management system and supporting material, including the content of the Annual Declaration and compliance inspection checklist, to ensure they are appropriate to the level of risk, and</li> <li>c) review the role and associated competencies for Sydney Water staff and contractors who are responsible for verifying the on-site preventive measures.</li> </ul>	<ul> <li>Partially complete Our auditor noted that Sydney Water consulted with NSW Health on the proposed iterative approach to addressing this recommendation. <ul> <li>a) &amp; c) Complete</li> <li>Our auditor noted that a final version of the interruption to supply process was presented to NSW Health in May 2018 after iterative consultation.</li> <li>Our auditor noted the Sydney Water have reviewed the role and associated skills of staff verifying on-site controls in relation to recycled water management and are requiring Business Customer Representatives to obtain qualifications or equivalent competency.</li> <li>b) Incomplete</li> <li>Our auditor noted that the iterative consultation with NSW Health has not been completed, revised materials should be finalised within 12 months, and status should be reviewed at the 2019 operational audit.</li> <li>Sydney Water has reviewed the preventive measures on end user sites. Supporting revised end user controls, statutory declarations and inspection checklists were provided to NSW Health, and iterative revisions are being reviewed and updated.</li> </ul> </li> </ul>

	Recommendation	Progress
2016-17-6: clauses 2.2.1 and 2.2.2	<ul> <li>By 30 June 2019:</li> <li>a) ensure Sydney Water staff and contractors who are responsible for verifying the on-site preventive measures are trained and assessed as competent to implement their responsibilities</li> <li>b) establish and implement a process for on- going competency assessment, and</li> <li>c) review all end user sites to confirm end users are meeting their obligations under their end user agreement or the Recycled Water Quality Management Plan and implement the interruption to supply process where appropriate.</li> </ul>	<b>Continuing</b> Our auditor noted that Sydney Water provided an update for progressing this recommendation that is due to be completed by 30 June 2019. As all Business Customer Representatives who manage interactions with recycled water business customers hold a Diploma in Water Industry Operations, Sydney Water considered that staff have the appropriate competencies to effectively manage the role. Sydney Water is implementing additional learning opportunities for employees and contractors whose duties involve recycled water management.
2016-17-7: clause 2.3.1	<ul> <li>By 30 June 2018, ensure all Sydney Water fluoridation systems are designed, installed, and operated in accordance with the <i>NSW Code of Practice for Fluoridation of Public Water Supplies 2011</i> (unless an exemption has been received from NSW Health), with particular reference to: <ul> <li>a) ensuring the dosing capacity of the fluoride dosing equipment does not exceed 110% of the target dose rate</li> <li>b) ensuring water traps remain filled</li> <li>c) providing appropriate colour coding</li> <li>d) marking of dosing pipes</li> <li>e) replacing dust mask filters every 13 weeks</li> </ul> </li> <li>f) maintaining a minimum of three months storage of fluoridating agent or apply for an exemption from this minimum standard 8.2.1.1 from NSW Health</li> <li>g) ensuring emergency response plans are consistent with Appendix C of the <i>NSW Code of Practice for Fluoridation of Public Water Supplies 2011</i></li> <li>h) submitting written notifications to cover all periods of repair/maintenance, and</li> <li>i) ensure internal audits assess compliance with all relevant requirements of Chapter 5 of the <i>NSW Code of Practice for Fluoridation of Public Water Supplies 2011</i>.</li> </ul>	Complete Our auditor noted that Sydney Water has addressed all areas of this recommendation. Detailed discussions have been undertaken under clause 2.3.1, where Sydney Water demonstrated compliance with the Fluoridation Code during the audit period.

	Recommendation	Progress
2016-17-8: clause 8.4.1	<ul> <li>By 31 March 2018:</li> <li>review its reporting process for infrastructure indicator I5 to provide assurance for future reported data, and</li> <li>evaluate the data it has historically reported for indicator I5 and report corrected data</li> </ul>	<b>Not required</b> Sydney Water reported this recommendation to be completed in their status report to IPART on 29 March 2018. We did not include this recommendation in the audit scope as it applies to indicators I5 that are no longer required to be reported.
2016-17-9: clause 8.4.1	<ul> <li>By 30 June 2018:</li> <li>a) assess whether its current processes for capturing site evidence for sewage overflow events and its compliance with its processes is sufficient for its business processes, and</li> <li>b) demonstrate that it has in place an appropriate audit trail for events where the priority has been changed.</li> </ul>	<b>Not required</b> Sydney Water reported this recommendation to be completed in their status report to IPART on 29 March 2018. We did not include this recommendation in the audit scope as it applies to indicators I6, and I7 that are no longer required to be reported.
2016-17-10: clause 8.4.1	By 31 December 2018, put in place appropriate measures to ensure that overflow ceased times are recorded accurately in future.	Not required Sydney Water reported this recommendation to be in progress in their status report to IPART on 29 March 2018 IPART wrote to Sydney Water on 4 September to inform them that they did not need to address 2016-17 audit recommendation 10. The recommendation applies to performance indicator I8 that is no longer required to be reported.

Source: Viridis Consultants, 2018 Operational Audit Report Sydney Water - Final Audit Report, November 2018.

Appendices

## A Compliance grades

Grades of compliance		Description
	Compliant	Sufficient evidence is available to confirm that the requirements have been met.
0	Compliant (minor shortcomings)	Sufficient evidence is available to confirm that the requirements have been met apart from <b>minor shortcomings</b> which to date have not compromised the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
8	Non-compliant (non-material)	Sufficient evidence is not available to confirm that the requirements have been met and the <b>deficiency does not adversely impact</b> the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
8	Non-compliant (material)	Sufficient evidence is not available to confirm the requirements have been met and the <b>deficiency does adversely impact</b> the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
	No Requirement	There is no requirement for the utility to meet this criterion within the audit period.

#### Table A1: Current compliance grades

Source: IPART Audit Guideline Public Water Utilities, September 2018, Figure 2.1.

Pre-2018 compliance grades

We abbreviate pre-2018 compliance grades according to the following convention:

- ▼ **Full** = Full Compliance
- **High** = High Compliance
- ▼ Adeq = Adequate Compliance
- ▼ NC = Non-compliant
- ▼ NR = No Requirement

### B 2018 audit scope

## 2018 operational audit scope Sydney Water Corporation

#### 2018 audit scope

This document sets out the 2018 operational audit scope for Sydney Water Corporation (Sydney Water).

This scope is based on the 5-year audit program for Sydney Water's 2015-2020 Operating Licence. Auditors should note any directions in the comments column of Table 2.

#### Audit period

The audit period is 1 July 2017 to 30 June 2018.

#### **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 conditions during the previous financial year. It also identifies what remedial action has or is being taken with respect to these non-compliances.

The SC covers all licence conditions 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.

#### Development and implementation of management systems

Where a management system needs to be developed and/or implemented by a date outside the audit period, we have requested the utility provide a verbal update on progress during the audit interviews. The purpose is to inform us and the auditor of progress made toward developing an effective management system by the date set out in the licence.

#### Interpretation

In the case of any discrepancies between the Sydney Water Operating Licence 2015-2020 (licence) and the audit scope, the licence will prevail.

#### Table 1 Key

Requirement	Meaning
Audit/Review	Audit/review clause in the 2018 audit
SC	We will rely on the utility's Statement of Compliance. All clauses require a Statement of Compliance unless there is a "no requirement" designation.
NR	No requirement (for audit or statement of compliance).

#### Table 2 2018 Audit scope for Sydney Water Corporation

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor	
1	Licence and licence authorisation			
1.1	Objectives of this licence			
1.1.1	<ul> <li>The objective of the licence is to enable and require Sydney Water to lawfully provide the services within its area of operations. Consistent with this objective, the licence requires Sydney Water to:</li> <li>a) meet the objectives and other requirements imposed on it in the Act and other relevant legislation</li> <li>b) comply with the quality and performance standards in the licence</li> <li>c) recognise the rights given to customers and consumers</li> <li>d) be subject to audits of compliance with the licence.</li> </ul>	NR		
1.2	Licence authorisation			
1.2.1	The licence is granted to enable and require Sydney Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems for providing the services throughout the area of operations.	SC		
1.3	Stormwater drainage system			
1.3.1	Sydney Water must 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 service to be provided by another appropriate body, including a council (within the meaning of the Local Government Act 1993 (NSW)).	SC		
1.3.2	Sydney Water may provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable Stormwater Drainage Systems and Services within the Area of Operations including for the purpose of increasing the capacity of the Stormwater Drainage System included in the business undertaking (referred to in Part 3 of the Act) 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.	SC		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
1.4	Term of this licence		
1.4.1	The term of the licence is five years from the commencement date.	NR	
	[Note: the Commencement Date is 1 July 2015, which means that the term of this Licence will end on 30 June 2020.]		
1.5	Licence amendment		
1.5.1	Subject to the Act and clause 1.5.2, this Licence may be amended by the Governor by notice in the New South Wales Government Gazette.	NR	
1.5.2	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.	NR	
	[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.]		
1.6	Connection of services		
1.6.1	Subject to any applicable laws, Sydney Water must ensure that Drinking Water and Wastewater Services are available on request for connection to any Property situated in the Area of Operations.	Audit	This is the first audit of this clause.
1.6.2	Connection to Sydney Water's systems for the supply of Services relating to Drinking Water and Wastewater is subject to any conditions that Sydney Water may lawfully determine to ensure the safe, reliable and financially viable supply of its Drinking Water and Wastewater Services to Properties situated in the Area of Operations in accordance with this Licence.	Audit	This is the first audit of this clause.
1.7	Non-exclusive licence		
1.7.1	The licence does not prohibit another 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	
1.8	Availability of Licence		
1.8.1	<ul><li>Sydney Water must make a copy of this Licence available to any person, free of charge:</li><li>a) website for downloading</li><li>b) upon request made to the contact centre.</li></ul>	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
1.9	Pricing		
1.9.1	Sydney Water must set the level of fees, charges, and other amounts payable for its Services subject to the terms of the licence, the Act and the maximum prices and methodologies for Services determined from time to time by IPART under the IPART Act.	Audit	Sydney Water was non-compliant in 2015 (previous licence), 2016 and 2017. Sydney Water notes in its Status Report on Audit Recommendations, provided to IPART on 28 March 2018, that billing for commercial customers to three decimal places has been resolved. Sydney Water is in the process of developing auditable processes for the annual updating of prices (as per recommendation 2016-17-1). Sydney Water's Statement of Compliance reports a non- compliance with this clause for part of the 2018 audit period. This non-compliance was reported in 2016-17 and recommendation 2016-17-1 addressed this non-compliance. Sydney Water reported that the recommendation is complete. Audit 2016-17-1 for completion.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
2	Water quality		
2.1	Drinking water		
2.1.1	Sydney Water must maintain a Management System that is consistent with the Australian Drinking Water Guidelines, except to the extent that NSW Health specifies otherwise (the Drinking Water Quality Management System). [Note: Sydney Water is to implement the Drinking Water Quality Management System to the Drinking Water Quality Management System to the Drinking Water system under its control in light of its knowledge of the entire drinking water supply system (from the water catchment to the Consumer). It is expected that the Drinking Water Quality Management System will be consistent with the Framework for Management of Drinking Water Quality. However, where NSW Health considers it appropriate, the application of the Australian Drinking Water Guidelines may be amended or added to, to take account of Sydney Water's circumstances and/or Drinking Water quality policy and practices within Naw South Wales 1	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade. The system must be consistent with the ADWG except to the extent that NSW Health specifies (specification from NSW Health must be consistent with the requirements of clause 2.1.4). NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).
2.1.2	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.	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade. Evidence must demonstrate that a compliant system was in place for the whole period to award Full Compliance. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health participated in risk assessments for four water filtration plants. NSW Health noted that Sydney Water is continuing to consult with NSW Health to update and implement risk assessment processes following the last audit (see also recommendations 2016-17-2 and 2016-17-3).
2.1.3	Sydney Water must notify IPART and NSW Health, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Drinking Water Quality Management System.	SC	
2.1.4	Sydney Water must obtain NSW Health's approval for any significant changes that it proposes to make to the Drinking Water Quality Management System before implementing, or carrying out its activities in accordance with, such changes.	SC	

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
2.1.5	By 31 D a) b)	becember 2016, Sydney Water must: in consultation with its Customer Council and NSW Health, complete a review of its public reporting on water quality. The review must address (at a minimum) the frequency of Sydney Water's public reporting and the key parameters reported on water quality; and provide IPART with a report detailing the outcomes of the review referred to in clause 2.1.5(a).	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
2.2	Recycled water		
2.2.1	Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling, except to the extent that NSW Health specifies otherwise (the <b>Recycled Water Quality Management</b> <b>System</b> ).	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade in that audit. The audit will include a risk based adequacy audit of the
	[Note: It is expected that the Recycled Water Quality Management System will be consistent with the Australian Guidelines for Water Recycling, including the Framework for Management of Recycled Water Quality and Use. However, where NSW Health considers it appropriate, the application of the Australian Guidelines for Water		system, and implementation of the system. Deviations from the AGWR should be in accordance with pre-approved requirements of clause 2.2.4. NSW Health is satisfied that
	Recycling may be amended or added to, to take account of Sydney Water's circumstances and/or Recycled Water quality policy and practices within New South Wales.]		Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).
2.2.2	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	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned an Adequate Compliance grade in that audit.
	Management System, and to the satisfaction of NSW Health.		Evidence must demonstrate that a compliant system was in place for the whole period to award Full Compliance. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted the importance of a robust cross connection inspection program. Auditor should include assessment of elements 11 and 12 of the AGWR.
			NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end- users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (see recommendations 2016-17- 4, 2016-17-5 and 2016-17-6).
2.2.3	Sydney Water must notify IPART and NSW Health, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Recycled Water Quality Management System.	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
2.2.4	Sydney Water must obtain NSW Health's approval for any significant changes that it proposes to make to the Recycled Water Quality Management System before implementing, or carrying out its activities in accordance with, such changes.	SC	Audit if required – determine if significant changes have been made without consultation with NSW Health. Approval from NSW Health must be demonstrated. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).
2.3	Fluoridation code		
2.3.1	Sydney Water must comply with the Fluoridation Code.	Audit	This clause was last audited in 2017 and Sydney Water was assigned an Adequate Compliance grade. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water will consider the risk of incorrect fluoride analyser as part of its response to previous audit recommendations relating to fluoride (see recommendation 2016-17-7).
3	Water Quantity		
3.1	Roles and Responsibilities Protocol		
3.1.1	<ul> <li>Sydney Water must use its best endeavours to:</li> <li>a) develop and agree a Roles and Responsibilities Protocol with the Metropolitan Water Directorate for the development and implementation of the Metropolitan Water Plan; and</li> <li>b) maintain and comply with the Roles and Responsibilities Protocol that has been developed and agreed under clause 3.1.1(a).</li> </ul>	Audit	Auditor does not need to audit this clause. IPART to review Sydney Water evidence of best endeavours. DPE, which has the function of the Metropolitan Water Directorate, advised that a roles and responsibilities protocol with Sydney Water is no longer required (Email to IPART, 13 August 2018).

Licence clause	Operating Lice	ence obligation	2018 audit requirement	Comments to the auditor
3.2	Economic level of water co	onservation		
3.2.1	By 1 November 2015, Syd IPART (for IPART's appro Sydney Water's approach developing a methodology economic level of water co a minimum) each of the fo conservation: a) water leakage; b) water recycling; a c) water efficiency (i management)	Iney Water must submit to val) a report outlining to, and principles for, of determining its onservation, including (at llowing elements of water nd ncluding demand	NR	
3.2.2	Once the approach and pr clause 3.2.1 are approved must develop a methodolo accordance with the appro	inciples referred to in by IPART, Sydney Water ogy ( <b>Methodology</b> ) in bach and principles.	NR	
3.2.3	By 31 December 2016, Sy IPART's approval for the M	/dney Water must obtain /lethodology.	NR	
3.2.4	Once the Methodology is a Sydney Water must, from approval is given: a) notify IPART, in a Reporting Manual changes that it pr	approved by IPART, the date that such ccordance with the l, of any significant	SC	Audit following notice of change.
	b) obtain IPART's w any significant ch prior to making su	ritten consent to make anges to the Methodology uch changes.		
3.2.5	Until Sydney Water has de IPART's approval for the Maccordance with clauses 3 Water must:	eveloped and obtained Methodology (in 3.2.2 and 3.2.3), Sydney	NR	
	<ul> <li>a) maintain the weat Drinking Water th sources to a level or less than, 329 (the Water Usage water usage for th Usage Level, Syd reasonable adjust effects of weather methodology app</li> </ul>	ther corrected quantity of at it draws from all of water usage equal to, litres per person per day e Level). In calculating the purpose of the Water liney Water may make tments to account for the r on water usage, using a roved by IPART;		
	<ul> <li>b) ensure that the le its Drinking Water</li> <li>Water Leakage Le 121 megalitres per</li> </ul>	vel of water leakage from r supply system (the evel) does not exceed er day; and		
	<ul> <li>c) promote, foster and use of water and Recycled Water, water</li> </ul>	nd encourage the efficient the production and use of where financially viable.		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
3.2.6	By 1 September 2017, Sydney Water must develop a water conservation program consistent with its economic level of water conservation and in accordance with the methodology approved by IPART under clause 3.2.3. [Note: The water conservation program will be outlined in the first Water Conservation Report, which is to be submitted to IPART by 1 September 2017 in accordance with clause 3.2.1 of the	Audit	Audit for completion.
3.2.7	Sydney Water must report to IPART, in accordance with the Reporting Manual, on water conservation.	Audit	
4 4.1	Assets Asset Management System		
4.1.1	By 30 June 2018, Sydney Water must develop a Management System that is consistent with the International Standard ISO 55001:2014 Asset Management System - Requirements (the <b>Asset</b> <b>Management System</b> ).	Audit	Audit for completion. Audit to include assessment of the spare parts management program. NSW Health noted a risk in the installation of mixer motor from different treatment plants (Letter to IPART, 17 August 2018).
4.1.2	<ul> <li>Sydney Water must ensure that:</li> <li>a) by 30 June 2019, the Asset Management System is certified by an appropriately qualified person to be consistent with the International Standard ISO 55001:2014 Asset Management System – Requirements; and</li> <li>b) once the Asset Management System is certified, the certification is maintained during the remaining term of this Licence.</li> </ul>	Review	Until the system is certified, a verbal update of progress will be reviewed at the audit and documented by the auditor. Any potential issues should be identified in this update.
4.1.3	Once the Asset Management System has been certified in accordance with clause 4.1.2(a), Sydney Water must notify IPART, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Asset Management System.	SC	
4.1.4	By 30 June 2019, 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.	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
4.1.5	<ul> <li>Until the Asset Management System has been developed in accordance with clause 4.1.1, certified in accordance with clause 4.1.2(a) and implemented in accordance with clause 4.1.4:</li> <li>a) Sydney Water must continue to maintain and implement the asset management framework that was required to be maintained and implemented by Sydney Water under the licence that was the immediate predecessor to this Licence (the Asset Management Framework),</li> </ul>	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a Full Compliance grade.
	<ul> <li>b) to avoid doubt, until the Asset Management System has been developed in accordance with clause 4.1.1, Sydney Water may only make changes to the Asset Management Framework that will assist in the transition of the Asset Management Framework to the Asset Management System; and</li> <li>c) Sydney Water must notify IPART, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Asset Management Framework.</li> </ul>		

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
4.2	System	Performance Standards		
4.2.1	Water F a)	Pressure Standard Sydney Water must ensure that, in any financial year, no more than 6,000 Properties experience a Water Pressure Failure (the Water Pressure Standard).	Audit	This clause was last audited in 2017 and Sydney Water was assigned a Full Compliance grade.
	b)	A Property is taken to have experienced a Water Pressure Failure:		
		<ul> <li>when 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> </ul>		
		ii) when Sydney Water identifies that the Property has experienced a Water Pressure Failure(including through its data collection systems and hydraulic analysis).		
	c)	Despite clause 4.2.1(b), a Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of:		
		<ul> <li>water usage in the case of a fire or other abnormal demand; or</li> </ul>		
		<ul> <li>a short term or temporary operational problem (such as a main break) which is remedied within Four days of its commencement.</li> </ul>		
	d)	For the purpose of the Water Pressure Standard:		
		<ul> <li>each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property; and [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.]</li> </ul>		
		<ul> <li>each Property that experiences one or more Water Pressure Failures in a financial year is to be counted once only in that financial year</li> </ul>		

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
4.2.2	Water (	<ul> <li>Continuity Standard</li> <li>Sydney Water must ensure that, in any financial year: <ul> <li>i) no more than 40,000 Properties experience an Unplanned Water Interruption that lasts for more than five continuous hours; and</li> <li>ii) no more than 14,000 Properties experience three or more Unplanned Water Interruptions that each lasts for more than one hour (the Water Continuity Standard).</li> </ul> </li> </ul>	Audit	This clause was last audited in 2017 and Sydney Water was assigned a Full Compliance grade.
	b)	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 and the duration of the Unplanned Water Interruption.		
	c)	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 purpose of clause 4.2.2(a).		
	d)	<ul> <li>For the purpose of the Water Continuity Standard: <ul> <li>i) each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property;</li> <li>ii) for the purpose of clause 4.2.2(a)(i) each separate instance, in a financial year, of a single Property experiencing an Unplanned Water Interruption that lasts for more than five continuous hours is to be counted as a separate Property that has experienced, in that financial year, an Unplanned Water Interruption that lasts for more than five continuous hours; and</li> <li>iii) for the purpose of clause 4.2.2(a)(ii), each Property that experiences, in a financial year, three or more Unplanned Water Interruptions that each lasts for more than one hour is to</li> </ul> </li> </ul>		
		be counted once only in that financial year.		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
4.2.3	Wastewater Overflow Standard	Audit	This clause was last audited in
-	<ul> <li>Sydney Water must ensure that, in any financial year:</li> </ul>		2017 and Sydney Water was assigned a Full Compliance
	<ul> <li>i) no more than 14,000 Properties (other than Public Properties) experience an Uncontrolled Wastewater Overflow in dry weather; and</li> </ul>		grade.
	<ul> <li>ii) no more than 175 Properties (other than Public Properties) experience three or more Uncontrolled Wastewater Overflows in dry weather (the Wastewater Overflow Standard).</li> </ul>		
	<li>b) For the purpose of the Wastewater Overflow Standard:</li>		
	<ul> <li>i) each Multiple Occupancy Property is to be counted as a single Property; [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.]</li> <li>ii) for the purpose of clause 4.2.3(a)(i),</li> </ul>		
	each separate instance, in a financial year, of a single Property experiencing an Uncontrolled Wastewater Overflow in dry weather is to be counted as a separate Property that has experienced, in that financial year, an Uncontrolled Wastewater Overflow in dry weather; and		
	<ul> <li>iii) for the purpose of clause 4.2.3(a)(ii), each Property that experiences three or more Uncontrolled Wastewater Overflows in a financial year is to be counted once only in that financial year.</li> </ul>		
4.2.4	Interpretation of standards In the case of any ambiguity in the interpretation or application of any System Performance Standard, IPART's interpretation or assessment of the application of the System Performance Standard will prevail.	NR	
4.3	Response time for water main breaks		
4.3.1	Sydney Water must report, in accordance with the Reporting Manual, on response times for water main breaks and leaks.	SC	
4.4	Priority Sewerage Program		
4.4.1	Sydney Water must co-operate with, and participate in, any Government review of the Priority Sewerage Program.	SC	Audit if triggered by a review.
4.4.2	If required by the Minister, Sydney Water must implement and comply with any outcomes (including timeframes) of a Government review of the Priority Sewerage Program.	SC	Audit if triggered by a Ministerial direction.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
5	Customer and Consumers		
5.1	Customer Contract		
5.1.1	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.	NR	
5.1.2	<ul><li>Sydney Water must make a copy of the Customer Contract available to any person, free of charge:</li><li>a) on its website for downloading; and</li><li>b) upon request made to the Contact Centre.</li></ul>	SC	
5.2	Providing information		
5.2.1	<ul> <li>Sydney Water must prepare a pamphlet that: <ul> <li>a) provides a brief explanation of the Customer Contract;</li> <li>b) summarises the key rights and obligations of Customers under the Customer Contract;</li> <li>c) refers to the types of account relief available for Customers experiencing financial hardship;</li> <li>d) outlines the rights of Customers to claim a rebate and the conditions that apply to those rights;</li> <li>e) contains information regarding how to contact Sydney Water by telephone, email or post; and</li> <li>f) contains information regarding the ability for a Customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sudney Water of Services at the Customer Contract)</li> </ul> </li> </ul>	Audit	
5.2.2	Sydney Water must update the pamphlet prepared under clause 5.2.1 to reflect any variations made to the Customer Contract.	SC	
5.2.3	<ul> <li>Sydney Water must: <ul> <li>a) provide the pamphlet prepared under clause 5.2.1 and pamphlet updates made under clause 5.2.2, free of charge to: <ul> <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 pamphlet prepared under clause 5.2.1 and pamphlet updates made under clause 5.2.2 available on its website for downloading by any person, free of charge within 60 days of the commencement of the Customer Contract or pamphlet update as the case may be.</li> </ul></li></ul>	Audit	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
5.2.4	<ul> <li>Sydney Water must advertise in a Sydney-base newspaper at least annually on:</li> <li>a) the types of account relief available Customers experiencing financial base and</li> <li>b) rights of Customers to claim rebate the conditions that apply to those response of the conditions that apply to the conditions that apply the conditions the conditions that apply th</li></ul>	e for hardship; es and ights.	This clause was last audited in the 2017 audit and Sydney Water was assigned a Full Compliance grade.
5.3	Consumers		
5.3.1	Sydney Water's obligations under the Custo Contract relating to Complaint handling and Complaint resolution procedures are extend Consumers as if Consumers were parties to Customer Contract.	omer SC I ded to o the	
5.4	Assistance Options for Payment Difficulties Actions for Non-Payment	and	
5.4.1	<ul> <li>Sydney Water must maintain and fully impleted a) a financial hardship policy that assist residential Customers experiencing financial hardship</li> <li>b) procedures relating to a payment presidential Customers who are respected for paying their Bills and who are, in Sydney Water's reasonable opinion experiencing financial hardship;</li> <li>c) procedures for identifying the circumstances under which Sydney water to a Customer's Property; and provisions for self-identification, identification by community welfare organisations and identification by Water of residential Customers experiencing financial hardship, (the Assistance Options for Payment D and Actions for Non-Payment).</li> </ul>	ement: Audit ists olan for ponsible n n, y Water oly of id Sydney le <i>ifficulties</i>	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.
5.4.2	Sydney Water must set out, in the Custome Contract: a) the Assistance Options for Paymer	er SC	
	<ul> <li>b) b) the options under the Assistance C for Payment Difficulties and Actions Non-Payment that are available to Residential Tenants who pay usag charges to Sydney Water.</li> </ul>	yment; Options s for Private e	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
5.4.3	Sydney Water must provide, free of charge, an explanation of the Assistance Options for Payment Difficulties and Actions for Non-Payment to: a) residential Customers, at least annually with their Bills:	SC	
	<ul> <li>b) residential Customers who Sydney Water identifies as experiencing financial hardship on the date that Sydney Water first identifies that the Customer is experiencing financial hardship; and</li> <li>c) any other person upon request made to the Contact Centre.</li> </ul>		
5.4.4	Sydney Water must make the explanation of the Assistance Options for Payment Difficulties and Actions for Non-Payment referred to in clause 5.4.3 available on its website for downloading by any person, free of charge.	SC	
5.5	Customer Council and Customer Council Charter		
5.5.1	Sydney Water must maintain and regularly consult with organisations representing a broad cross section of its Customers and Consumers through the Customer Council.	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.
5.5.2	Sydney Water must utilise the Customer Council to, among other things, obtain advice on the interests of Sydney Water's Customers and Consumers, the Customer Contract and such other key issues related to Sydney Water's planning and operations as Sydney Water may determine, consistent with the Customer Council Charter (referred to in clause 5.5.4).	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
5.5.3	Sydney a)	Water must: ensure that, at all times, the membership of the Customer Council is appointed and determined by Sydney Water in accordance with the Customer Council Charter, and	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.
	b)	use its best endeavours to include, as members of the Customer Council, at least one person representing each of the following categories:		
		<ul> <li>business groups, including small, medium and large business and non- residential customers;</li> </ul>		
		<ul> <li>ii) consumer groups;</li> <li>iii) organisations representing low income households;</li> </ul>		
		<li>iv) people living in rural and urban fringe areas;</li>		
		<ul><li>v) residential consumers;</li><li>vi) environmental groups;</li></ul>		
		vii) local government;		
		ix) people with disabilities;		
		<ul><li>xi) people from non-English speaking backgrounds.</li></ul>		

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
<b>clause</b> 5.5.4	Sydney Council a charte address a) b) c) d) e) f) g)	Water and members of the Customer must, for the term of this Licence, maintain er (the Customer Council Charter) that see all of the following issues: the role of the Customer Council; selection criteria on how members of the Customer Council will be drawn from the community and information on how vacancies for membership will be advertised; the processes for appointment of new members; the term for which members are appointed; information on how the Customer Council will operate; a description of the type of matters that will be referred to the Customer Council and how those matters will be referred; procedures for the conduct of Customer Council meetings, including the appointment of a chairperson and the requirement to invite, on an annual basis, a co-chair of the Customer Council from Customer representatives; procedures for communicating the	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.
	i) j)	to the public; procedures for monitoring issues raised at meetings of the Customer Council and ensuring appropriate follow-up of those issues; and funding and resourcing of the Customer		
5.5.5	Sydney with info under it Council than inf (includii privilego	Council by Sydney Water. Water must provide the Customer Council ormation in Sydney Water's possession or s control necessary to enable the Customer to discharge the tasks assigned to it, other ormation or documents that are confidential ng documents that are subject to client legal e).	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.
5.5.6	Sydney Council the Cus of charg a) b)	Water must make a copy of the Customer Charter and minutes from proceedings of stomer Council, available to any person, free ge: on its website for downloading; and upon request made to the Contact Centre.	SC	
5.5.7	Sydney propose Charter effective Sydney	Water and the Customer Council may each e any amendments to the Customer Council . However, such amendments will not be e until they have been approved by both Water and the Customer Council.	NR	

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
5.6	Internal	complaints handling		
5.6.1	Sydney receiving which is AS/NZS handling (the Inte	Water must maintain a procedure for g, responding to and resolving Complaints, consistent with the Australian Standard 10002:2014 – Guidelines for complaint in organisations (AS/NZS 10002:2014) rnal Complaints Handing Procedure).	SC	
5.6.2	Sydney Complai impleme carried o Complai	Water must ensure that the Internal nts Handling Procedure is fully nted and that all relevant activities are out in accordance with the Internal nts Handling Procedure	SC	
5.6.3	Sydney annually internal make a receive,	Water must provide to Customers, at least with their Bills, information concerning complaints handling, which explains how to Complaint and how Sydney Water will respond to and resolve Complaints.	SC	
5.6.4	Sydney concern in clause charge: a) b)	Water must make the information ing internal complaints handling referred to a 5.6.3 available to any person, free of on its website for downloading; and upon request made to the Contact Centre	SC	
5.7	External	dispute resolution scheme		
5.7.1	Sydney Water O by a disp Sydney	Water must be a member of the Energy and mbudsman NSW to facilitate the resolution, bute resolution body, of disputes between Water and its Customers and Consumers.	SC	
5.7.2	Sydney a) b) c)	Water must: prepare a pamphlet that explains the operation of the dispute resolution service provided by the Energy and Water Ombudsman NSW, including any right to have a Complaint or dispute referred to the Energy and Water Ombudsman NSW and how such a Complaint or dispute can be assessed; provide a copy of the pamphlet prepared under clause 5.7.2(a), free of charge to Customers at least once a year with their Bills; and make a copy of the pamphlet prepared under clause 5.7.2(a) available to any person, free of charge: i) on its website for downloading; and ii) upon request made to the Contact Centre	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
5.8	Code of conduct		
	Sydney Water must use its best endeavours to co- operate with each Licensed Network Operator and Licensed Retail Supplier within the Area of Operations that seeks to establish with Sydney Water a code of conduct of the kind referred to in clause 25 of the WIC Regulation.	Audit	This clause was last audited in 2017 and Sydney Water was assigned a Full Compliance grade. Audit to determine if Sydney Water is using 'best endeavours' where a code of conduct is sought to be established. IPART is aware of at least four Utility Service Agreements in place between WIC Act licensees and Sydney Water which fulfil the requirements of a Code of Conduct under clause 25 of the WIC Regulation.
6			
6.1	Environment management		
6.1.1	Sydney Water must maintain a Management System certified to Australian Standard AS/NZS ISO 14001:2004: Environmental Management Systems – Requirements with guidance for use (the Environmental Management System).	SC	
6.1.2	Sydney Water must fully implement, and carry out all relevant activities in accordance with, the Environmental Management System.	SC	
6.1.3	Sydney Water must notify IPART, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Environmental Management System.	SC	
6.1.4	Sydney Water must provide IPART, in accordance with the Reporting Manual, with a report on the outputs of the Environmental Management System.	SC	
6.2	Environmental indicators		
6.2.1	<ul> <li>Sydney Water must:</li> <li>a) prepare indicators of the direct impact on the environment of Sydney Water's activities (the Environmental Performance Indicators);</li> <li>b) monitor and compile data on the Environmental Performance Indicators; and</li> <li>c) report on the Environmental Performance Indicators in accordance with the Reporting Manual.</li> </ul>	SC	
7	Quality Management		
7.1	Quality Management System		
7.1.1	By 30 June 2017, Sydney Water must develop a Management System that is consistent with the <i>Australian Standard AS/NZS ISO 9001:2008:</i> <i>Quality Management Systems - Requirements</i> (the <b>Quality Management System</b> ).	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
7.1.2	<ul> <li>Sydney Water must ensure that:</li> <li>a) by 30 June 2018, the Quality Management System is certified by an appropriately qualified person to be consistent with the <i>Australian Standard AS/NZS ISO</i> 9001:2008: Quality Management Systems - Requirements; and</li> <li>b) once the Quality Management System is certified under clause 7.1.2(a), the certification is maintained during the remaining term of this Licence.</li> </ul>	Audit	Audit to determine if QMS is certified and that certification is maintained.
7.1.3	By 30 June 2018, Sydney Water must ensure that the Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the Quality Management System.	Audit	To award Full Compliance, evidence must demonstrate that a compliant system was in place, fully implemented and that all activities are carried out in accordance with the QMS by the due date.
7.1.4	Sydney Water must notify IPART, in accordance with the Reporting Manual, of any significant changes that it proposes to make to the Quality Management System.	SC	Audit following notice of change.
8	Performance monitoring		
8.1	Operational audits		
8.1.1	IPART may undertake, or may appoint an Auditor to undertake, an audit of Sydney Water's compliance with any of the following: this Licence; the Reporting Manual; and any matters required by the Minister; (the Operational Audit).	NR	
8.1.2	Sydney Water must, within a reasonable time period of a receiving a request from IPART or an Auditor to provide information, provide IPART or the Auditor with all the information in Sydney Water's possession, or under Sydney Water's custody or control, which is necessary to conduct the Operational Audit, including any information that is reasonably requested by IPART or an Auditor.	NR	

Licence clause	Operating Licence obligation		2018 audit requirement	Comments to the auditor
8.1.3	For the purpose of any Operational Audit or verifying a report on an Operational Audit, Sydney Water must, within a reasonable time period of receiving a request from IPART or an Auditor, permit IPART or the Auditor to:		NR	
	a)	access any works, premises or offices occupied by Sydney Water;		
	b)	carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;		
	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;		
	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		
	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.		
8.2	Reporti	ng		
8.2.1	Sydney Water must comply with its reporting obligations set out in the Reporting Manual, which include: a) reporting to IPART and NSW Health in		SC	NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating
	b)	accordance with the Reporting Manual; making reports and other information publicly available, in the manner set out in the Reporting Manual; and		August 2018). NSW Health noted that Sydney Water provides water quality
	c)	reporting to IPART on Sydney Water's performance against the National Water Initiative Performance Indicators.		reports to NSW Health and notifies incidents in accordance with agreed protocols.
8.2.2	Sydney Water must maintain sufficient record systems that enable it to report accurately in accordance with clause 8.2.1.		SC	
8.3	Provision of information			
8.3.1	Sydney Water must provide IPART with information relating to the performance of any of Sydney Water's obligations under clause 8.2 (including providing IPART with physical and electronic access to the records required to be kept under clause 8.2) within a reasonable time period of Sydney Water's receiving a request from IPART for that information		SC	
8.3.2	Sydney Water must provide IPART with 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 period of Sydney Water's receiving a request from IPART for that information.		SC	
Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor	
-------------------	---	------------------------	--	
8.3.3	If Sydney Water contracts out any of its activities to any person (including a subsidiary) 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 8.1 as if that person were Sydney Water.	SC		
8.3.4	If IPART or an Auditor requests information under clause 8 which 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.	SC		
8.3.5	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 period of receiving NSW Health's request. [Note: Under section 19 of the Public Health Act 2010 (NSW), the Director General of the NSW Ministry of Health may require Sydney Water to produce certain information.]	SC	NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water provides water quality reports to NSW Health and notifies incidents in accordance with agreed protocols.	
8.4	Performance indicators and system performance standards		5	
8.4.1	Sydney Water must maintain record systems that are sufficient (to IPART's satisfaction) to enable Sydney Water to measure accurately its performance against the performance indicators and System Performance Standards specified in the Reporting Manual.	Audit	This clause was last audited in 2017 and Sydney Water was assigned a High Compliance grade. Audit to focus on record systems that measure Sydney Water's performance against the systems performance standards. Not required to audit IPART performance indicators this year.	
8.4.2	In the case of any ambiguity in the interpretation or application of any performance indicators specified in the Reporting Manual, IPART's interpretation or assessment of the application of the indicators will prevail.	NR		
9	Memorandum of understanding			
9.1	NSW Health			
9.1.1	Sydney Water must maintain the memorandum of understanding with NSW Health entered into under section 35 of the Act.	SC	NSW Health is satisfied that Sydney Water has met its obligations under the MoU (Letter to IPART, 17 August 2018).	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
9.1.2	The purpose of the memorandum of understanding referred to in clause 9.1.1 is to form the basis for co- operative relationships between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 9.1.1 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.	NR	
9.1.3	The memorandum of understanding referred to in clause 9.1.1 must include arrangements for Sydney Water to report to NSW Health information on any events in relation to Sydney Water's systems or Services, which may pose a risk to public health.	SC	NSW Health is satisfied that Sydney Water has met its obligations under the MOU (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water provides water quality reports to NSW Health and notifies incidents in accordance with agreed protocols.
9.2	Environment Protection Authority		
9.2.1	Sydney Water must maintain the memorandum of understanding with the Environment Protection Authority entered into under section 35 of the Act.	SC	The Environment Protection Authority (EPA) considers that the MoU is performing satisfactorily as a sound basis for understanding and managing the relationship between Sydney Water and the EPA (Letter to IPART, 10 August 2018).
9.2.2	The purpose of the memorandum of understanding referred to in clause 9.2.1 is to form the basis for co- operative relationships between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 9.2.1 is to recognise the role of the Environment Protection Authority as the environment regulator of New South Wales and to commit Sydney Water to environmental obligations.	NR	
9.3	Water Administration Ministerial Corporation		
9.3.1	Sydney Water must maintain the memorandum of understanding with the Water Administration Ministerial Corporation ( <b>WAMC</b> ) entered into under section 35 of the Act.	SC	
9.3.2	The purpose of the memorandum of understanding referred to in clause 9.3.1 is to form the basis for co- operative relationships between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 9.3.1 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.	NR	

Licence clause		Operating Licence obligation	2018 audit requirement	Comments to the auditor
9.4	Fire and	d Rescue NSW		
9.4.1	Sydney develop underst ( <b>FRNS</b> )	Water must use its best endeavours to and enter into a memorandum of anding with Fire and Rescue NSW <b>N</b> ) by 31 December 2015.	NR	
9.4.2	Once th in claus Sydney comply	e memorandum of understanding referred to e 9.4.1 is developed and entered into, Water must use its best endeavours to with the memorandum of understanding.	Audit	We have not received Fire and Rescue NSW comments (as of 31 August) on Sydney Water's performance against this clause. We will provide additional information prior to the audit interview if available.
9.4.3	<ul> <li>The purpose of the memorandum of understar referred to in clause 9.4.1 is to form the basis of operative relationships between the parties to memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 9.4.1 is to:</li> <li>a) develop the roles and responsibilities parties to the memorandum of understanding as they relate to each of understanding as they relate to each of understanding as they relate to each of and</li> <li>c) identify and develop strategies for efficiencies of the memorandum of the memorandum of understanding as they relate to each of and</li> </ul>		NR	
		consistent with the goals of each party to the memorandum of understanding.		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments to the auditor
9.4.4	The memorandum of understanding referred to in clause 9.4.1 must require:	SC	
	<ul> <li>a) the establishment of a working group, comprised of representatives from Sydney Water and FRNSW; and</li> </ul>		
	<li>b) the working group to consider the following matters (at a minimum):</li>		
	<ul> <li>arrangements regarding information sharing between Sydney Water and FRNSW;</li> </ul>		
	<ul> <li>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> </ul>		
	<ul> <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> </ul>		
	iv) other matters as agreed by both parties to the memorandum of understanding.		
	[Note: Clauses 9.1.1, 9.2.1, 9.3.1 and 9.4.1 do not limit the persons with whom Sydney Water may be a party to a memorandum of understanding.]		
10	End of Term Review		
10.1	End of Term Review		
10.1.1	It is anticipated that a review of this Licence will commence in the first quarter of 2019 to investigate: a) whether this Licence is fulfilling its objectives; and	NR	
	b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence; (the End of Term Review).		
10.1.2	Sydney Water must provide the person undertaking the End of Term Review with such information as is reasonably required to enable the person to undertake the End of Term Review. Sydney Water must provide that person with such information as the person requests within a reasonable time period of receiving that request.	NR	

Source: Sydney Water Corporation five year audit program.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2015-16-2	2.2.2 Water Quality – Recycled Water	Sydney Water should review recycled water monitoring requirements in consultation with NSW Health to confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place (by 30 March 2018).	This recommendation was a new recommendation in the 2016 audit that captured the remaining tasks of recommendation 2014-15- 4 from the 2016 audit of Sydney Water. Sydney Water provided ultraviolet transmissivity (UVT) performance assessment reports for the Rouse Hill, Castle Hill and Wollongong (Stage 2) Water Recycling Plants (WRP). All the UVT samples for Rouse Hill were above the validated UVT upper limit of 70%. The Wollongong ultraviolet radiation (UV) unit had one sample out of seven that was below the validated UVT range and Castle Hill had two samples out of ten that were below the validation limit of 65%. Sydney Water also conducted verification testing of the UV units. NSW Health has advised that to date it has been sufficiently consulted with respect to this recommendation and their understanding is that work by Sydney Water is ongoing to meet the deadline of 30 March 2018. Sydney Water has made good progress on this recommendation and it is on track to meet the March 2018 deadline. Sydney Water did not address this item in its status report.	Auditor to assess for completion. Also see new recommendations made for recommendations 2016-17-5 and 2016- 17-6. NSW Health did not provide comment on this particular matter (Letter to IPART, 17 August 2018).

### Table 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-1	1.9.1 Licence and Licence authorisation - Pricing	<ul> <li>By 30 June 2018:</li> <li>ensure that substance charges for commercial customers are charged to three decimal places in accordance with the IPART, Sydney Water Corporation maximum, prices for water, sewerage, stormwater drainage and other services from 1 July 2016, and</li> <li>develop and implement an auditable quality assurance process to confirm the accuracy of data entry of set fees.</li> </ul>	Substance charges for commercial customers Sydney Water has updated its billing system to apply substance charges for commercial customers to three decimal places. This occurred for all bills issued from 1 November 2017. <u>Updating of annual prices</u> Sydney Water's IPART determined prices cover a wide variety of services and are levied via several internal systems. Some of these systems have documented processes in place for the annual updating of prices to adjust for CPI, while others do not. In February 2018, Sydney Water undertook a gap analysis to confirm the business areas responsible for updating prices annually in these systems and where documented processes or procedures are currently in place. Based on this work, Sydney Water is in the process of developing auditable processes for the annual updating of prices where these currently do not exist.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-2	2.1.2 Water Quality – Drinking Water	Invite NSW Health to all risk assessments (eg, catchment to tap or system risk assessments) undertaken in relation to Sydney Water's systems (whether or not the system is operated by Sydney Water) that will consider public health risks.	Sydney Water will invite NSW Health to all risk assessment workshops that will consider public health risks. Sydney Water will systematise this requirement by adding it to the related water quality risk assessment procedures. In line with the scope of the Operating Licence condition, Sydney Water will limit the systematised invitation of NSW Health to only risk assessment workshops convened under the Drinking Water Quality Management System and Recycled Water Quality Management System. However, Sydney Water may request NSW Health involvement in other forms of risk assessment concerning public health, in line with the Memorandum of Understanding with NSW Health.	Audit for completion. NSW Health participated in risk assessments for four water filtration plants. NSW Health noted that Sydney Water is continuing to consult with NSW Health to update and implement risk assessment processes following the last audit (Letter to IPART, 17 August 2018).

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-3	2.1.2 Water Quality – Drinking Water	<ul> <li>By 30 June 2018:</li> <li>in consultation with NSW Health, update and implement the risk assessment process to ensure adequacy of inputs to, and outputs from, the risk assessment and ensure inputs include a generalised process flow diagram and the attendance of relevant stakeholders</li> <li>in consultation with NSW Health, develop or update all system process flow diagrams against the requirements of Element 2, Component 1, Action 2 (A generalised flow diagram should be constructed describing the water supply system from catchment to consumer) of the Australian Drinking Water Guidelines, and</li> <li>use the process flow diagram currently being developed for the Nepean water filtration plant, to review the risk assessment for that plant.</li> </ul>	<ul> <li>Sydney Water provided NSW Health a position paper "Operational Audit 201617 Water Quality Recommendations Proposed Approach for Discussion". A meeting with NSW Health was held in February 2018 and an agreed approach to respond to the audit recommendation has been developed. Sydney Water is now implementing the agreed actions:</li> <li>a) In consultation with NSW Health, Sydney Water has developed a risk assessment procedure that addresses the audit recommendations. Sydney Water is also conducting risk assessment workshops with NSW Health using the revised procedure. Sydney Water will fully implement this action by 30 June 2018.</li> <li>b) In consultation with NSW Health, Sydney Water has developed specifications for process flow diagrams in line with the recommendations from the audit. Sydney Water is currently updating all flow diagrams and using the updated flow diagrams for risk assessment workshops. Sydney Water will fully implement this action by 30 June 2018.</li> <li>c) Using the revised procedures above, the updated process flow diagram for Nepean will be used for the risk assessment workshop for Nepean Water Filtration Plant (scheduled for April 2018).</li> </ul>	Audit for completion. See guidance notes for 2016-17-2 above.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-4	2.2.2-Water Quality Recycled Water	By 31 March 2018, complete a desktop review of the most recent compliance inspections for all end user sites to identify any outstanding high risk non-compliances and initiate appropriate action to address non- compliances, including interruption of supply where appropriate.	Sydney Water has almost finalised its desktop review of the most recent compliance inspections for all end user sites to identify high risk non- compliances. Based on feedback received from NSW Health during discussions on 26 February 2018, high risk non-compliances have been defined as those relating to backflow prevention and cross- connections. In line with this discussion, Sydney Water is finalising its review with a focus on these areas. The desktop review is on track to be completed by 31 March 2018, and Sydney Water will initiate appropriate actions to address any high risk non- compliances identified through the review.	Audit for completion. NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end- users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (Letter to IPART, 17 August 2018).

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-5	2.2.2-Water Quality Recycled Water	<ul> <li>By 30 June 2018:</li> <li>(a) in consultation with NSW Health, develop an interruption to supply process where end users are not meeting their obligations under their end user agreement or the Recycled Water Quality Management Plan</li> <li>(b) in consultation with NSW Health, review the preventive measures for end user sites (on-site preventive measures) as documented in the recycled water management system and supporting material, including the content of the Annual Declaration and compliance inspection checklist, to ensure they are appropriate to the level of risk, and</li> <li>(c) review the role and associated competencies for Sydney Water staff and contractors who are responsible for verifying the on-site preventive measures.</li> </ul>	<ul> <li>a) The current end user agreements contain mechanisms to interrupt the supply of recycled water to end users that are not meeting their obligations. To support this, Sydney Water will draft an interruption of supply process that highlights actions to take to restrict supply and share this with NSW Health. This process will focus on suspending supply to customers that have not resolved high risk non-compliances.</li> <li>b) Sydney Water has provided a position paper to NSW Health and held initial discussions. Sydney Water will be further discussing this recommendation with NSW Health shortly, specifically with regards to confining the list of preventative measures to those required under the recycled water guidelines.</li> <li>The outcome of this discussion will inform the review of the relevance of current preventative measures, the content of the annual declaration, and the content and/or relevance of the compliance inspection checklist. It will also highlight what amendments to end user agreements are required. Any changes to the annual declaration, the inspection checklist and the end user agreements will be implemented post review (after 30/6/18).</li> <li>Sydney Water is concurrently reviewing the list of on-site preventative measures included in its recycled water management system.</li> </ul>	Audit for completion. See guidance notes for 2016-17-4 above.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-6	2.2.2-Water Quality Recycled Water	<ul> <li>By 30 June 2019:</li> <li>(a) ensure Sydney Water staff and contractors who are responsible for verifying the onsite preventive measures are trained and</li> </ul>	a) Sydney Water will develop a training package to ensure the competence of relevant staff and contractors.	Review progress. See guidance notes for 2016-17-4 above.
		<ul><li>assessed as competent to implement their responsibilities</li><li>(b) establish and implement a process for ongoing competency assessment, and</li></ul>	<ul> <li>b) As part of the above training package, an ongoing competency assessment program will be developed.</li> </ul>	
		<ul> <li>(c) review all end user sites to confirm end users are meeting their obligations under their end user agreement or the Recycled Water Quality Management Plan and implement the interruption to supply process where appropriate.</li> </ul>	c) Sydney Water will review the status of end users with regards to meeting their obligations under their end user agreement. Any high-risk non-compliances will be managed through the interruption to supply process, where appropriate.	

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-7	2.3.1 Water Quality – Fluoridation Code	<ul> <li>By 30 June 2018, ensure all Sydney Water fluoridation systems are designed, installed, and operated in accordance with the <i>NSW</i> Code of practice for fluoridation of public water supplies 2011 (unless an exemption has been received from NSW Health), with particular reference to:</li> <li>(a) ensuring the dosing capacity of the fluoride dosing equipment does not exceed 110% of the target dose rate</li> <li>(b) ensuring water traps remain filled</li> <li>(c) providing appropriate colour coding and marking of dosing pipes</li> <li>(d) replacing dust mask filters every 13 weeks</li> <li>(e) maintaining a minimum of three months storage of fluoridating agent or apply for an exemption from this minimum standard 8.2.1.1 from NSW Health</li> <li>(f) ensuring emergency response plans are consistent with Appendix C of the <i>NSW Code of practice for fluoridation of public water supplies 2011</i></li> <li>(g) submitting written notifications to cover all periods of repair/maintenance, and</li> <li>(h) ensure internal audits assess compliance with all relevant requirements of Chapter 5 of the <i>NSW Code of practice for fluoridation for fluoridation of public water supplies 2011</i></li> </ul>	At 28 March 2018, the following recommendations have been completed: b) ensuring water traps remain filled at Nepean Water Filtration Plant. All other sites complied with Code of Practice. c) providing appropriate colour coding and marking of dosing pipes at Nepean WFP. All other sites complied the Code of Practice. d) replacing dust mask filters every 13 weeks at Prospect WFP). All other sites complied with Code of Practice. g) submitting written notifications to cover all periods of repair/maintenance. For the remaining actions (a, e, f, and h), Sydney Water and NSW Health have agreed to meet and discuss the recommendations from the audit to ensure Sydney Water's proposed actions meet the requirements of NSW Health. Sydney Water will implement the actions in consultation with NSW Health by 30 June 2018.	Audit for completion. NSW Health noted that Sydney Water will consider the risk of incorrect fluoride analyser as part of its response to previous audit recommendations relating to fluoride (Letter to IPART, 17 August 2018)

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-8	8.4.1 Performance monitoring – Performance indicators and system performance standards	<ul> <li>By 31 March 2018:</li> <li>(a) review its reporting process for infrastructure indicator I5 to provide assurance for future reported data, and</li> <li>(b) evaluate the data it has historically reported for indicator I5 and report corrected data if necessary.</li> </ul>	Sydney Water have indicated that this recommendation is complete. Sydney Water has conducted a review of the process used to compile the 15 report. This clearly identified that a manual calculation error was the primary factor for the incorrect number being reported. As a result of this, Sydney Water has updated the 15 Performance Indicator (PI) Sheet to include the methodology to be used to ensure future reporting data is correct. As a secondary control, the template used for the annual summary of pressure performance has now been modified to have a distinct field for the autocalculation. Historical data was reviewed for the last five years from 2012-13 to 2016-17, which identified that-the data was reported incorrectly for 2015-16 and 2016- 17. For 2015-16 the reported number was <i>96</i> , with the correct number being <i>106</i> and for 2016-17 the reported correctly. Sydney Water will make these corrections to historical data in its 2017-18 Performance Indicators Report, due to be submitted to IPART by 1September 2018.	Audit not required. This recommendation does not require follow up. Performance indicator referred to in this recommendation is no longer required to be reported in 2017- 18.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported by utility on 28 March 2018 <sup>a</sup>	Guidance for 2018 audit
2016-17-9	8.4.1 Performance monitoring – Performance indicators and system performance standards	<ul> <li>By 30 June 2018:</li> <li>(a) assess whether its current processes for capturing site evidence for sewage overflow events and its compliance with its processes is sufficient for its business processes, and</li> <li>(b) demonstrate that it has in place an appropriate audit trail for events where the priority has been changed.</li> </ul>	Sydney Water have indicated that this recommendation is complete. a) Sydney Water has assessed its current process for the capture of site evidence for sewage overflow events and considers it is adequate for business needs and the current compliance meets business requirements. b) There are two audits currently in place relating to priority changes. Weekly to check non- compliance with internal response time targets and monthly to check all priority changes. Audit processes exist for all priority changes in both water and waste water activities. These are managed by the Civil Delivery works programming team. As with all data integrity issues, all audit processes are followed by data correction processes and if required, additional actions are implemented to improve business data integrity.	Audit not required. This recommendation does not require follow up. Performance indicators referred to in this recommendation are no longer required to be reported in 2017- 18.
2016-17-10	8.4.1 Performance monitoring – Performance indicators and system performance standards	By 31 December 2018, put in place appropriate measures to ensure that overflow ceased times are recorded accurately in future.	<ul> <li>A fact sheet is to be issued to all crew members detailing the process for accurate recording of overflow cease times. This instruction reinforces the following mandatory requirements:</li> <li>All sewer overflows must contain a sewer overflow cease time</li> <li>Where no sewer overflow has occurred, this must be detailed in the MXES work order log. e.g. no overflow cease time recorded as no overflow occurred due there being no wastewater escape to the environment.</li> <li>Both above requirements will be managed through the Civil Delivery internal audit and error correction processes.</li> </ul>	Audit not required. This recommendation does not require follow up. Performance indicator referred to in this recommendation is no longer required to be reported in 2017- 18.

Source: Sydney Water Corporation 31 March Report

Audit year	Location	Facility
2018 (proposed)	Cascade	Water Filtration Plant
	Parklea	Drinking and Recycled Water Reservoirs, and rechlorination station
	Rouse Hill	Water Recycling Plant and network
2017	Nepean	Water Filtration Plant
	Prospect	Water Filtration Plant
	Campbelltown	Reservoir
	Liverpool	Water Recycling Plant
	Guildford	Water main renewal - maintenance
2016	Orchard Hill	Water Filtration Plant
	Preston	Maintenance Depot
	Cronulla	Wastewater Treatment Plant
2015	Parklea	Reservoir
	Box Hill	Pumping Station
	North Richmond	Water Filtration Plant
	Rouse Hill	Water Recycling Plant
2014	West Camden	Water Recycling Plant
	Warragamba	Water Filtration Plant
		South West Growth Area
2013	Macarthur	Water Filtration Plant
	Liverpool	Customer Service Centre
	Liverpool	Water Recycling Plant
	West Hoxton	Priority Sewage Project
2012	Wollongong	Water Recycling Plant
	Woronora	Water Filtration Plant
	Heathcote	Reservoir
2011	N/A	Three treated water reservoirs
	Orchard Hills	Water Filtration Plant
	Drummoyne	Mains flushing

#### Table 4 Previous field verification locations for Sydney Water Corporation

C Operational audit report 2018 – Sydney Water

# 2018 Operational Audit Report

Sydney Water

November 2018





## **2018 Operational Audit Report**

Sydney Water

Viridis Consultants Pty Ltd PO Box 131 Bulimba Qld 4171 Australia www.viridis.net.au ABN: 49 129 185 271

Telephone: 1300 799 310

Date: 23 November 2018

Final

Reference: 18NS15

Status:



### © Viridis Consultants Pty Ltd 2018

**Citation:** James Howey and Jim Sly 2018, 2018 Operational Audit Report - Sydney Water, prepared for IPART by Viridis Consultants Pty Ltd.

#### Contents Executive Summary ......1 1. 1.1. Objective ......5 1.2. Audit Method 1.2.1. 1.2.2. 1.2.3. 1.2.4. 1.2.5. 1.3. 1.4. 2. 2.1. 2.1.1. Cascade Water Filtration Plant......15 2.1.2. 2.1.3. 2.2. 2.2.1. 2.2.2. 2.2.3. 2.2.4. 2.2.5. 2.2.6. 2.2.7. 2.2.8. 2.2.9. 2.2.10. 2.2.11. 2.2.12. 2.2.13. 2.2.14. Water Pressure Standard (4.2.1).....72 2.2.15. 2.2.16. Wastewater Overflow Standard (4.2.3).....75 2.2.17. 2.2.18. Assistance Options for Payment Difficulties and Actions for Non-Payment (5.4.1) .... 79 2.2.19. 2.2.20. 2.2.21. 2.2.22. 2.2.23. 2.2.24. 2.2.25. 2.2.26. 2.2.27. 2.2.28. 2.2.29. 3.



### Tables

Table 1 Audit Scope	5
Table 2 Audit steps	
Table 3 Audit team details	
Table 4 Audit participants	
Table 5 Compliance Grades	



Document mistory and Status						
Revision	Date	Reviewed by	Approved by	Details		
0.1	14 Oct 2018	James Howey Tasleem Hasan Jim Sly Hanne Rasmussen	James Howey	Initial draft for IPART and Sydney Water		
0.2	9 Nov 2018	Sydney Water IPART	James Howey	Revised draft		
1.0	23 Nov 2018	Sydney Water IPART	James Howey	Final		

### **Document History and Status**

Author:	James Howey and Jim Sly		
Project manager:	James Howey		
Name of client:	IPART		
Name of project:	2018 Operational Audit – Sydney Water		
Name of document:	2018 Operational Audit Report		
Document number	REC-18-172		
Document version:	1.0		
Project number:	18NS15		



### **Executive Summary**

### **Auditor Declaration**

Viridis Consultants Pty Ltd has been engaged by the Independent Pricing and Regulatory Tribunal of NSW to undertake the operational audit of Sydney Water Corporation's Operating Licence for the period of 1 July 2017 to 30 June 2018. The audit was undertaken in partnership with Cobbitty Consulting Pty Ltd.

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 June 2018* and IPART's *Request for Quote*
- the audit findings have not been unduly influenced by the utility and/or any of its associates.

### **Major Findings**

The audit interviews and site visits were undertaken from 19 to the 21 September 2018. During the site visit the following locations were inspected:

- Cascade Water Filtration Plant
- Parklea (Drinking and Recycled) Reservoirs and rechlorination facility
- Rouse Hill Recycled Water Plant

Major findings of the audit are summarised in the table below.

Section	Clause	Sub- clause	Compliance and Major Findings
	Connection of	1.6.1	Compliant
	services	1.6.2	Compliant
Licence and Licence Authorisation	Pricing	1.9.1	Non-compliant (non-material) Sydney Water has declared non-compliance in respect of substance charges for commercial customers, this resulted in a minor under charging. A sample of prices has been checked and confirms that they are now been calculated in accordance with the relevant IPART Determination.
		2.1.1	Compliant
	Drinking Water	2.1.2	Compliant (minor short comings) Reservoir inspections are an important preventive measure and inspections for reservoir location RS0449 were conducted from ground level only for more than 12 months and the reservoir roof was not inspected. Also, few actions from the Improvement Plan were not completed within the identified timeframe. These minor shortcomings did not impact product delivery and public health.
Water Quality		2.2.1	Compliant
Water Quality	Recycled Water 2.2.2		Compliant (minor short comings) One of the preventive measures for recycled water is that all properties will have a check for cross-connections prior to connection of the service, to ensure that in the first instance it is set up correctly. When clearing a backlog of these inspections a cross-connection to the meter of a residential property it was identified that it had been cross- connected for over 2 years. Although cross-connections are undesirable and must be minimised, this instance did not appear to exceed the level of exposure that has been planned for in determining the level of water treatment and no illness was reported.



Section	Clause	Sub- clause	Compliance and Major Findings
Water Quality	Recycled Water	2.2.2 cont	Risk management improvement plans for recycled water have a number of items that have not been closed out by the due date. These issues did not impacted on recycled water quality, public health
	Fluoride	231	Compliant
	Faconomia Laval of	3.2.6	Compliant
Water Quantity	Water Conservation	3.2.7	Compliant
		4.1.1	Compliant
	Asset Management	4.1.2	Covered in a separate report
•	System	4.1.5	Compliant
Assets		4.2.1	Compliant
	System Performance Standards	4.2.2	Compliant
	Stundurds	4.2.3	Compliant
	Providing Information	5.2.1	Compliant (minor short comings) A pamphlet that summarises the provisions of the Customer Contract consistent with the specified requirements, with the exception that the requirement of paragraph f) to provide information regarding the ability of Customers to enter into separate agreements (to the <i>Customer</i> <i>Contract</i> ) is not fully addressed. Whilst information is provided in respect of pressure sewer service agreements, information in respect of other additional services agreements is not provided. Any potential impact of this minor shortcoming is not considered material as the information is otherwise readily available and would only be of interest to a small number of Customers or the public who would be directly informed by Sydney Water in the event that such separate agreements are required; it will not affect water quality, public health and safety, or the environment.
Customers and Consumers		5.2.3	Compliant
	Assistance Options for Payment Difficulties and 5.4.1 Actions for Non- Payment		Compliant
		5.5.1	Compliant
	Customer Council	5.5.2	Compliant
	and Customer	5.5.3	Compliant
	Council Charter	5.5.4	Compliant
		5.5.5	Compliant
	Code of Conduct	5.8	Compliant
Quality	Quality Management	7.1.2	Compliant
Management	System	7.1.3	Compliant
Performance Monitoring	Performance indicators and system performance standards	8.4.1	Compliant (minor short comings) Whilst it is assessed that the record systems and procedures for reporting against the performance indicators and System Performance Standards are, in general, sufficiently robust to ensure accurate reporting, there appear to be some minor shortcomings in the data extracted for reporting against the Wastewater Overflow Standard. Based on review of the 2017/18 data, the impact was minor; however, it is important to ensure that accurate reporting is not compromised. These minor shortcomings did not materially impact Sydney Water's reporting against the Wastewater Overflow Standard, and they do not affect water quality, public health and safety, or the environment.
Memorandum of Understanding	Fire and Rescue NSW	9.4.2	Compliant



### Recommendations

Licence Section	Licence sub-clause	Recommendation	Recommendation Reference	Timeframe
Drinking Water	2.1.2	Expedite relevant training and equipment for inspectors to ensure that they can access reservoir roofs during inspections, where Lad-Saf system, which is a fall arrest system, has been installed (e.g. reservoir location RS0449).	REC-SWC-2017/18-01	30 June 19
Drinking Water	2.1.2	<ul> <li>Implement the improvement actions within the target finish dates identified. In cases where the action in not able to be completed within the original due date, a revised date should be assigned and tracked, noting the reasons for the delay. It is recommended that the Product Management Improvement Register includes/notes the following, in addition to the existing details:</li> <li>column for priority level - to determine a timeframe which is risk based (new column)</li> <li>date action was identified column (currently only in the DW strategic tab of the Register, make uniform)</li> <li>target finish date column, from initial assessment (already captured, maintain)</li> <li>revised date column - to assign a revised finish date, if required, following progress meetings (new column)</li> <li>commentary or comments column to note progress on actions and where necessary justification and reasoning for not meeting the original target finish date assigned (already captured, note).</li> </ul>	REC-SWC-2017/18-02	30 June 19
Recycled Water	2.2.2	All properties must be tested for cross-connections prior to supply of recycled water and a hold point established.	REC-SWC-2017/18-03	30 June 19
Recycled Water	2.2.2	<ul> <li>The Product Management Improvement Register and Recycled Water Scheme Improvement Register must be maintained and priority items closed out within an appropriate timeframe. It is recommended that the Recycled Water Scheme Improvement Register includes/notes the following, in addition to the existing details:</li> <li>column for priority level - to determine a timeframe which is risk based (new column)</li> <li>date action was identified column (currently only in the DW strategic tab of the Register, make uniform)</li> <li>target finish date column, from initial assessment (already captured, maintain)</li> <li>revised date column - to assign a revised finish date, if required, following progress meetings (new column)</li> <li>commentary or comments column to note progress on actions and where necessary justification and reasoning for not meeting the original target finish date assigned (already captured, note).</li> </ul>	REC-SWC-2017/18-04	30 June 19

The recommendations from the audit are summarised in the table below.



Licence Section	Licence sub-clause	Recommendation	Recommendation Reference	Timeframe
Providing Information	5.2.1	It is recommended that Sydney Water revises the pamphlet prepared pursuant to clause 5.2.1 of the <i>Operating Licence</i> to fully address the requirement of paragraph f), i.e. to include information regarding the ability for a Customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sydney Water of Services to the Customer.	REC-SWC-2017/18-05	30 June 19
Performance indicators and system performance standards	8.4.1	Sydney Water should review its data extraction processes for reporting against the Wastewater Overflow Standard to ensure that actual number of events is accurately reported.	REC-SWC-2017/18-06	30 June 19



### 1. Introduction

### 1.1. Objective

The objective of this audit was to conduct an operational audit of Sydney Water Corporation's (Sydney Water's) performance against specified clauses of its *Operating Licence* and any ministerial requirements for the period from 1 July 2017 to 30 June 2018.

### 1.2. Audit Method

### 1.2.1. Audit Scope

The audit scope was determined by the Independent Pricing and Regulatory Tribunal (IPART) using a risk-based approach to identify the *Operating Licence* clauses to be audited during the 2017/18 audit period. The clauses within the scope for this audit period are identified in Table 1. Sydney Water was required to provide a Statement of Compliance (SC) for the licence clauses that were not audited.

Prior to the audit, IPART sought advice from NSW Health Chief Health Officer (CHO) regarding Sydney Water's performance relevant to the licence requirements over the audit period. The CHO's letter included that NSW Health did not have specific recommendations on sites or asset classes that warrant inspection.

Outstanding items/recommendations from previous audits were also reviewed and the status of the required actions determined.

Licence Part	Clause/Obligation	Type of Audit	IPART's Comments
Licence Authorisation	1.2.1	SC	N/A
Stormwater drainage system	1.3.1, 1.3.2	SC	N/A
Connection of services	1.6.1; 1.6.2	Audit	This is the first audit of this clause.
Availability of Licence	1.8.1	SC	N/A
Pricing	1.9.1	Audit	Sydney Water was non-compliant in 2015 (previous licence), 2016 and 2017. Sydney Water notes in its Status Report on Audit Recommendations, provided to IPART on 28 March 2018, that billing for commercial customers to three decimal places has been resolved. Sydney Water is in the process of developing auditable processes for the annual updating of prices (as per recommendation 2016-17-1). Sydney Water's Statement of Compliance reports a non- compliance with this clause for part of the 2018 audit period. This non-compliance was reported in 2016-17 and recommendation 2016-17-1 addressed this non-compliance. Sydney Water reported that the recommendation is complete. Audit 2016-17-1 for completion.
Water Quality – Drinking Water	2.1.1	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade. The system must be consistent with the Australian Drinking Water Guidelines (ADWG) except to the extent that NSW Health specifies (specification from NSW Health must be consistent with the requirements of clause 2.1.4). NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).

### Table 1 Audit Scope



Licence Part	Clause/Obligation	Type of Audit	IPART's Comments
	2.1.2	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade. Evidence must demonstrate that a compliant system was in place for the whole period to award Full Compliance. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health participated in risk assessments for four water filtration plants. NSW Health noted that Sydney Water is continuing to consult with NSW Health to update and implement risk assessment processes following the last audit (see also recommendations 2016-17-2 and 2016-17-3).
	2.1.3, 2.1.4	SC	N/A
Water Quality – Recycled Water	2.2.1	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a High Compliance grade in that audit. The audit will include a risk-based adequacy audit of the system, and implementation of the system. Deviations from the Australian Guidelines for Water Recycling (AGWR) should be in accordance with pre-approved requirements of clause 2.2.4. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).
Water Quality – Recycled Water	2.2.2	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned an Adequate Compliance grade in that audit. Evidence must demonstrate that a compliant system was in place for the whole period to award Full Compliance. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted the importance of a robust cross connection inspection program. Auditor should include assessment of elements 11 and 12 of the AGWR. NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end-users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (see recommendations 2016-17-4, 2016- 17-5 and 2016-17-6).
	2.2.3	SC	N/A
	2.2.4	N/A <sup>1</sup>	Audit if required – determine if significant changes have been made without consultation with NSW Health. Approval from NSW Health must be demonstrated. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018).



<sup>1</sup> Not audited, approval from NSW Health was demonstrated.

Licence Part	Clause/Obligation	Type of Audit	IPART's Comments	
Water Quality – Fluoridation Code	2.3.1	Audit	This clause was last audited in 2017 and Sydney Water was assigned an Adequate Compliance grade. NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water will consider the risk of incorrect fluoride analyser as part of its response to previous audit recommendations relating to fluoride (see recommendation 2016-17-7).	
Water Quantity	3.1.1	Audit	The auditor does not need to audit this clause. IPART to review Sydney Water evidence of best endeavours. DPE, which has the function of the Metropolitan Water Directorate, advised that a roles and responsibilities protocol with Sydney Water is no longer required (Email to IPART, 13 August 2018).	
	3.2.4	SC	Audit following notice of change.	
Economic level of Water Conservation	3.2.6	Audit	Audit for completion.	
water Conservation	3.2.7	Audit	N/A	
Assets	4.1.1	Audit	Audit for completion. Audit to include assessment of the spare parts management program. NSW Health noted a risk in the installation of mixer motor from different treatment plants (Letter to IPART, 17 August 2018).	
	4.1.2	Review	Until the system is certified, a verbal update of progress will be reviewed at the audit and documented by the auditor. Any potential issues should be identified in this update.	
	4.1.3	SC	N/A	
	4.1.5	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a Full Compliance grade.	
System Performance Standards	4.2.1; 4.2.2; 4.2.3	Audit	This clause was last audited in the 2017 audit and Sydney Water was assigned a Full Compliance grade.	
Response time for water main breaks	4.3.1	SC	N/A	
Priority Sewerage	4.4.1	SC	Audit if triggered by a review.	
Program	4.4.2	SC	Audit if triggered by a Ministerial direction.	
	5.1.2; 5.2.2	SC	N/A	
	5.2.1	Audit	N/A	
	5.2.3	Audit	N/A	
Customers and Consumers	5.2.4	SC	This clause was last audited in the 2017 audit and Sydney Water was assigned a Full Compliance grade.	
	5.3.1	SC	N/A	
	5.4.1	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.	
	5.4.2; 5.4.3; 5.4.4	SC	N/A	
Customer Council and Customer Council	5.5.1; 5.5.2; 5.5.3; 5.5.4; 5.5.5	Audit	This clause was last audited in 2016 and Sydney Water was assigned a Full Compliance grade.	
Charter	5.5.6	SC	N/A	
Internal complaints handling	5.6.1; 5.6.2; 5.6.3; 5.6.4	SC	N/A	
External dispute resolution scheme	5.7.1; 5.7.2	SC	N/A	



Licence Part	Clause/Obligation	Type of Audit	IPART's Comments
Code of conduct	5.8	Audit	This clause was last audited in 2017 and Sydney Water was assigned a Full Compliance grade. Audit to determine if Sydney Water is using 'best endeavours' where a code of conduct is sought to be established. IPART is aware of at least four Utility Service Agreements in place between Water Industry Competitions (WIC) Act licensees and Sydney Water which fulfil the requirements of a Code of Conduct under clause 25 of the WIC Regulation.
Environment	6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.2.1	SC	N/A
	7.1.1	SC	N/A
	7.1.2	Audit	Audit to determine if QMS is certified and that certification is maintained.
Quality Management System	7.1.3	Audit	To award Full Compliance, evidence must demonstrate that a compliant system was in place, fully implemented and that all activities are carried out in accordance with the QMS by the due date.
	7.1.4	SC	Audit following notice of change
Reporting	8.2.1	SC	NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water provides water quality reports to NSW Health and notifies incidents in accordance with agreed protocols.
	8.2.2	SC	N/A
	8.3.1; 8.3.2; 8.3.3; 8.3.4	SC	N/A
Provision of information	8.3.5	SC	NSW Health is satisfied that Sydney Water has met its obligations relevant to water quality under the operating licence (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water provides water quality reports to NSW Health and notifies incidents in accordance with agreed protocols.
D. C.			This clause was last audited in 2017 and Sydney Water was assigned a High Compliance grade.
Performance monitoring	8.4.1	Audit	Audit to focus on record systems that measure Sydney Water's performance against the systems performance standards. Not required to audit IPART performance indicators this year.
Memorandum of understanding - NSW Health	9.1.1; 9.1.3	SC	NSW Health is satisfied that Sydney Water has met its obligations under the MoU (Letter to IPART, 17 August 2018). NSW Health noted that Sydney Water provides water quality reports to NSW Health and notifies incidents in accordance with agreed protocols.
Memorandum of understanding - Environment Protection Authority	9.2.1	SC	The Environment Protection Authority (EPA) considers that the MoU is performing satisfactorily as a sound basis for understanding and managing the relationship between Sydney Water and the EPA (Letter to IPART, 10 August 2018).
Memorandum of understanding - Water Administration Ministerial Corporation	9.3.1	SC	N/A
Memorandum of understanding - Fire and Rescue NSW	9.4.2	Audit	We have not received Fire and Rescue NSW comments (as of 31 August) on Sydney Water's performance against this clause. We will provide additional information prior to the audit interview if available.



Licence Part	Clause/Obligation	Type of Audit	IPART's Comments
Memorandum of understanding - Fire and Rescue NSW	9.4.4	SC	N/A
Recommendations/Outst	anding Items from Previ	ous Audits	
2015/16-2	2.2.2 Water Quality – Recycled Water	Audit	Auditor to assess for completion. Also see new recommendations made for recommendations 2016-17-5 and 2016- 17-6. NSW Health did not provide comment on this particular matter (Letter to IPART, 17 August 2018).
2016/17-1	1.9.1 Licence and Licence authorisation - Pricing	Audit	Audit for completion
2016/17-2	2.1.2 Water Quality – Drinking Water	Audit	Audit for completion. NSW Health participated in risk assessments for four water filtration plants. NSW Health noted that Sydney Water is continuing to consult with NSW Health to update and implement risk assessment processes following the last audit (Letter to IPART, 17 August 2018).
2016/17-3	2.1.2 Water Quality – Drinking Water	Audit	Audit for completion. NSW Health participated in risk assessments for four water filtration plants. NSW Health noted that Sydney Water is continuing to consult with NSW Health to update and implement risk assessment processes following the last audit (Letter to IPART, 17 August 2018).
2016/17-4	2.2.2-Water Quality Recycled Water	Audit	Audit for completion. NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end-users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (Letter to IPART, 17 August 2018).
2016/17-5	2.2.2-Water Quality Recycled Water	Audit	Audit for completion. NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end-users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (Letter to IPART, 17 August 2018).
2016/17-6	2.2.2-Water Quality Recycled Water	Audit	Review progress. NSW Health noted that Sydney Water is working to develop an interruption to supply procedure for recycled water and to review preventative measures for end-users sites in consultation with NSW Health. NSW Health is satisfied with Sydney Water's progress in the rolling review of recycled water scheme plans (Letter to IPART, 17 August 2018).
2016/17-7	2.3.1 Water Quality – Fluoridation Code	Audit	Audit for completion. NSW Health noted that Sydney Water will consider the risk of incorrect fluoride analyser as part of its response to previous audit recommendations relating to fluoride (Letter to IPART, 17 August 2018).

The audit scope included three days of staff interviews and site inspections. These were undertaken between 19 and 21 September 2018. The timetable and sites visited were as follows:

- 19 September 2018– staff interviews
- 20 September 2018– site inspections:
  - Cascade Water Filtration Plant (WFP)
  - Parklea (Drinking and Recycled) Reservoirs and rechlorination facility
  - Rouse Hill Recycled Water Plant (RWP)
- 21 September 2018– staff interviews

### 1.2.2. Audit Standard

The IPART *Audit Guideline - Public Water Utilities - June 2018* (Audit Guideline) formed the standard for the Operational Audit. *ISO 19011:2011 Guidelines for Auditing Management Systems* was also relied upon to ensure good audit practice.

### 1.2.3. Audit Steps

The audit steps are identified in the Audit Guideline and are reproduced in Table 2. The audit interviews and field verification site visits were undertaken on the 19 and 21 September 2018.

Step	Description	Responsibility			
1	Audit scoping	IPART			
2	Appointment of auditor	IPART			
3	Audit preparation	Auditor/Utility/IPART			
4	Audit interview	Auditor/Utility			
5	Field verification site visits	Auditor/Utility			
6	Wrap up and close out meetings	Auditor/Utility			
7	Assessing and reporting	Auditor/Utility/IPART			
8	Reporting to Minister	IPART			
9	Reporting on recommendations	Utility			

### Table 2 Audit steps

### 1.2.4. Audit Team

The audit team was co-led by James Howey from Viridis and Jim Sly from Cobbitty. Roles for each team member are detailed in Table 3.

Team member	Organisation	Certifications	Role
James Howey	Viridis	Lead Water Quality Management Systems Auditor – Drinking and Recycled Water (Exemplar Global) Associate Environment Management Systems Auditor (Exemplar Global) Technical Services and Water Licencing Audit Panel: Drinking Water Quality Recycled Water Quality	Project Manager Lead Auditor - Water Quality, QMS
Tasleem Hasan	Viridis	Lead Water Quality Management Systems Auditor – Drinking Water (Exemplar Global) Technical Services and Water Licencing Audit Panel: Drinking Water Quality	Water Quality, QMS – Audit Support

#### Table 3 Audit team details



Team member	Organisation	Certifications	Role
Jim Sly	Cobbitty	Technical Services and Water Licencing Audit Panel: Infrastructure performance Retail supply	Lead Auditor – Assets, Performance, NWI Indicators
Mark Favetta	Cobbitty	Technical Services and Water Licencing Audit Panel: Infrastructure performance Retail supply Environment and catchment management	Assets and Performance – Audit Support

Sydney Water staff and contractors as well as IPART, attended the interviews and site verification visits. Details of audit participation are shown in Table 4.

#### **Table 4 Audit participants**

Name	Position	Organisation	Participation
Ben Blayney	Product Manager	Sydney Water	Auditee
Philip Davies	Head of Regulatory Economics	Sydney Water	Auditee
David Holland	Networks Programs Manager	Sydney Water	Auditee
Craig Crawley	Service Planning Manager	Sydney Water	Auditee
Mark Crabtree	Service Planning Manager	Sydney Water	Auditee
Sunietha Katupitiya	Integrated Management System Manager	Sydney Water	Auditee
Patrick Gallagher	Head of Risk	Sydney Water	Attendee for inception / close out
Peter Nedelkovski	Senior Compliance Analyst	Sydney Water	Auditee
Sandra Spargo	Corporate Compliance Manager	Sydney Water	Auditee
Marcia Suwitoputro	Improvement Delivery Advisor	Sydney Water	Auditee
ASM Mohiuddin	Process Manager	Sydney Water	Auditee
Raema Melverton	Head of Communications & Government Relations	Sydney Water	Auditee
Karen Chia	Bulk Water Integration Manager	Sydney Water	Auditee
Deirdre Burt	Monitor Design & Reporting Specialist Lead	Sydney Water	Auditee
Sunita Singh	Senior Risk & Assurance Partner	Sydney Water	Auditee
Peter Cresta	Water & Recycled Water Production Team Leader	Sydney Water	Auditee
Chris Owens	Service Planning Senior Analyst	Sydney Water	Auditee
Rebecca Reid	Senior Compliance Analyst	Sydney Water	Record taker
Christian McNally	Manager Development	Sydney Water	Auditee
Chris Robinson	Lead Developer Consultant	Sydney Water	Auditee
Jignesh Chudasama	Compliance Analyst	Sydney Water	Record taker
Kate Beatty	Senior Analyst	Sydney Water	Auditee
Marjorie Lim-Cerretto	Pricing and Non-residential Specialist	Sydney Water	Auditee
Gus Garbers	Business & Reg Compliance Specialist	Sydney Water	Auditee
Melanie Werner	Manager Customer Programs	Sydney Water	Auditee



Name	Position	Organisation	Participation
Kathy Hourigan	Head of Customer Services	Sydney Water	Auditee
Darren Finn	A/Team Leader Networks Performance & Reporting	Sydney Water	Auditee
David Zhang	Service Planning Lead	Sydney Water	Auditee
Gary Hurley	Manager Networks Including Civil Del	Sydney Water	Attendee for inception / close out
Kris Selvakumar	Service Delivery Officer Lvl6	Sydney Water	Auditee
Krish Krishnananthan	Service Delivery Officer Lvl6	Sydney Water	Auditee
Stephen Cheung	Service Delivery Officer Lvl6	Sydney Water	Auditee
Azam Muhammed	Service Delivery Officer Lvl4	Sydney Water	Auditee
Lee Sproal	Service Delivery Officer Lvl4	Sydney Water	Auditee
Lachlan McTaggart	Production Manager Western Water	Sydney Water	Auditee
John Young	Operations & Maintenance Coordinator	Sydney Water	Auditee
Yuva Upadhyaya	Senior Production Officer	Sydney Water	Auditee
Heath Botham	Production Officer Level 2	Sydney Water	Auditee
Karteek Subramanya	Reliability Team Leader	Sydney Water	Auditee
Graham Orgill	Asset Program Team Leader	Sydney Water	Auditee
Daniel Judd	Service Delivery Officer Lvl6	Sydney Water	Auditee
Michael Price	Field Supervisor	Sydney Water	Auditee
Demil Letic	Production Officer Level 1	Sydney Water	Auditee
Jeff Scott	Production Manger Chemical Dosing	Sydney Water	Auditee
Lal Wickramarachchi	Service Delivery Officer Lvl6	Sydney Water	Auditee
Nalin Karunatilake	Water & Recycling Asset Team Leader	Sydney Water	Auditee
Michael Easton	Service Delivery Officer Lvl4	Sydney Water	Auditee
Chintan Patel	Reliability Team Leader	Sydney Water	Auditee
Imran Ali	Service Delivery Officer Lvl4	Sydney Water	Auditee
Manav Kaur	Process Controller	Sydney Water	Auditee
Robert Aurisch	Production Manager North West	Sydney Water	Auditee
Nicola Nelson	Manager Science Research & Innovation	Sydney Water	Auditee
Caleb Furner	Manager Business Customers	Sydney Water	Auditee
Kim Hill	QMS Manager	Sydney Water	Auditee
Kylie Havill	Senior QMS Analyst	Sydney Water	Auditee
Steve Cramer	Manager Billing & Revenue	Sydney Water	Auditee
Vedah Panuccio	Team Manager Customer Care	Sydney Water	Auditee
Eric Lindberg	Senior Business Analyst Tech Pricing & Compliance	Sydney Water	Auditee
Andrew Demery	Analytics & Spatial Capability Manager	Sydney Water	Auditee
Adam Severino	Analytics & BI Lead	Sydney Water	Auditee
Jenny Hu	Service Delivery Officer Level 4	Sydney Water	Auditee
Vincent Young	Contract Officer Level D	Sydney Water	Auditee
Phil Woods	Service Planning Lead	Sydney Water	Auditee





Name	Position	Organisation	Participation
Greg Alford	Service Delivery Officer Lvl6	Sydney Water	Auditee
Aravinda Stanley	Service Planning Senior Analyst	Sydney Water	Auditee
Bernie Sheridan	Head of Cust Del Production	Sydney Water	Attendee for inception / close out
Paul Higham	GM Liveable City Solutions	Sydney Water	Attendee for inception / close out
James Howey	Director	Viridis	Lead Auditor
Jim Sly	Director	Cobbitty	Lead Auditor
Tasleem Hasan	Consultant	Viridis	Auditor
Mark Favetta	Consultant	Cobbitty	Auditor


## 1.2.5. Audit Grades

Compliance grades are identified in the IPART Audit Guidelines and are reproduced in Table 5.

Table 5 Compliance Grades		
Grade of compliance	Description	
Compliant	Sufficient evidence has been provided in the audit on which to make a judgement on each requirement. Evidence is verifiable. The requirement has been met.	
Compliant (minor shortcomings)	Sufficient evidence to confirm that any shortcomings are minor and they do not affect water quality, public health and safety or the environment.	
Non-Compliant (non- material)	The deficiency does not adversely affect the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.	
Non -Compliant	The deficiency does adversely affect the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.	
No Requirement	There is no requirement for the utility to comply with the Licence conditions or to meet the condition within the audit period.	

Table 5 Compliance Grades

## **1.3. Regulatory Regime**

Sydney Water Corporation is a State-Owned Corporation, wholly owned by the NSW State Government. Sydney Water's principle functions are to provide water, sewerage and stormwater services and dispose of wastewater in its area of operations.

These roles and responsibilities, as well as Sydney Water's objectives, are prescribed by the *State Owned Corporations Act 1989* (NSW), the *Sydney Water Act 1994* (NSW) (the Act) and the Operating Licence (licence) issued to Sydney Water under Part 5, section 12 of the Act.

## 1.4. Quality Assurance Process

This audit was carried out in accordance with the Viridis Quality Manual, which is accredited under ISO 9001:2015. The audit team leader James Howey was the Project Manager for the audit and responsible for ensuring the quality of the deliverables. Quality assurance activities undertaken during the audit comprised of:

- compliance with the Viridis Quality Manual
- internal peer review of the report by a suitably qualified Lead Auditor
- document control and approval processes.





# 2. Detailed Audit Findings

## 2.1. Site Visit Report

The auditors visited the following sites on 20 September 2018 to verify implementation of the management systems and observe practices and assets. Site inductions were undertaken at all sites visited.

## 2.1.1. Cascade Water Filtration Plant

## Drinking Water:

The drinking water quality policy was visible on the wall inside the WFP building. The auditors walked through the treatment process, from intake point to final treated water. The currency of the treatment process against the process flow diagram was verified and found to be current. Calibration stickers (current) were noted on the online filtered water turbidity meters. It appeared that the operator was slightly confused on some monitoring locations for the CCPs/OCPs (Critical Control Points / Operational Control Points). CCPs are SCADA (Supervisory Control and Data Acquisition) controlled with interlocks for WFP shut down on out-of-specification water quality, hence potentially compromised water quality is not supplied to customers thereby managing any potential health risk. Further discussions on this is undertaken under Element 3, clause 2.1.1. The UPGs (Unit Process Guideline) and WIs (Work Instruction) used by the operators were found to be available onsite. The operational monitoring undertaken are recorded in daily log sheets, these were sighted. The onsite testing laboratory room was also visited, and records/equipment viewed. The CCP limits and alarm levels were seen on SCADA. It is currently not possible to view the values at which the Cascade WFP shut off occurs with the interlocks. The interlocks are coded in the back end. Further discussions on this is undertaken under Element 3, clause 2.1.2. The fluoridation unit/room was also inspected to verify compliance against the Fluoridation Code of Practice. Further discussion on this is undertaken under clause 2.3.1. The onsite operator's training records (hard copy) and Compass system were sighted and discussed. Further discussion on this is undertaken under Element 7 clause 2.1.1. The chemical delivery process and checklist were discussed and viewed onsite.

## Assets:

A walk through the plant following the treatment process from intake point to final treated water, revealed the assets to be generally in good condition. Some minor issues, such as noise emitting from a rapid mixer and surface corrosion on the air scour pipework, were identified. These were subsequently discussed with members of the ROM (reliability operability and maintenance) team (i.e. maintenance management staff) and reviewed through the MAXIMO maintenance management system to ensure that they had been identified and were being appropriately managed. Detailed discussion is presented in Section 2.2.14 (clause 4.1.5).

As the Cascade WFP is located in a bushfire prone area, it was interesting to note the measures that had been implemented in respect of personnel and safety protection. These measures include the recent construction of a shielding wall around the chemical storage area, a dousing system installed to the roof of the plant building and a designated Bushfire Shelter Area within the building, which was fitted with an air supply and breathing apparatus.

## 2.1.2. Parklea Reservoirs and Rechlorination Facilities

## Drinking and Recycled Water:

The auditors walked around of the facility, including discussions with relevant staff. The drinking water reservoir is chloraminated and is 60 ML is size. Water quality test results are checked daily to guide



adjustment of chlorine and ammonia ratio, a daily nitrogen report is generated. There is a phone app which is used for communication between the Area Water Quality Scientist (AWQS) and the rechlorination team. The chlorine dosing tanks were seen to be maintained in good working condition. There is 7,000 L (or about 30 days) of chlorine kept onsite and the re-chlorination chlorine tank strength is diluted to 2% for use. Duty and standby pump arrangement is used and the dose pumps are regularly calibrated. Online monitoring equipment and IICATS (Integrated Instrumentation, Control, Automation and Telemetry System) were also viewed onsite for chlorine results/trends. The drinking water reservoir has a connection to the elevated recycled water reservoir, however, there is a visible air gap to prevent any backflow and maintain separation. The drinking water reservoir was last cleaned in 2016. Six monthly visual reservoir inspections are undertaken using a checklist and every 5 years an extensive internal and external inspection is undertaken. Reservoir inspection records were requested by the auditors. Further discussion on reservoir inspections is undertaken under Element 3 clause 2.1.2.

## Assets:

This site accommodates a number of potable and recycled water system components, including:

- Parklea potable water storage (WS 0337);
- Parklea recycled water elevated storage (RS 0449), part of the Rouse Hill Recycled Water Scheme;
- Parklea to Kellyville potable water pumping station (WPS 0290);
- Parklea potable water re-chlorination facility (WX 080);
- Pumping station for potable top-up of recycled water storage RS 0449 (WPS 0309); and
- Parklea potable water re-chlorination facility (RX 0003).

The auditors undertook a general inspection of the site, noting that the facilities were generally in good condition. All were appropriately labelled and visible recycled pipework (for example) colour coded for identification. Safety and environmental protection arrangement were in place, including (for example) locked access to water storage roofs, chemical eye washes and showers, and bunding around chemical delivery and storage areas.

More detailed inspection was undertaken in respect of the potable water storage, and two pumping stations. Observations in respect of the potable water storage are discussed in more detail in Section 2.2.14 (clause 4.1.5).

## 2.1.3. Rouse Hill Recycled Water Plant

## Recycled Water:

The auditors walked through the treatment plant, from inlet to final treated effluent. The currency of the treatment process against the process flow diagram was verified and found to be current. However, it is ambiguous, it gives the impression the sewer catchment and distribution network are not operated by Sydney Water. Further discussion on this is undertaken under Element 2 clause 2.2.1. The installation of the Ultra-Violet Transmissivity (UVT) instruments was inspected and the critical limits for the UV Disinfection CCP were reviewed with staff. It was noted that the instrument had a tag on it with a UVT greater than the critical control limit. Further discussed under Element 3 clause 2.2.2. Online monitoring equipment installed for various process steps were viewed. The UPGs and WIs used by the operators were found to be available onsite. The operational monitoring undertaken are recorded in daily log sheets, these were sighted. The CCP limits and alarm levels were seen on SCADA. The chemical delivery process and checklist were discussed and viewed onsite.

### Assets:

The auditors walked through the facility, principally the recycled water plant, whilst discussing maintenance arrangements with members of the ROM team. Assets were observed to be generally in good condition.



A number of assets were identified and their maintenance regimes and records subsequently reviewed through the MAXIMO maintenance management system. These are discussed in more detail in Section 2.2.14 (clause 4.1.5).

## 2.2. Detailed Findings by Clause

### 2.2.1. Connection of Services (1.6.1)

Sub-Clause	Requirement		Compliance Grade
1.6.1	Subject to any applicable laws, Sydney Water must ensure that Drinking Water and Wastewater Services are available on request for connection to any Property situated in the Area of Operations.		Compliant
RiskTarget for full complianceFailure to comply with the requirements of this obligation presents a high risk that services may not be provided to properties that require them. Ultimately, this may present a risk to public health or the environmentTarget for full compliance Evidence that Sydney Water has ensured that Services are availa on request for connection to any Property situated in the Area of Operations.			e or has ensured that Services are available o any Property situated in the Area of
Evidence sighted Sydney Water resp Sydney Water, Gr PowerPoint preser PowerPoint preser Sample: Notice of Sample: Subdivide Sample: Subdivide Sydney Water, Mi Sydney Water, Po Sydney Water, Po Sydney Water, Qu Sydney Water, La Sydney Water, La Sydney Water, Ma Sydney Water, Ma Sydney Water, Ma Sydney Water, Wa	bonse to 2017/18 Operational Audit Ques owth Servicing Plan; July 2014 to June 2 natation: 1.6.1 – Drinking water connection natation: 1.6.1 – Developer Process.pptx. Requirements for Case No: 167337, date er/Developer Compliance Certificate for nor service extension fact sheet, undated licy, Minor service extension, 12 Decemb licy, Rural Water Supply (Version 1), 21 wick Reference Guide; Sydney Water Tap rge Watermain Connection; Sydney Water and development guide, undated. Unaging new development process; Task a Nork Instruction; Land Under Develop	stionnaire. 2019, undated. <i>n.pptx.</i> ed 26 October 2017. Case No: 167337, dated 21 M Case No: 171399, dated 1 Jun Der 2013. May 2015. <i>in – Staff Portal</i> (Version 1.3 <i>er Tap in; Procedure</i> (Version <i>summary</i> , undated. Depment – Water Servicing NDP AS-IS process 20102015	May 2018.         ne 2018.         3), August 2016.         n 3), 26 September 2016.         • Coordinator Instructions (Version 4),         5.xlsx.
Summary of reasons for grade Sydney Water demonstrated that it has arrangements in place to assess applications and provide drinking water and wastewater services to properties within the Area of Operations. There are, however, some cases where Sydney Water is unable to provide services (within a reasonable time) due to the property (typically a development site) being located beyond the limits of the water supply or wastewater network or there being insufficient system capacity. It is noted, however, that for the purposes of the Operating Licence, the definition of a Property is limited (amongst other criteria) to properties which: " are connected to, or for which connection is available to Sydney Water's water supply system or the sewerage system;". On this basis, it is assessed that Sydney Water is able to ensure that Drinking Water and Wastewater Services are available for connection to any Property situated within the Area of Operation upon request. Accordingly, it is assessed that Sydney Water has demonstrated full compliance with this obligation			
Discussion and notes Sydney Water advised that it will respond to applications for connections to properties that are zoned for development within its Area of Operations. This may include applications made by developers under the provisions of Division 9 of the Sydney Water Act. It also advised that the <i>Growth Servicing Plan</i> indicates where Sydney Water plans to provide water, wastewater and stormwater infrastructure to service urban growth. It may also enter into a commercial arrangement with an applicant to provide services. It is noted that " <i>Developers must still fund and construct reticulation services for their developments</i> ". Applications for drinking water and wastewater connections are managed through the Sydney Water online "Tap in" portal, available at: <u>https://www.sydneywater.com.au/tapin/index.htm</u> . Tap in is used for all private connections and redevelopment in brownfield areas. Applications for connection to new development areas are lodged by Water Servicing Coordinators (independent service provides) and managed through the E Davalance surter.			



Section 73 of the *Sydney Water Act*) and may issue a Notice of Requirements (for example, *Notice of Requirements* for Case No: 167337), which details requirements that must be satisfied before issuing a Subdivider/Developer Compliance Certificate (for example, *Subdivider/Developer Compliance Certificate* for Case No: 167337). Requirements, which must be implemented at the developers cost, may include (for example) the construction of water main and sewer extensions to the development site and water and sewerage reticulation networks and service connections to each property.

In cases where Sydney Water is unable to provide services to a proposed development, for example where they are beyond the limits of the water supply or wastewater network or there is insufficient system capacity, it will issue a Subdivider/Developer Certificate of Compliance granting consent for the development to proceed on the basis that services to the new properties is not available. In such cases, the Certificate indicates that: "*Water [or Sewerage] facilities cannot be provided within a reasonable time from the date of this certificate*" (for example, *Subdivider/Developer Compliance Certificate* for Case No: 171399).

For properties located outside the limits of Sydney Water's water or wastewater systems, service connections may be provided through the "Minor Service Extension" process. This involves constructing new pipelines and equipment as necessary to extend the existing water or wastewater system to a property or number of properties. Minor Service Extensions are dependent upon capacity being available within the existing systems and require a contribution to the costs of the works which are undertaken/arranged by Sydney Water. The *Minor Service Extensions Policy* details the requirements/constraints in respect of service extensions; service extensions are not applicable for developers.

A "Rural Water Supply" service may also be provided to non-urban customers who require a potable water connection where the circumstances of an individual property connection could result in its exclusion from some of the standards of service of the *Customer Contract*.

It is noted that a Customer may be required to enter into an "Additional Services Agreement" with Sydney Water in cases where the service provided is not fully addressed by the *Customer Contract*. Such cases include (for example) where water pressure boosting is required, Extended Private Services (Rural Water Supply), pump to sewer installations and connections to a pressure sewer system.

Sydney Water has in place various guidance and process documentation (in addition to that referenced above), including (for example):

- Tap in Quick Reference Guide for staff;
- Large Watermain Connection Procedure (Tap in);
- Land development guide;
- Managing new development process;
- Land Under Development Water Servicing Coordinator Instructions;
- Managing new development process Flow Chart;

In summary, Sydney Water has arrangements in place to assess applications and provide drinking water and wastewater services to properties within the Area of Operations. There are, however, some cases (as discussed above) where Sydney Water is unable to provide services (within a reasonable time) due to the property (typically a development site) being located beyond the limits of the water supply or wastewater network or there being insufficient system capacity.

It is noted, however, that for the purposes of the *Operating Licence* (refer to clause 12.1), the definition of a Property is limited (amongst other criteria) to properties which: "… are connected to, or for which a connection is available to Sydney Water's water supply system or the sewerage system…". This is taken to mean that Sydney Water is not required to provide Services where a connection is not available (i.e. in an un-serviced area). On this basis, it is assessed that Sydney Water is able to ensure that Drinking Water and Wastewater Services are available for connection to any Property situated within the Area of Operation upon request, consistent with the requirements of this obligation.

### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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

## 2.2.2. Connection of Services (1.6.2)

Sub-Clause	Requirement		Compliance Grade
1.6.2	Connection to Sydney Water's systems for the supply of Services relating to Drinking Water and Wastewater is subject to any conditions that Sydney Water may lawfully determine to ensure the safe, reliable and financially viable supply of its Drinking Water and Wastewater Services to Properties situated in the Area of Operations in accordance with this Licence.		Compliant
<b>Risk</b> Failure to comply with the requirements of this obligation presents a high risk that the provision of services may not be safe, reliable or financially viable, thereby presenting a high		<b>Target for full com</b> Evidence that Sydne in respect of the pro provision of such Se	<b>pliance</b> by Water has imposed lawful conditions vision of Services so as to ensure that the ervices is safe, reliable and financially

commercial risk to Sydney Water.



viable.

### Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Sydney Water, Policy; Connecting to Sydney Water systems, (Version 4), 30 April 2018.

Sydney Water, Policy; Responsibilities of connected customers (Version 3), 30 April 2018.

Sydney Water, Land development guide, undated.

Sample: Notice of Requirements for Case No: 167337, dated 26 October 2017.

Sydney Water website: http://www.sydneywater.com.au/SW/index.htm ("Plumbing, building & developing" pages).

### Summary of reasons for grade

Sydney Water explained/demonstrated that connections to its water supply and sewerage systems are subject to conditions, which principally relate to compliance with industry standards and existing legislation. Requirements documented in the *Customer Contract* and any Additional Service Agreements are also applicable.

Information in respect of such conditions is generally available on the Sydney Water website. Requirements specific to individual new developments are set out in a Notice of Requirements issued pursuant to Section 74 of the *Sydney Water Act*.

Sydney Water is therefore assessed to have demonstrated compliance with this obligation.

### **Discussion and notes**

Sydney Water advised that, in order for it to ensure consistency of its approach to the provision of Services, it has criteria in place that are applied when assessing and responding to applications for connection. These criteria relate to (for example):

- sizing of the connection;
- requirements in respect of backflow prevention;
- requirements in respect of trade waste;
- requests to pump to the wastewater system;
- connection to the wastewater system.
- Requirements in respect of these criteria are documented in (for example):
- Connecting to Sydney Water systems (Policy); and
- Responsibilities of connected customers (Policy).
- Information, including the above documents, is also available on the "Plumbing" pages of the Sydney Water website.

All connections are required to comply with relevant legislation and guidelines, including:

- Sydney Water Act;
- Water Services Association of Australia (WSAA) Codes;
- AS/NZS 3500 Plumbing code;
- AS/NZS 2845 Water Supply Backflow prevention devices;

and are subject to:

- the provisions of the *Customer Contract*;
- the provisions of any Additional Service Agreements;
- IPART regulated fees and charges; and
- the outcomes of hydraulic assessments.

Requirements applicable to new developments are outlined in the *Land development guide*, which is available from the "Developing" pages on the Sydney Water website. Specific requirements for each development are detailed in a Notice of Requirements issued pursuant to Section 74 of the *Sydney Water Act*.

In summary, Sydney Water explained/demonstrated that connections to its water supply and sewerage systems are subject to conditions, which principally relate to compliance with industry standards and existing legislation. Requirements documented in the *Customer Contract* and any Additional Service Agreements are also applicable.

### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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

## 2.2.3. Pricing (1.9.1)

Sub-Clause	Requirement	Compliance Grade
1.9.1	Sydney Water must set the level of fees, charges, and other amounts payable for its Services subject to the terms of the licence, the Act and the maximum prices and methodologies for Services determined from time to time by IPART under the IPART Act.	Non-compliant (non-material)



Risk	Target for full compliance
Failure to comply with the requirements of this obligation	Evidence that Sydney Water has set the level of fees, charges
presents a risk that Sydney Water is either overcharging its	and other amounts payable for its Services subject to the terms
customers or failing to recover the costs of providing the	of the Licence, the Act and the maximum prices and
service.	methodologies determined by IPART.

### Evidence sighted

Sydney Water, Statement of Compliance 2018 (for 2017/18), 29 August 2018.

MS Excel worksheet: ACCESS\_Commercial quality charges\_3 decimal places.xlsx.

Sydney Water, Commercial customers; Trade wastewater fees and charges for 2017-18, June 2017.

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Letter dated 9 May 2017 from IPART to Sydney Water (re: Consumer Price Index Movements and Pricing Information Regarding IPART Determined Prices for Sydney Water for 2017-18).

Sydney Water, Implementing IPART determined retail prices (Version 2), 28 June 2018.

Document: 2017-18 Price Schedule\_Signed version.pdf.

Document: ACCESS billing system\_sign off 2017-18.pdf.

Sydney Water website "Prices for your home" page: <u>http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/prices-for-your-home/index.htm</u>.

Sydney Water website "Prices for other services" page: <u>http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/prices-for-other-services/index.htm</u>.

IPART, Determination; Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016, June 2016.

Sydney Water, Standard operating procedure; Annual IPART price changes, 20 May 2018.

Sydney Water, Procedure; Updating prices for Sydney Water Tap in (Version 1), 22 June 2018.

Sydney Water, Procedure; Update e-Developer Ancillary Service Charges (Version 2), 25 June 2018.

Sydney Water, Operating Licence pricing audit (Reference: 2018/00003581), 17 August 2018.

Document: 2018-19 CPI (Consumer Price Index) escalated prices\_Signed copy.pdf.

### Summary of reasons for grade

Whilst Sydney Water has declared non-compliance in respect of substance charges for commercial customers, checking of a sample of prices confirms that they have been calculated in accordance with the relevant IPART Determination. Review of a small sample of customer bills confirms that the correct prices have been applied.

Sydney Water also demonstrated that it has an extensive portfolio of procedures in place to ensure that prices are correctly calculated and applied. These procedures include independent checking, with records to be retained, and the conduct of random audits.

It is noted that the non-compliance, which was the subject of a previous audit recommendation (2016-17-1), was addressed early in the audit period. Given that the non-compliance resulted in undercharging of customers, it impacted (albeit by a relatively small amount in 2017/18) Sydney Water's financial objectives but did not result in any impact on Sydney Water's objectives in respect of public health or the environment. On this basis the non-compliance is deemed to have been non-material during the audit period.

#### **Discussion and notes**

In its *Statement of Compliance*, Sydney Water declared a non-compliance with this obligation. More specifically, it advised that:

"From 1 July 2012 until 31 October 2017, Sydney Water's commercial trade waste customers have been charged an incorrect (lower) price for substance charges than the determined price.

No customers were adversely affected as the nature of the non-compliance meant that prices were effectively rounded down. This resulted in an under-recovery of revenue for Sydney Water of \$224,810 from 2012-13 to quarter 2 of 2017-18. The amount per year varied, in accordance with the total amount of substance charges for commercial customers levied.

*This non-compliance was reported in our 2016-17 statement of compliance and carried over into the first quarter of 2017-18.*"

It further noted that:

"Under section 18 of the IPART Act, Sydney Water is only able to levy a charge that is lower than a determined price with approval from the Treasurer."

The non-compliance arose due to unit price for substance charges being truncated when entered into Sydney Water's billing system, which was configured to two decimal places consistent with prices set prior to 2012. In the absence of the Treasurer's approval, this constituted a non-compliance.

Sydney Water demonstrated that it had adjusted the unit rates for substance charges for commercial customers to three decimal places after the first quarter billing in 2017/18 (i.e. from 1 November 2017). As evidence, Sydney Water provided:

- A summary spreadsheet/list of commercial substance charges for 2016/17, 2017/18 and 2018/19 showing the change from two to three decimal places;
- A fact sheet *Commercial customers; Trade wastewater fees and charges for 2017-18*, which shows the charges to three decimal points.

- Sample bills for two customers showing the change in unit rate from two to three decimal after first quarter of 2017/18:
  - account number 5447909 July 2017 (\$2.19/kL for Low strength BOD Food) and November 2017 (\$2.285/kL); and
- account number 4072816 August 2017 (\$2.19/kL for Low strength BOD Food) and February 2018 (\$2.285/kL). Sydney Water advised that:

"There were five IPART pricing determinations and one Premier's request under the IPART Act (s12A) which applied to prices for our Services during 2017-18 as follows:

- *Retail prices* Review of prices for Sydney Water Corporation June 2016 (Determination No.5, 2016). *This determination outlines the maximum prices for water, wastewater, stormwater drainage and other services. It sets our retail prices from 1 July 2016 to 30 June 2020. Prices are adjusted for the rate of inflation (Consumer Price Index (CPI)) each financial year, except for the first year of the price determination.*
- Wholesale prices Sydney Water Corporation, Maximum prices for wholesale water, sewerage and trade waste services from 1 January 2018 (excluding services supplied to recycled water systems), Determination No.4, 2017. This determination would have applied to any requests for wholesale services we received after 1 January 2018 (Note, we did not receive any wholesale requests during that time).
- *Recycled Water Developer Charges* Pricing arrangements for recycled water and sewer mining, Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council, Determinations No. 8 2006. *This determination sets out the methodology for calculation of the price for new connections to recycled water services.*
- Backlog Sewerage charges Pricing of backlog sewerage services Sydney Water Corporation, Gosford City Council, Hunter Water Corporation Wyong Shire Council, Determination No 4, 1997. This determination sets the methodology for calculation of prices to connect to services in Priority Sewerage Scheme areas. There were 149 PSP properties who connected during the 2017-18 year.
- Developer charges for water, wastewater and stormwater Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wyong Shire Council, Developer Charges From 1 October 2000, Determination No. 9, 2000. This determination would have applied to charges to connect new development to our systems however, these charges were set to zero by the NSW Government in December 2008.
- Dishonoured or declined and late payment fees IPART specified these in the final report of the 2012 review of our retail prices fees as part of their associated Section 12A review.

Sydney Water uses a number of different business processes and associated billing systems to levy the charges under each of these determinations and the Section 12A review."

Sydney Water provided an extensive portfolio of process and sample pricing documentation to demonstrate that prices charged during the 2017/18 financial year were consistent with the relevant Determination and that quality assurance processes had been implemented. A sample of that documentation is referenced in the following discussion.

Pricing adjustments each year during the period for which a Determination applies is based largely on CPI changes. The values adopted are as advised by IPART, with the CPI change varying for each Determination. CPI changes for 2017/18 were:

- Sydney Water Determination: 2.1%
- Developer Charges Determination: 1.5%
- Recycled Water and Sewer Mining Determination: 1.5% and
- Backlog Sewerage Charges Determination: 1.7%.

The procedure *Implementing IPART determined retail prices* details the process followed to implement new prices from 1 July each year. The process requires that the new prices are calculated by a Senior Regulatory Economist and then independently calculated by four other people and the values compared. Any differences are reviewed and the new prices agreed before sign-off by four managers. Approved prices are issued to relevant business units for implementation, principally through the ACCESS Billing System.

A signed copy of the 2017/18 Price Schedule was provided as evidence that the review process had been implemented; signoff that the prices had been uploaded into the ACCESS Billing System and that the billing production process was tested was also provided.

A check of prices against the 2017/18 Price Schedule revealed:

- Prices/fees shown on the Commercial customers; Trade wastewater fees and charges for 2017-18, fact sheet are consistent with the Price Schedule; and
- 2017/18 charges as published on the "Prices for your home" page of the Sydney Water website are consistent with the Price Schedule.
- A sample of 2017/18 ancillary charges published on the "Prices for other services" page of the Sydney Water website was
  reviewed; charges for (for example) a conveyancing certificate or Sewerage service diagram were consistent with the Price
  Schedule, however, the hourly rate for provision of Sydney Water's services was shown as \$149.31 compared to \$135.74 shown
  in the Price Schedule. Sydney Water clarified that the hourly rate shown on the website is inclusive of GST (as is indicated on the
  website) whereas the Price Schedule includes base prices as escalated for CPI only (i.e. prices in the Price Schedule are exclusive
  of GST, which is consistent with the prices included in the IPART Determination).

Calculation of the above referenced fees and charges, as shown in the *Price Schedule*, was checked against the Sydney Water Determination, as follows:

- Trade waste substance charges for commercial customers (Table 18) all unit rates correct.
- Home prices:



- Meter Connection Charge (Table 1) \$91.84 prior to SDP Adjustment correct;
- Water supply service charge for unmetered properties (Table 2) \$459.40 prior to SDP Adjustment correct;
- Water Usage Charge (Table 3) Filtered water \$2.04 and SDP Uplift \$0.12 correct;
- Wastewater Service Charge (Table 6) \$566.92 correct; and
- Sewerage Usage Charge (Table 5) \$1.13 correct.
- (SDP Adjustment not checked).
- Ancillary charges:
  - Conveyancing certificate (Table 20, Item 1) \$6.59 correct;
  - Property Sewerage Diagrams (Table 20, Items 2(a) & (b)) \$10.84 & \$27.41 correct; and
  - Sydney Water Hourly Rate (Table 20, Item 39) \$135.74 correct.
- On the basis of this sample, it is apparent that the prices have been correctly calculated.

In respect of the development of quality assurance processes to ensure that prices are correctly calculated and applied (as required under previous recommendation 2016-17-1), Sydney Water advised:

"Sydney Water has around 100 different regulated prices which we levy in five different billing systems. To bring our *QA* of these prices up to date during 2017-18 we have:

- written six new price calculation, implementation and tracking procedures
- updated five existing price implementation and management procedures
- created four new work instructions and/or standard operating procedures
- identified numerous improvement opportunities.

We have also arranged for all regulated prices to be regularly and randomly audited by either SMEs (Subject Matter Expert) or the QMS (Quality Management System) team."

Review of a sample of procedures demonstrates that they have been updated or recently prepared, including (for example):

- Implementing IPART determined retail prices dated 28 June 2018 this details the master process for updating prices, which as reported above, requires independent calculation/checking by four people in addition to the initial calculation. Sign-off by multiple managers is also required. The procedure also requires that a random audit to confirm implementation of the new prices prior to communication.
- Annual IPART price changes dated 20 May 2018 (new document) provides or links to work instructions for uploading of new prices into the ACCESS Billing System. It requires running the new prices in a test environment prior to billing production.
- Updating prices for Sydney Water Tap in dated 22 June 2018 (new document) details the procedure for updating each fee type. A check to ensure that prices have been updated correctly is to be undertaken by creating requests for each product type in Tap in; screen shots are to be printed as pdf documents, prices checked and the documents filed for future reference.
- Update e-Developer Ancillary Service Charges dated 25 June 2018 details the process for updating Ancillary Service charges including IPART determined prices in e-Developer. The process includes requirements for testing (work instruction and testing template (in which test records are to be retained) are referenced) and quality checking.
- As reported in each case, testing/checking and quality control processes have been incorporated.

Sydney Water provided the record of a random audit conducted in respect of the 2018/19 prices. This revealed that fifteen (15) individual prices, which collectively represented more than 90 percent of the volume and value of bills issued by Sydney Water, had been checked/audited. It appears that the audit found all prices to be correct (confirmed by sample checking against the 2018/19 Price Schedule); however, there was no clear statement to that effect. As an opportunity for improvement (**OFI-SWC-2017/18-01**), it is suggested that Sydney Water includes a clear statement of compliance (or otherwise) in its pricing audit reports.

In summary, whilst Sydney Water has declared non-compliance in respect of substance charges for commercial customers, checking of a sample of prices confirms that they have been calculated in accordance with the relevant IPART Determination. Review of a small sample of customer bills (not all reported above) confirms that the correct prices have been applied.

Sydney Water also demonstrated that it has an extensive portfolio of procedures in place to ensure that prices are correctly calculated and applied. These procedures include independent checking, with records to be retained, and the conduct of random audits.

It is noted that the non-compliance, which was the subject of a previous audit recommendation (2016-17-1), was addressed early in the audit period. Given that the non-compliance resulted in undercharging of customers, it impacted (albeit by a relatively small amount in 2017/18) Sydney Water's financial objectives but did not result in any impact on Sydney Water's objectives in respect of public health or the environment. On this basis the non-compliance is deemed to have been non-material during the audit period.

### 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-2017/18-01:** It is suggested that Sydney Water includes a clear statement of compliance (or otherwise) in its pricing audit reports.



## 2.2.4. Water Quality - Drinking Water (2.1.1)

Sub- Clause	Requirement		Compliance Grade
2.1.1	Sydney Water must maintain a Management System that is consistent with the Australian Drinking Water Guidelines, except to the extent that NSW Health specifies otherwise (the Drinking Water Quality Management System, DWOMS).		
	[Note: Sydney Water is to implement the Dri Management System to the Drinking Water s light of its knowledge of the entire drinking w the water catchment to the Consumer).	nking Water Quality ystem under its control in water supply system (from	
	It is expected that the DWQMS will be consistent with the Framework for Management of Drinking Water Quality. However, where NSW Health considers it appropriate, the application of the Australian Drinking Water Guidelines may be amended or added to, to take account of Sydney Water's circumstances and/or Drinking Water quality policy and propriates within New South Wales 1		Compliant
<b>Risk</b> Without a compreh Sydney Water may water quality and p	nensive DWQMS, there is a high risk that r not be able to effectively manage risks to protect public health.	<b>Target for full compliand</b> Evidence that a DWQMS is up to date, and that it is co specified by NSW Health.	e is established, maintained and kept nsistent with the ADWG, as
<b>Evidence sighted:</b>			
Element 1 BMIS0213.13 – Da iConnect – Compli BMIS0213 – Drink	rinking Water Management Policy (DWMP) ance Accountability Register king Water Management Manual (DWMM) (Se	ection 1.3)	
Element 2 BMIS0249 - Catchment to customer water quality risk review procedure D0000799 - Operational risk assessment workshop SOP 791708 - Final 2018 Report Catchment to Tap Mid-term review 801951- Operational Risk Assessment Report - Cascade WFP 2017 _ V1.2 801982 Operational Risk Assessment Report - Nepean WFP 801984 Operational Risk Assessment Report - North Richmond WFP 2017 801985 Operational Risk Assessment Report - Orchard Hills WFP 2017 802019 Operational Risk Assessment Report - Warragamba WFP 2017 D0000890 Process Flow Diagram - Cascade WFP D0000893 Process Flow Diagram - North Richmond WFP D0000896 Process Flow Diagram - North Richmond WFP D0000896 Process Flow Diagram - Orchard Hills WFP D0000896 Process Flow Diagram - Orchard Hills WFP			
Element 3 791708 - Final 2018 Report Catchment to Tap Mid-term review IMS0152.01 - Drinking Water Product Specifications 801951- Operational Risk Assessment Report - Cascade WFP 2017 _ V1.2 801982 Operational Risk Assessment Report - Nepean WFP 801984 Operational Risk Assessment Report - North Richmond WFP 2017 801985 Operational Risk Assessment Report - Orchard Hills WFP 2017 802019 Operational Risk Assessment Report - Warragamba WFP 2017 KnowRisk sighted onsite 19 Sept 18 DOC0542 - Process Decision and Abnormal Water Quality WI			
Element 4 BMIS0213 - Drinking Water Management Manual SDIMS0008 - Document Management Procedure 613121 - Drinking Water Quality Operational Monitoring Plan 2017-18 WPIMS5274 - Triggers Notifications & Actions for Adverse WQ Results DOC0542 - Process Decision and Abnormal Water Quality WI WPIMS5228 - Drinking Water Quality Event Management Plan WTCS5001 - Receiving Bulk Chemicals			



WT5232 rev 4 - Quality Assurance for Receiving Bulk Chemicals used in Drinking Water Treatment
OS0015 - Buik Chemical Data Capture and Assessment
Element 5
611186 - Annual Drinking Water Quality Compliance Monitoring Plan 2017-18
WPIMS5274 - Triggers Notifications & Actions for Adverse WQ Results
WPIMS5228 - Drinking Water Quality Event Management Plan
WOQ5162 v10 - Managing wQ Customer Complaints
WTCS5031 - Emergency Plan for Cascade WEP WEP00/1
WOO5162 V10 - Managing WO Customer Complaints
PBP0001V2 - Development Planning for Water Quality Scientists
The second
Element 6
D0000506 - Incident Management Procedure
WPIMS5228 - Drinking Water Quality Event Management Plan
WPIMS5228.01 - DWQ Event Management Incident Management Contacts
SDIMS0041 Incident investigation and lessons learned work instruction Mandatory criteria IMP V1.7 Treatment can analysis (Excel document)
Flament 7
Production Canability Development Guide - Product Quality Final
PRP0001V2 - Development Planning for Water Quality Scientists
Compass system
Flamont 8
iConnect - Community and Stakeholder Engagement
Sponsorships & Partnerships
http://www.svdnevwater.com.au/SW/about-us/our-organisation/who-we-sponsor/index.htm
Education & tours program:
http://www.sydneywater.com.au/SW/education/index.htm
Kidney dialysis allowance procedure
Home Haemodialysis
Customer Council Charter:
http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd_047785.pdf
Customer forums:
http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm
Element 9
Strategy presentation - RI Strategy Final
Status Report - RI Portiono Status Report - June 2018 v4
Element 10 SDIMS0009 Decomment Management
SDIMS0008 - Document Management
MP0023 - Preparation of the Quarterly Drinking Water Quality Report (ODWOR)
PAMAM0003 - FPA Annual Return Reporting Procedure
Flamont 11
MP0023 - Preparation of the Quarterly Drinking Water Quality Report (ODWOR)
MP0017 - Quarterly Monitoring Report on Drinking Water Quarty for NSW Health
SDIMS0010 – Assurance & Monitoring Procedure (Audit & Inspections)
Element 12
SDIMS0012 – Management Review
BMIS0214 - Product Management Improvement Framework
617839 - Product Management Improvement Register



### Summary of reasons for grade

Sydney Water was assessed as being Compliant for this sub-clause. It has established a DWQMS which addresses and is consistent with the framework prescribed by the ADWG. Sydney Water also undertakes regular communication with NSW Health to maintain the DWQMS to their satisfaction.

Overall, the auditors were pleased with the DWQMS established by Sydney Water. Some opportunities for improvement have been identified to strengthen the DWQMS, noting that some of these are already in progress.

### Discussion and notes

The DWMM is the principal document that describes Sydney Water's approach to managing drinking water quality in a manner that is consistent with the framework prescribed by the ADWG. The DWQMS overall is underpinned by a number of key supporting documents, processes and procedures to fully define drinking water management practices undertaken by Sydney Water. Detailed element-by-element discussions are captured below.

### Element 1

There is a drinking water quality policy (date reviewed: 28/6/18), which has been endorsed by the Acting Managing Director. Regulatory and formal requirements have been identified in the Compliance Accountability Register, which is referenced in the DWMM. The Register is maintained to cover all of Sydney Water's regulatory requirements.

The Manual identifies important stakeholders and explains the mechanisms relating to their commitment and involvement (section 1.3).

### Element 2

A risk assessment team with appropriate knowledge is assembled for risk assessment workshops. NSW Health is invited to all workshops and has also attended some. The procedures for guiding the C2C (Catchment to Customer) risk review and operational water quality risk assessments are available, which include ensuring that NSW Health is invited. The BOO (Build Own Operate) contractors also use Sydney Water's procedure for guiding water quality risk assessment workshops, which require invitation to NSW Health.

Process flow diagrams have been created for the water supplies. There is also a work instruction on creation of process flow diagrams. The process flow diagrams are reviewed annually in conjunction with the annual water quality risk assessments. An information pack is developed and provided prior to the risk workshops that collates pertinent information. A PowerPoint presentation is supplied to the workshop attendees. The package also includes a copy of the relevant process flow diagrams.

Historical data from source waters and treated water was assembled for each risk workshop, including examination of exceedances and data assessment using trends charts, which included treated (filtered) water at the WFPs. Turbidity trends from filters were also plotted as well as finished water CCPs at reservoirs.

The approach and methodology used for risk assessment is described in the review SOPs (BMIS0249 - Catchment to customer water quality risk review procedure and D0000799 - Operational risk assessment workshop SOP). The C2C risk assessment is the overall strategic risk assessment and the annual operational risk assessments are plant specific. The delivery system risk assessment is conducted separately by Sydney Water's Network team, but it will be carried out together with WFP risk assessments from 2019 after the Network Water Quality Group migrates to the new Product Group, following Sydney Water's reorganisation. Hazards are identified in the C2C risk assessment and considered during the operational risk assessments. The operational risk assessment register (KnowRisk) itself does not specifically state or outline hazards (e.g. in a specific column), although it is captured in the risk description. Uncertainty is considered through discussions (on effectiveness of controls) and exceptions and similar to hazards is not stated or outlined specifically. It will be useful to describe in the operational risk assessment SOP on how hazards and uncertainty are identified and captured within KnowRisk assessment (**OFI-SWC-2017/18-02**).

The risk assessments are periodically reviewed. The C2C water quality risk review procedure sets out requirements for the review. In summary, the review entails:

- major review performed once per five years
- existing risks or new risks can be reassessed/flagged through a number of mechanisms including Quarterly Water Forums and Quarterly JOG (Joint Operational Group) meetings. Frequent minor, 'high-level' reviews can also be performed in the order of monthly to quarterly, to address emerging or changing risks. This is also included in the SOP.

The operational risk assessment workshops (KnowRisk Review) are undertaken annually to review risks.

### Element 3

Preventive and control measures are identified through the two levels of risk assessment: C2C risk review and operational water quality risk assessments. The operational risk assessments are captured in KnowRisk.

The risk assessments evaluated the residual risks considering the preventive and control measures. Risk treatments were identified where improvements were needed. The risk treatment actions or additional risk measures were then captured in the improvement plan.

The Drinking Water Product Specification identifies the CCPs/OCPs, their limits and monitoring requirements. The justification for selecting CCPs/OCPs is also given in the Drinking Water Product Specification. CCPs/OCPs are implemented at plant level and in the network. Action limits and critical limits are incorporated as online alarms in SCADA/IICATS. Performance against critical limits are monitored continuously and performance is routinely reviewed and reported to internal business stakeholders and NSW Health.

Plant staff have a procedure to follow if results deviate from the limits (Process Decision and Abnormal Water Quality WI). During the onsite visit to Cascade WFP, the operator was slightly confused on monitoring locations for the CCPs/OCPs, although these are marked on the process flow diagrams. CCPs are SCADA controlled with interlocks for WFP shut down on out-ofspecification water quality, hence potentially compromised water quality is not supplied to customers thereby managing any



potential health risk. Not all CCPs stated in the Drinking Water Product Specification is applicable to all sites (e.g. there is no combined filtered water turbidity as a CCP for Cascade WFP). This can cause some confusion. It will be useful to have a HACCP (Hazard Analysis and Critical Control Points) like plan (or DWQMP) for use at the plants which includes or refers to specifics for a respective plant. This will act as the interface between the higher-level Drinking Water Manual/documents and the operational level SOPs. Sydney Water is in the process of developing these documents/plans (**OFI-SWC-2017/18-03**).

### Element 4

Documents (procedures) relevant to the management of operational processes are available in Sydney Water's ISO 9001 certified Integrated Management System (IMS) (sighted onsite). The Document Management Procedure covers the types of documents that are generated and their requirements, including review frequency. Initial document drafting is typically undertaken by operations staff directly for operational procedures. There are various UPGs and WIs available but locating and accessing them in IMS easily can be a challenge (e.g. due to internet speed in some operational areas and due to all procedures being lumped within IMS). Hence operators also have hard copies of the procedures onsite for reference, if required. Sydney Water is also in the process of establishing iConnect pages as interface where documents for a particular plant will be listed and clickable for easy access. It is also not clear at the moment to easily see and determine if all relevant procedures are available for all significant processes from catchment to consumer (as they are all lumped into one place), although relevant SOPs asked by the auditors were available as either UPGs or WIs. It was noted that Sydney Water is currently undertaking a roadmap project to rationalise all SOPs within the business. As part of this process it will be useful to explicitly identify procedures required for each process/activity from catchment to consumer. This gap analysis will ensure that all significant risks/preventive measures have associated documented procedures identified and available, and the iConnect interface page under construction will make it easy to find and access a respective procedure (**OFI-SWC-2017/18-04**).

The Process Decision and Abnormal Water Quality WI (Tables 1 and 2) outlines the operational monitoring undertaken by the plant team, as well as the targets and action limits. In addition, a Drinking Water Quality Operational Monitoring Plan is prepared annually by Project and Services Group and is approved and endorsed by Networks and Treatment. This Plan covers the monitoring of routine grab samples, project based (routine and non-routine) and event/incident monitoring. Monitoring under this Plan is undertaken by Sydney Water's National Association of Testing Authorities (NATA) accredited laboratory. The plan also illustrates examples of control charts and trending reports that are produced from the data on a monthly basis. Networks also have a series of water quality procedures under the IMS that ensure that water quality is maintained throughout the distribution network.

Corrective actions in relation to data excursions are undertaken using some key documentation that outlines responses to excursions. These include: Triggers, Notification & Actions for Adverse WQ Results WI, Process Decision and Abnormal Water Quality WI and DWQ Event Management Plan. Corrective actions are performed onsite by operators in accordance with the WIs. Each Sydney Water WFP also follows the UPG which includes the trouble shooting guide during any operational abnormalities. Where corrective action requires specialist intervention (e.g. mechanical/electrical issues identified as part of routine maintenance), a corrective maintenance work order is created in Maximo to schedule the corrective action. Alternatively, in some instances the plant team will directly engage the instrument specialists to assist.

The Process and Equipment Monitoring Procedure also details the daily, weekly and monthly monitoring activities undertaken by operators to ensure process equipment are working effectively. SOP's for equipment calibration, including schedules are maintained in IMS. Online and laboratory instruments are inspected, cleaned and calibrated on a routine basis. Staff calibrate and maintain water quality monitoring instruments throughout the network in accordance with a schedule that is based on instrument type. Laboratory instruments are checked daily against calibration standards from the manufacturer or West Ryde standards e.g. pH, fluoride, turbidity and colour. External calibrations for online equipment are also undertaken. Portable field water quality testing equipment used by field sampling staff are operated according to work instructions stored within the quality system. Sydney Water has a preventive maintenance program (Maximo – Sydney Water's enterprise Asset Management System (AMS)) to ensure that equipment and instruments are maintained for reliable and accurate operation.

Sydney Water maintains a list of approved chemicals for use with drinking water. This is located in the Bulk Chemical Data Capture and Assessment WI. Sydney Water uses detailed specifications, long term supply contracts with testing requirements and other controls (onsite testing/verification of chemicals received) to ensure that only approved chemicals are used. The chemical supply contracts detailed specifications include chemical quality, allowable contaminant limits and testing requirements. Contaminant testing is undertaken by the contractor and test reports are supplied to Sydney Water as per contracts. Test results are stored in a centralised database and reviewed regularly (as per Work Instruction OS0015). The chemicals used for treating water at Sydney Water WFPs are part of the list of typical chemicals used for drinking water treatment as mentioned in the ADWG. Sydney Water also uses procedures outlined in the following documents to ensure chemical quality: Receiving Bulk Chemicals used in Drinking Water Treatment. On arrival at site, chemical deliveries are inspected by plant operators to verify that the correct chemical is being delivered and meets the requirements.

### Element 5

A Drinking Water Quality Compliance Monitoring Plan is prepared annually. Sydney Water complies with the monitoring requirements set out in the IPART Reporting Manual. The monitoring plan details sampling locations, frequency of sampling and the water quality characteristics to be monitored. NSW Health are given the opportunity to comment. As part of the annual review of the monitoring plan, population statistics are reviewed to ensure compliance with ADWG sample number requirements. The samples are tested at Sydney Water's laboratory which is NATA accredited.

Water quality complaints are received through Sydney Water's Call Centre. The Managing Water Quality Customer Complaints WI provides the approach to management and resolution of complaints from consumers. Water quality complaints are followed up within 4 hours (except health-related water quality complaints and complaints received in dual product areas i.e. recycled, which are followed up within 1 hour). The WI also references two water quality alarms that are triggered once a predetermined threshold has been reached (dirty water in MAXIMO and 5 complaints in 90 mins in CMS). Complaints and responses are recorded in Sydney Water's CMS. Complaint information is reviewed monthly. Water Quality Scientists are responsible for



managing water quality complaints. Area Water Quality Scientists are developed through a dedicated program that involves hands on training and a competency-based program run alongside experienced Water Quality Scientists (as per procedure Development and Succession Planning for Area Water Quality Scientist). Reviews of their performance are documented to improve their understanding and performance. There are a number of reports that review customer complaint data. The Customer Sentiment Monitor also seeks feedback on consumer satisfaction across a number of Sydney Water products and services.

Verification data is stored in Sydney Water's BI. Grab samples are analysed by the laboratory and results stored in the LIMS. Data is then transferred into the 'Monitoring Universe' in BI. Non-conformances in relation to water quality grab sampling data analysed by the laboratory are reported through daily exception reports.

Corrective actions on non-conformances are managed using Triggers, Notification & Actions for Adverse WQ Results, WI and DWQEMP. Records of investigations are maintained e.g. in Sydney Water Incident Recording and Learnings (SWIRL) system. Other review and response systems include real time telemetry of water quality and quantity measurement and alarms (SCADA & IICATS) which are monitored continuously by the SOC, including high and low alarms set on operational target criteria and real time monitoring of customer complaints trends e.g. dirty water events (WI provided). Cascade WFP (audit field site) has site specific procedures for corrective actions in response to non-conformances (Cascade WFP Process Decision and Abnormal Water Quality WI). There is also an Emergency Plan for Cascade WFP. Corrective actions are recorded in the daily note book record of corrective action. Investigations can also be undertaken when non-compliant results or potential issues are suspected.

### Element 6

Sydney Water has an overall Incident Management Procedure (D0000506) and Emergency Management Procedure (D0000507). The Incident Management Procedure (D0000506) was finalised in July 2017 and follows a new business resilience framework. It has mandatory requirements for incident prevention, including Threat and Vulnerability analysis, Business Impact Assessment, Risk Assessment and the identification of critical customers. This is currently being rolled out and a gap analysis has been prepared for the Treatment Business (Mandatory criteria IMP V1.7 – Treatment gap analysis). There are a number of gaps identified and actions required to address them. However, the gap analysis is high-level, some gaps are yet to be verified and responsibilities and due dates are not included. Ensure that the gap analysis for incident management (D0000506) is finalised, including specific actions assigned with responsible positions and a due date, applicable to the risk of the gap. (OFI-SWC-2017/18-05)

These procedures set out the overall approach to incident management and the DWQEMP deals directly with water quality. The overall procedures set out incident definitions at the corporate level and example definitions are used to align the DWQEMP and the procedures. The DWQEMP has triggers for reporting events and incidents to NSW Health and any escalation that may be required. The document defines Events, Notifiable Events and Incidents. Response protocols are stated in the DWQEMP. Some supporting procedures/protocols include: WaterNSW and Sydney Water protocol for response to the detection of *Cryptosporidium* and *Giardia* in the drinking water supply, Triggers, Notifications and Actions for Adverse Water Quality Results WI, NSW Health's series of response protocols and WaterNSW Raw Water Quality Incident Response Plan.

Communication during drinking water incidents is in accordance with the DWQEMP and includes close liaison with NSW Health and WaterNSW as required. Key records are kept in SWIRL and other records are kept locally (e.g. Situation Reports). Sydney Water has an agreed communication protocol in place with WaterNSW and NSW Health for drinking water incidents and emergencies. This approach defines responsibilities and agreed public communication throughout a water quality incident. Interagency and internal communication protocols are reviewed as part of quality management audits, training exercises and may be discussed through the JOG and SLG. In addition, communication protocols are set out in a number of areas including alarm responses, laboratory reporting systems, customer complaint system and SWIRL.

Discussions on the contact list was undertaken under Element 1.

Training is provided on the DWQEMP to all required staff (further discussed under Element 7). Sydney Water also has a program of regular training and joint exercises with key stakeholders. These simulations place systems, processes and facilities into situations as close as possible to real events. The exercises provide opportunities to test communications, planning and management procedures, and include emergency management training. A joint exercise program between Sydney Water, WaterNSW, and NSW Health is developed routinely through the JOG and the Strategic Liaison Group (SLG).

The Incident Investigation and Lessons Learned WI (SDIMS0041) provides instructions for investigating incidents and managing the implementation of actions and lessons learned.

The Communications team manage and maintain the communications protocols with public and media.

#### Element 7

Sydney Water has formal and informal mechanisms and communication processes in place to increase employee awareness of and participation in drinking water quality management. This ensures that all employees are aware of drinking water quality management programs and that relevant staff are appropriately trained and made aware of their responsibilities in drinking water quality management. Mechanisms and processes include: induction and competency programs, development programs, internal and external training workshops/conferences, divisional updates, newsletters, noticeboards, emails, seminars, team meetings, incident and event reporting through SWIRL, internal forums, external forums with key stakeholders (including WaterNSW, NSW Health, WFP BOO operators), Sydney Water's intranet and internal social media. For example, the Water Forum provides staff with the opportunity to meet quarterly and discuss water quality issues. Area Water Quality Scientists are co-located in area operational teams. This provides access to water quality expertise for field operations staff and ensures that water quality is considered in work that is being undertaken. It also provides operational staff with a hands-on mentoring experience. Procedures and documents relating to water quality are available to all staff via quality systems. Notifications relating to changes to quality documentation held within the quality systems are automatically issued to relevant staff. This ensures that they are updated with the latest changes.

Roles and responsibilities of staff are captured through formal position descriptions (held by human resources). Performance of staff is reviewed and assessed using the Capability Development Guide. Training requirements can also be allocated through this



process to ensure that staff are adequately trained to undertake their duties. At the corporate level, training records are managed via the Compass software package. Compass is also used to assign training needs to staff, track completion of that training and store all relevant records. Training records can be also maintained locally onsite (e.g. by operators). BOO contractors have performance-based contracts to ensure drinking water quality management.

Sydney Water uses in-house expertise to provide training. The Water Quality Team provides coaching, mentoring, SOPs, experience, and has a training schedule in place. The Water Quality Team runs a water quality training and awareness course to train staff with a hands-on role in water quality management. The training is delivered to operations staff in key areas by experienced water quality personnel. Standard water quality presentations have been prepared, which are specifically tailored for individual Sydney Water business areas. The training includes the coverage of many water quality aspects, for example, the drinking water policy, risks to water quality (pathogens, cross connections, ingress through new mains, etc.), DWQEMP actual case studies (includes incidents and investigations), disinfection and local key work instructions. As learnings are realised, the presentations are updated so that information remains current.

In the network, treatment and civil operational areas, the AWQS is consulted on water quality issues, who can then in turn contact the Water Quality Team for more support.

At WFPs, for specific SOPs, training is given on the job as part of a formalised competency system to pass on required knowledge. Mandatory training for operators addresses risks such as chlorine gas and fluoride. WFP operators also receive general water quality training through the Water Quality Team training program. New starters at WFP's complete requirements as set out in the new starters training list. Treatment also have a Competency Development Program.

The senior production officer (operator) at the Cascade WFP does not have a formal water operations certificate, although the operator is experienced and trained to operate the plant well. It was noted that the operator is in the process of obtaining a formal certificate. This will be beneficial to obtain (**OFI-SWC-2017/18-06**).

The employees are qualified and/or trained to undertake their roles. However, it will be useful to develop a training needs matrix for staff and contractors to ensure that they have and maintain appropriate experience and qualifications. The matrix can be used as a Training Needs Analysis tool. In addition, the matrix can visually, at a glance, identify individual skill levels and training gaps. The matrix should also capture the periodic renewal or refresher requirements for trainings undertaken (OFI-SWC-2017/18-07).

### Element 8

Sydney Water has an overarching policy on community and stakeholder engagement. Project and issue specific communications and stakeholder engagement plans are developed and implemented.

Sydney Water's Communications & Public Affairs unit delivers community involvement through the following approaches:

- informative content across a range of communications channels e.g. Sydney Water website, social media channels (Facebook, Twitter), print, radio and TV broadcast media, publications, education programs, community events
- a community involvement program which includes education, community sponsorships and proactive engagement through community events. These programs are supported through Sydney Water digital and social media channels.
- ongoing customer research including quarterly Customer Sentiment Monitor and annual Customer Relationship Study
- Customer Council (quarterly) engagement with a wide variety of peak organisations that represent the interests of customers.
  Business Customer Forum engages with peak organisations and customers that represent the interests of business, industrial and
- Business Customer Forum engages with peak organisations and customers that represent the interests of business, industrial and commercial groups.
- Service Faults Tracking System
- Business customer specific issues addressed via Customer Relationship Managers

Sydney Water engages with specific community sections on their needs, e.g. dialysis customers. The procedure on notification arrangements for dialysis patients was provided. External translating services are also offered to customers, especially where they may be impacted by upcoming work on their properties, or if they are having trouble communicating around billing and account enquiries.

Community consultation and engagement is undertaken via public discussion documents, public forums, Sydney Water Talk (online engagement platform), individual meetings and through the groups like the Customer Council and Business Customer Representatives.

Customers can get information on drinking water quality via:

- Phoning contact centre
- Email
- Social Media
- Customer Management System
- Waterwrap newsletter with customer bills
- Daily Drinking Water Quality report
- Quarterly Drinking Water report
- Your Water summarises Quarterly report
- Resources on the Sydney Water website
- Sydney Water's Annual Report.

There are proactive drinking water education programs. It uses a number of elements to build community awareness including: school and university education programs, participation in community events, staff engagement, sponsorships, presentations to community groups and other special interest groups.



### Element 9

Sydney Water has a dedicated research function within the Corporate Strategy group. The R&D program sets out Sydney Water's current research portfolio. Sydney Water has a detailed Governance Framework which includes the process for identifying and determining if a research project is undertaken. During the 2017-18 financial year roadshows were undertaken to roll out Sydney Water's Research & Innovation Strategy Towards 2020 and Beyond (strategy presentation was provided as evidence).

A copy of the Research & Innovation Portfolio Monthly Status Report, which summarises monthly reporting of all the projects to the Head of Customer Strategy and Planning was also provided as evidence.

Sydney Water has a research program developed with the private sector partners for BOO plants, which includes research and development, technology transfer and fellowships available to staff to foster knowledge and skills exchange.

Research projects can be identified through the C2C risk assessment and operational risk assessments. A number of research projects are being implemented out of the Product Management Improvement Framework. Sydney Water undertakes a range of research projects, specifically targeted at delivering a safe water supply and protecting public health.

Sydney Water undertakes validation for new technology and instrumentation for drinking water monitoring on an as required basis. In-house technical expertise in process designs is utilised to manage the validation program. The process team prepares the detailed technical report. C.*t* calculation models have also been developed for the water supplies, viewed onsite.

Sydney Water maintains awareness of industry issues and new technology developments via multiple means, including WSAA, WSAA Water Quality Network, Water Research Foundation (via WSAA), Water Environment Research Foundation, WateReuse Foundation, National Centre of Excellence in Desalination and UKWIR (United Kingdom Water Industry Research), and Water Research Australia and Technology Approval Group (TAG).

### Element 10

Documentation related to delivering drinking water to customers are managed through a certified Integrated Management System (ISO90001, ISO14001, AS/NZ4801, ISO17025). Version control is managed by the rules built into the database. BOO contractors are required to implement a similar quality management system, including document management.

There are documented procedures for managing documents and records under the Integrated Management System. Records are managed as per Sydney Water's records management requirements. Key records are maintained in systems such as MAXIMO, SWIRL, Sydney Water's Information Management (SWIM), Compass, SCADA central. Records related to specific areas are maintained locally as well (e.g. plant log sheets). Several improvement projects are planned/underway to improve effectiveness.

The documentation is controlled through the BMIS (Business Management Information System) database with specified review periods. Automated emails are sent to document owners as review reminders. Documents are reviewed at specified frequency or when there are significant changes to the process. The currency of documents is monitored against agreed Key Performance Indicators (KPIs) and reported monthly to stakeholders and management.

Monitoring performance of key processes and regular reporting occurs at all levels. Monthly reports are prepared and circulated to all business managers and portfolio holders to inform performance and take necessary action.

External compliance reports are specified by the IPART Reporting Manual. An annual report is also produced for consumers and published on Sydney Water's website.

### Element 11

A range of system performance and water quality reports are prepared on a regular basis that include both operational and verification monitoring, including monthly trend and control chart analysis, quarterly reporting to NSW Health and the public and annual reporting. Long-term analysis of drinking water quality is performed each quarter. These analyses are included in the Quarterly Drinking Water Quality Reports. It is prepared in accordance with a procedure. Long term reviews are also carried out at the time of the annual operational risk reviews. A report with further analysis is also compiled for NSW Health each quarter, prepared in accordance with a procedure.

External audits of the operating licence are undertaken annually (financial year period).

DWQMS audits are incorporated into the IMS audits. All audit related information is recorded in the BMIS Audit database. Audits are scheduled through the database and the reports resulting from the audits are also recorded in the same database. Improvement actions arising from audits are also raised in BMIS and completion of actions are managed through a workflow within the system (BMIS).

#### Element 12

Senior executives regularly (annually) review the performance of the DWQMS, in accordance with the Management Review Procedure, which includes a review of business plan objectives and actions, relevant risks and controls, incident data and associated actions, audit findings and associated actions, ongoing currency of relevant documentation. In addition, JOG and SLG meetings, CD dashboard reports to Group executive team and monthly water performance meetings provide a level of executive reviews.

The Drinking Water Improvement Plan is comprised of two items:

- the Product Management Improvement Framework (BMIS0214), which describes the approach used to identify the improvement programs and initiatives
- the Product Management Improvement Register (Excel), which records the improvement programs and initiatives.

Due to the recent reform (including Treatment Operations and the Water Quality Team into Product Delivery), the strategic and operational improvement actions/registers will be amalgamated in 2018-19. Improvements from the Water Quality Team were incorporated in late May 2018. The operational improvement actions/register is set at a lower operational level with target dates assigned.



### Recommendations

There are no recommendations in respect of this sub-clause.

### **Opportunities for improvement**

The following opportunities for improvement have been identified in respect of this sub-clause:

#### Element 2:

• OFI-SWC-2017/18-02: Describe how hazards and uncertainty are identified and captured within KnowRisk assessment (e.g. document it in the operational risk assessment SOP); or include hazards and uncertainty explicitly as separate columns in KnowRisk.

### Element 3:

• OFI-SWC-2017/18-03: Continue to complete the task underway for developing scheme level drinking water quality management plans. This will act as an interface between the higher-level Drinking Water Management Manual/documents and the operational level SOPs.

### Element 4:

• OFI-SWC-2017/18-04: Explicitly identify procedures required for each process/activity from catchment to consumer. This could be through a gap analysis to ensure that all significant risks/preventive measures have associated documented procedures identified and available. It was noted that Sydney Water is currently undertaking a roadmap project to rationalise all SOPs within the business and an iConnect interface page (per supply) is also under construction to make it easy to find and access a respective procedure.

### Element 6:

• OFI-SWC-2017/18-05: Ensure that the gap analysis for incident management (Procedure D0000506) is finalised, including specific actions assigned with responsible positions and a due date, applicable to the risk of the gap.

### Element 7:

- **OFI-SWC-2017/18-06:** The operator at the Cascade WFP should complete a formal water operations course and obtain a formal certificate/qualification. It was noted that this is currently being investigated.
- OFI-SWC-2017/18-07: Develop a training needs matrix for staff and contractors to ensure that they have and maintain appropriate experience and qualifications. The matrix can be used also as a Training Needs Analysis tool and can visually show individual skill levels and training gaps. The matrix should capture the periodic renewal or refresher requirements for trainings undertaken.

### 2.2.5. Water Quality - Drinking Water (2.1.2)

Sub- Clause	Requirement		Compliance Grade
2.1.2	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)
Risk		Target for full compliand	ce
If the DWQMS is not fully implemented, there is a high risk that Sydney Water may not be able to effectively manage risks to water quality and protect public health. Evidence that the DWQN relevant activities are car System, including to the		Evidence that the DWQM relevant activities are carri System, including to the sa	S is fully implemented and that all ied out in accordance with the atisfaction of NSW Health.
Evidence sighted:			
Element 1 Policy available on public website Policy sighted the Cascade WFP on 20 Sept 18 CCP0001 Regulatory scanning procedure Screenshot - iConnect Policies tab showing Drinking Water Management Policy available 789026 - Minutes - Water Forum Q1 2018 (p. 2) Email - New Version Form BMIS0213.13 - Active-260618 Email - Legislative update 11-24 Nov 2017 -27 November 2017 Contacts list sighted in BMIS onsite			
Element 2 BMIS0249 - Catchment to customer water quality risk review procedure D0000799 - Operational risk assessment workshop SOP 791708 - Final 2018 Report Catchment to Tap Mid-term review Invitation - Macarthur Risk Assessment Workshop - 15-05-2018 (email) Invitation - Prospect Risk Assessment Workshop - 04-05-2018 (email) 801951- Operational Risk Assessment Report - Cascade WFP 2017_V1.2 801982 Operational Risk Assessment Report - Nepean WFP 801984 Operational Risk Assessment Report - North Richmond WFP 2017			



801985 Operational Risk Assessment Report - Orchard Hills WFP 2017 802019 Operational Risk Assessment Report - Warragamba WFP 2017 D0000890 - Process Flow Diagram - Cascade WFP D0000866 Process Flow Diagram - Nepean WFP D0000893 Process Flow Diagram - North Richmond WFP D0000896 Process Flow Diagram - Orchard Hills WFP D0000898 Process Flow Diagram - Warragamba WFP 789305 - Item 4.5 - Catchment to Customer Mid-Term Risk Review (JOG meeting paper) **Element 3** 791708 - Final 2018 Report Catchment to Tap Mid-term review C2C register (Excel) SWC Asset Services Inspection Manual extract section 9 SHID AIS Reservoir inspection RS0449 2017-01-17 AIS Reservoir inspection RS0449 2017-02-27 AIS Reservoir inspection RS0449 2017-07-20 AIS Reservoir inspection RS0449 2018-01-16 AIS Reservoir inspection\_RS0449\_2018-07-23 AIS Water SHID inspection RS0449 2018-05-18 IMS0152.01 - Drinking Water Product Specifications A0000315-DWQ Cascade audit 801951- Operational Risk Assessment Report - Cascade WFP 2017 V1.2 801982 Operational Risk Assessment Report - Nepean WFP 801984 Operational Risk Assessment Report - North Richmond WFP 2017 801985 Operational Risk Assessment Report - Orchard Hills WFP 2017 802019 Operational Risk Assessment Report - Warragamba WFP 2017 KnowRisk sighted onsite 19 Sept 18 DOC0542 - Process Decision and Abnormal Water Quality WI D0000890 Process Flow Diagram - Cascade WFP 801798 - 4th Quarterly Drinking Water Quality Monitoring Report 2017-18 **Element 4** BMIS0213-Drinking Water Management Manual SDIMS0008-Document Management Procedure 613121 - Drinking Water Quality Operational Monitoring Plan 2017-18 Control Chart - Nitrification control chart Potts Hill Delivery System JUN18 Control charts - Chlorine - pH - HPCs control charts all systems JUNE18 BOXES MP0020 V3 - Producing Drinking Water Charts using statistical package SAS.docx WS0001 V4 - Calibration and maintenance of HACH 2100 FS075v11 - Determination of Chlorine Residuals in the Field Calibration record - HACH Turbidity WL Calibration record - Chlorine Titrator 2017 Calibration record - HACH Chlorine 2017 Maximo - Calibration record flow meter PM Cascade Maximo - Flow meter calibration PM and WO completion details Record - Daily Readings June 2018 WPIMS5274 - Triggers Notifications & Actions for Adverse WQ Results DOC0542 - Process Decision and Abnormal Water Quality WI WPIMS5228 - Drinking Water Quality Event Management Plan WTHQ5022-RAPID AND HIGH RATE GRAVITY FILTRATION UPG Table of contents for UPGs used at Cascade WFP MAXIMO - List of active PMs for Cascade MAXIMO - List of work orders for Cascade CPDMS0023 - Technical Specifications Part 1 Civil Works BMIS0209 Technical Specification Part 2 Mechanical Works ACP0028 Water Supply Code of Australia SW Edition 2014 WSA Manual - WSA 201 Selection & Application of Protective Coatings ACP0166 - Supplement to WSA 201 Technical Specification



WTCS5001 - Receiving Bulk Chemicals WT5232 rev 4 - Quality Assurance for Receiving Bulk Chemicals used in Drinking Water Treatment OS0015 - Bulk Chemical Data Capture and Assessment Contract clauses for Chemicals Procurement Examples of chemical test certificates Chemical test certificate - ENV27301 SE172415 Analysis on IXOM Laverton Liquid Chlorine November 17 Chemical test certificate - 20180104 HRL ref # 18-0136-11 Orchard Hills- Ferric Chloride • Chemical test certificate - EW1704397 1 COA Lime Chemical test certificate - NRA 2922 180523 FSA SYDNEY 3463889 Hydrofluorosilicic Acid Chemical test certificate - 18-1219 FL4526PWGSWCHRL DADMAC Chemical test certificate - 17-1163-04 Potassium Permanganate Examples of delivery dockets • Delivery Docket - Cascade WFP Cationic Poly delivery docket • Delivery Docket - Cascade WFP Chlorine delivery docket Delivery Docket - Cascade WFP Fluoride delivery docket Delivery Docket - Cascade WFP Lime delivery docket Delivery Docket - Cascade WFP Non-Ionic Poly delivery docket Element 5 611186 - Annual Drinking Water Quality Compliance Monitoring Plan 2017-18 801709 - Zone Population Estimates 2017-18 801798 - 4th Quarterly Drinking Water Quality Monitoring Report 2017-18 CMS screen shot - Example of customer complaint 29-01-18 (1-LA8PFV) CMS-Maximo - Customer Complaint Monthly Report June 2017 Competency Assessment - Area Water Quality Scientist Pipe Bain Oct 17 DOC0542 - Process Decision and Abnormal Water Quality WI Email - Automated email notification from AMD's Actions Database (E. coli Newport Heights Reservoir) Email - Dirty Water Status Report 30-03-18 Maximo - Civ\_Dirty\_Water\_Alert\_Details 30Mar2018 0359PM NATA Certificate Biological (ISOIEC17025) NATA Certificate Chemical (ISOIEC17025) PBP0001V2 - Development Planning for Water Quality Scientists Plant Diary screen shot - Plant Diaries 17-19 June 2018 Record - E. coli Investigation Report Newport Heights Res WS0080 Report - Bitumen lined main report draft 4 15082018 Report - SW Sentiment Monitor Report June 2018 quarter 13.08.18 Report - Lead in Brass Fittings Report FINAL 2018 Roster - AWOS Development Roster update Jan 17 to Feb 18 SWIRL Screen Shot -- INC 19834 E. coli detection at Newport Heights Reservoir SWIRL, BI, SCADA, IICATS - seen onsite WOQ5162 V10 - Managing WQ Customer Complaints WOQ5162 V10 - Managing WQ Customer Complaints WPIMS5228 - Drinking Water Quality Event Management Plan WPIMS5274 - Triggers Notifications & Actions for Adverse WQ Results WTCS5031 - Emergency Plan for Cascade WFP WFP0041 Element 6 789296 - Minutes JOG meeting 21 May 2018 801798 - 4th Quarterly Drinking Water Quality Monitoring Report 2017-18 Communications protocols and guidelines 17March2015 FINAL D0000506 - Incident Management Procedure D0000507 - Emergency Management Procedure Report - 1-TT report ex HUME 2018 ALL AGENCIES FINAL SWIRL Screen Shot - INC 19834 E. coli detection at Newport Heights Reservoir SWIRL viewed onsite WPIMS5228 - Drinking Water Quality Event Management Plan WPIMS5228.01 - DWQ Event Management Incident Management Contacts Element 7 789026-Minutes - Water Forum Q1 2018



Record - DWQ awareness training Attendance sheet - Seven Hills Depot 5SEPT17

Training presentation - Drinking WQ awareness training (2017) Networks - Civil

Compass - Summary of WQ training

Flyer - Course outline WQ Awareness training

Excel - WQ Awareness training matrix

Examples of training undertaken in Treatment:

- Training attendance record Bush Fire Major Asset Damage Failure and Site Evacuation
- Training attendance record Bush Fire Awareness Vespa System
- Training attendance record Chlorine Leak and Site Evacuation
- Position descriptions:
- Position Description Manager Product and Asset Management
- Position Description PAI Manager W & RW
- Position Description Plant Manager Level 1 & 2
- Position Description Production Officer A D
- Position Description Service Delivery Officer 6

PBP0001V2 - Development Planning for Water Quality Scientists

Competency assessment - Pip Bain

Meeting minutes - Pip Bain Induction Meeting 030717

Minutes - Pip Bain Exit Meeting 131017

Roster - AWQS Development Roster update Jan 17 to Feb 18

### Element 8

Social media engagement:

- https://www.facebook.com/SydneyWater/
- https://twitter.com/SydneyWaterNews/
- https://www.instagram.com/sydneywater/
- https://www.youtube.com/user/SydneyWaterTV

Digital engagement:

- http://www.sydneywater.com.au
- https://www.sydneywatertalk.com.au/
- http://oursydneyourwater.com.au/

Service Faults tracking:

 http://www.sydneywater.com.au/sw/water-the-environment/how-we-manage-sydney-s-water/water-supply-serviceupdates/index.htm

Education & tours program:

- http://www.sydneywater.com.au/SW/education/index.htm
- Customer Council Minutes published on the Sydney Water website:
- http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm Customer forums:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm

Customer research:

• Report - SW Sentiment Monitor Report June 2018 quarter 13.08.18

Waterwrap publications:

- https://www.sydneywater.com.au/SW/about-us/our-publications/reports-and-publications/index.htm
- Daily drinking water quality report:
- <u>http://www.sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/safe-drinking-water/daily-drinking-water-quality-report/index.htm</u>

801798 - 4th Quarterly Drinking Water Quality Monitoring Report 2017-18

Facts about your drinking water:

- <u>http://www.sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/safe-drinking-water/facts-about-drinking-water/index.htm</u>
- Your Water:

• <u>http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mduy/~edisp/dd\_052287.pdf</u> Sydney Water Annual Report 2016-17 as an example.



### Element 9

Agreement - ARC Linkage Projects Collaborative Research Agreement

Minutes - Management Meeting Minutes - Final

Research Plan - Xiaoran (Daisy) Chu Oxidation and NOM Removal Research Plan

Fact sheet - Adapting catchment monitoring and potable water treatment to climate change

Request - DRCADHOC40 NOM characterisation Nepean - Extension of monitoring

Report - Trial of Online Turbidity Meters FINAL

C.*t* calculation model for Cascade WFP

Minutes - Steering Committee Minutes of Meeting 16.11.2017 FINAL

Schedule - ARC NOM Project 2018 Schedule (as of 09.03.18)

### Element 10

79004 - IMS Monthly Report 2018 07 02 (Dashboard)
802969 - CD Dashboard Report
Annual DWQ Compliance and Performance Report 2017-18 Final
BMIS, MAXIMO, SWIRL, SWIM, SCADA, IICATS, SCADA central, Compass – viewed onsite
iConnect - Networks Performance Report June 2018
MP0017 - Quarterly Monitoring Report on Drinking Water Quality for NSW Health
MP0023 - Preparation of the Quarterly Drinking Water Quality Report (QDWQR).
PAMAM0003 - EPA Annual Return Reporting Procedure

PAMAM0003 - EPA Annual Kelurn Repor

### Element 11

615081- 3rd Quarterly Drinking Water Quality Monitoring Report to NSW Health 2017-18

777158 - 3rd Quarterly Drinking Water Quality Report 2017-18

A0000315 - DWQ Cascade audit

MP0017 - Quarterly Monitoring Report on Drinking Water Quality for NSW Health

MP0023 - Preparation of the Quarterly Drinking Water Quality Report (QDWQR).

SDIMS0010 - Assurance & Monitoring Procedure (Audit & Inspections)

### Element 12

617839 - Product Management Improvement Register

754470-16-17 Mgt Review - Minutes, Actions & Process Reviews

791708 - Final 2018 Report Catchment to Tap Mid-term review

801828 - Q4\_June 18\_Water Products Improvement Actions

Agenda - 17 May 2018 Water Performance Meeting Agenda

BMIS0213 - Drinking Water Management Manual

BMIS0214 - Product Management Improvement Framework

Calendar-Management Review-310118

Meeting Minutes - 17 May 2018 Water Performance Meeting Minutes and Actions

SDIMS0012 - Management Review

### Summary of reasons for grade

Sydney Water was assessed as being Compliant (with minor shortcoming) for this sub-clause. The DWQMS is being implemented from the evidence provided and sighted. There were minor shortcomings identified for Element 3 and Element 12. The inspections for reservoir location RS0449 were conducted from ground level only for more than 12 months and the reservoir roof was not inspected. A few actions from the Improvement Plan were not completed within the identified timeframe. These minor shortcomings did not impact product delivery and public health.

Overall, the auditors were satisfied with the implementation of the DWQMS by Sydney Water. Two recommendations were identified for this sub-clause.

### **Discussion and notes**

Implementation was sampled across the 12 Elements through relevant examples and onsite observations as discussed below.

### Element 1

The Drinking Water Management Policy is communicated:

- as an active document in the BMIS
- through automated email notification to relevant business areas upon its revision in BMIS (email sighted)
- on the 'Policies' tab of the internal intranet (screenshot sighted as evidence)
- on the 'Policies' page of the public website (verified by auditors)
- by being on physical display at water treatment plants (sighted onsite at Cascade WFP)

• at the Water Forum - policy was developed/reviewed in collaboration with the Water Forum (minutes sighted as evidence) The legislative updates in the Compliance and Accountability Register are prepared by the Corporate Compliance team and sent to relevant contacts on a routine basis. The Register was sighted by the auditors. There is a process and procedure for maintaining



and communicating legislative requirements and updates (procedure was sighted). An email regarding legislative update sent to relevant contacts (11-24 Nov 2017 - 27 November 2017 period) was sighted as an example.

The stakeholders contacts list was sighted in BMIS onsite, version 3 which was last updated on 30 April 18, which confirms that it is reviewed and kept current.

### Element 2

The mid-term C2C risk review workshop and annual operational WFP risk workshops included NSW Health invitations/attendance. The workshop reports were sighted as evidence. BOO contractors workshop reports were also sighted as evidence. Email invitations sent to NSW Health for the workshops (Macarthur and Prospect) were also seen as evidence.

Examples of process flow diagrams created for the water supplies were sighted. Operational risk assessment reports were also provided, including pertinent information and process flow diagrams. This report includes list of appendices including the briefing paper, treatment and Networks presentation, C2C mid-term review update, agenda, attendance sheet, risk methodology, risk management process and risk register (KnowRisk extract).

Historical data assessment (5 and 10-year periods), including examination of exceedances and data assessment using trends charts are undertaken and were seen in the risk workshop briefing papers. Historical data can be accessed via Sydney Water's BI system, which was demonstrated onsite.

The C2C mid-term review report 2018 was sighted, which contained the risk methodology, hazards, hazardous events and risk evaluation. KnowRisk, which captures and stores the operational risk assessments was also sighted onsite (19 Sept 18). These reports also show that the risk assessments are periodically reviewed. A major revision of the C2C risk review occurs five-yearly. The 'mid-term' review occurred in 2017-18. A paper was also presented at the Q1 JOG meeting held on 19/02/2018 on the outcomes.

### Element 3

Preventive and control measures are documented in the 2018 C2C Report and C2C risk register, and operational water quality risk assessment reports. These were sighted. KnowRisk system, which captures the control measures was also sighted onsite at the Parramatta office.

The risk assessments included an evaluation of the residual risks considering the preventive and control measures and additional improvements were identified.

Reservoir inspections are undertaken to ensure integrity is maintained. The procedure (Manual) and checklist used were provided. Filled in inspections records were also sighted as evidence. The inspection records for reservoir location RS0449 (asset number 1274) showed that inspections were conducted from ground level and the reservoir roof was not inspected. This was noted as due to Lad-Saf system being installed, and associated training and equipment to access the roof not being delivered for the inspectors, for more than 12 months. The Lad-Saf system is a fall arrest system that uses a flexible steel cable to provide fall protection while climbing structures. This is a minor shortcoming as the reservoir inspections did not cover the roof area, which is an important aspect for maintaining distribution system integrity and maintaining water quality. The relevant training and equipment should be delivered for the inspectors (**REC-SW-2017/18-01**).

The Drinking Water Product Specifications was sighted, which identifies the CCPs/OCPs, their limits and monitoring requirements. No CCPs were exceeded during the audit period (Q4 Report to NSW Health). The CCP limits were seen on SCADA, with some alarm limits being more stringent than the critical limit. It is currently not possible to view the values at which the Cascade WFP shut off occurs with the interlocks (coded in the back end), although the Cascade operators had simulated the documented shut off value as part of an internal audit for filtered water turbidity and fluoride, and it was mentioned that the shut off happened as expected. The internal audit report was sighted as evidence. It will be useful to have the shut off values viewable on SCADA screen, with read-only access (OFI-SWC-2017/18-08).

### Element 4

UPGs and WIs were sighted in IMS and also onsite during the site visit to Cascade WFP. The procedures sighted included: UPGs, Process Decision and Abnormal Water Quality WI, Triggers, Notification & Actions for Adverse WQ Results WI, DWQEMP, Process and Equipment Monitoring Procedure, Receiving Bulk Chemicals and Quality Assurance for Receiving Bulk Chemicals used in Drinking Water Treatment.

The operational monitoring undertaken at the Cascade WFP was seen in the Process Decision and Abnormal Water Quality WI. The testing undertaken onsite is entered by the operators into SCADA central, which was seen onsite. The daily testing record was also sighted onsite at the Cascade WFP.

The Drinking Water Quality Operational Monitoring Plan was also provided. The plan illustrates examples of control charts and trending reports that are produced from the data on a monthly basis. Examples of control charts and the work instruction to produce these were seen as evidence. Networks also have a series of water quality procedures under the IMS that ensure that water quality is maintained throughout the distribution network.

The record of the daily rounds log sheet for June 2018 undertaken by the operators was seen as evidence.

SOP's for equipment calibration maintained in the IMS were seen (examples included SOPs for HACH 2100 and determination of chlorine residuals). Staff calibrate and maintain water quality monitoring instruments throughout the network (examples of calibration records were provided). External calibrations stickers were seen on the filtered water turbidity meters at Cascade WFP, these were current.

Examples of Maximo preventive maintenance work orders were provided as evidence. A Maximo calibration record for Cascade flow meter was also provided.

Chemical test certificates for contaminant testing undertaken by the contractor were provided as evidence, in accordance with supply contracts (supply contract extracts were provided). Test results are stored in a centralised database. The database (excel spreadsheet – Bulk Chemical Result Master Sheet) was viewed onsite. On arrival at site, chemical deliveries are inspected by plant operators to verify that the correct chemical is being delivered and meets the requirements. Examples of delivery dockets



were seen as evidence. During the onsite visit to the Cascade WFP, the chemical delivery process was also verified.

### Element 5

The Drinking Water Quality Compliance Monitoring Plan 2017-18 was sighted. Evidence of how zone population statistics is used during the annual review of the monitoring plan was also seen.

The Managing Water Quality Customer Complaints WI was provided as evidence. Complaint information is reviewed monthly, example of June 17 data was seen. Complaints and responses are recorded in Sydney Water's CMS. Screen shots from CMS were provided as examples. Area Water Quality Scientists are responsible for managing water quality complaints. Example of assessment and development roster for AWQS were provided as evidence. There are a number of reports that review customer complaint data. Evidence provided were 4th Quarterly Drinking Water Quality Monitoring Report 2017-18 (for NSW Health) and CMS-Maximo - Customer Complaint Monthly Report June 2017. The Customer Sentiment Monitor also seeks feedback on consumer satisfaction across a number of Sydney Water products and services. The Sydney Water Sentiment Monitor Report June 2018 Quarter 13.08.18 was seen as evidence.

Verification data is transferred from LIMS into the 'Monitoring Universe' in BI and interrogated twice daily. The BI was seen onsite. This process compliments IICATS/SCADA monitoring and allows any out-of-spec results to be reviewed and acted on. Non-conformances in relation to water quality grab sampling data analysed by the laboratory are reported through daily exception reports sent out to staff, evidence of automated email notification from AMD's Actions Database was seen as example. A daily report is also automatically generated to manage chloramination in chloraminated systems. Example of email and excel sheet were provided and seen.

Implementation of the monitoring plan was also checked. The plan states that 24 *E. coli* samples were to be tested for Cascade supply and data in BI confirmed that 24 samples had been tested and recorded in BI. The NATA certificate for the laboratory (with scope) was also sighted.

Records of corrective actions and investigations are maintained e.g. in SWIRL, which was seen onsite. An example of an investigation where *E. coli* was detected at Newport Heights Reservoir (WS0080) was provided. The SWIRL record for this incident (incident date: 10/01/18) showed that NSW Health were informed verbally within 24 hours, as required. Other review and response systems include real time telemetry of water quality and quantity measurement and alarms. SCADA & IICATS were sighted onsite. The Cascade WFP Process Decision and Abnormal Water Quality WI and Emergency Plan were also sighted onsite. Corrective actions are recorded in the daily note book record of corrective action. Screen shot of plant diary was supplied as evidence (Plant Diaries 17-19 June 2018).

Investigations can also be undertaken when non-compliant results or potential issues are suspected. Two examples were provided of investigations that were undertaken which included an investigation into bituminous lined pipes after a black lining was observed within a pipe, and lead leaching from brass fittings after elevated lead levels were detected from the test rig used in the bituminous pipe investigation.

### Element 6

The Incident Management Procedure (D0000506), Emergency Management Procedure (D0000507) and the DWQEMP were provided as evidence.

There were no declared water quality incidents or emergencies in 2017-18. There were a number of notifications that were reported to NSW Health through SWIRL (4th Quarterly Drinking Water Quality Monitoring Report 2017-18). An example of SWIRL record and notification to NSW Health as evidence was discussed under Element 5. SWIRL was also viewed onsite. Incidents are discussed as a standing agenda item in JOG meetings, minutes were seen.

A joint exercise program between Sydney Water, WaterNSW, and NSW Health is developed routinely. An exercise was

undertaken during the audit period (Hume), the post exercise report was provided as evidence.

The Communications team maintain and manage the communications protocols with public and media. The public communications guidelines (including key messages) and protocols for interagency communications were provided as evidence.

### Element 7

The Water Forum provides staff with the opportunity to meet quarterly and discuss water quality issues. Minutes may have been given.

Roles and responsibilities of staff are captured through formal position descriptions. Examples of position descriptions were provided. Training records are managed via the Compass software package. Compass was viewed onsite.

Standard water quality presentations have been prepared, which are specifically tailored for individual Sydney Water business areas. Example of a water quality presentation was provided.

New starters at WFP's complete requirements as set out in the new starters training list (the checklist was provided).

Drinking water quality and event management plan training sessions are provided to key staff. A number of water quality training courses were delivered through 2017/18. The following were sighted as evidence:

- Record DWQ awareness training Attendance sheet Seven Hills Depot 5 SEPT 17
- Training presentation Drinking WQ awareness training (2017) Networks Civil
- Compass Summary of WQ training for evidence of staff attending the course
- Flyer Course outline WQ Awareness training

Evidence on when training is scheduled and to which groups the training will be delivered was also sighted as evidence. Training undertaken in the Treatment area was also sighted as evidence (bush fire, chlorine leak).

A competency program is in place for all plant operators, and for Networks Area Water Quality Scientists. Entry and exit meetings are held with potential upcoming Area Water Quality Scientists. A competency form is completed during their placement. A Water Quality Scientist Development Roster is also in place. Relevant evidences on the competency program were sighted (development roster, completed competency form, induction and exit meeting minutes).



### Element 8

The platform examples for community involvement were provided/sighted:

- Sydney Water website, social media channels (Facebook, Twitter, Instagram, Youtube)
- Sydney Water digital engagement
- Customer Sentiment Monitor report
- Customer Council minutes (quarterly)
- Customer Forums
- Service Faults Tracking System web address
- Waterwrap newsletter with customer bills
- Daily drinking water quality report web address
- Quarterly Drinking Water reports
- Your Water summarises Quarterly report
- Resources on the Sydney Water website
- Sydney Water's Annual Report.

In February and March 2018, Sydney Water engaged with over 2,000 residential customers and over 250 business customers from across greater Sydney and the Illawarra to better understand their current values and expectations on the essential services provided, prices and customer service (staff interview).

### Element 9

A number of research projects are being implemented out of the Product Management Improvement Framework. Sydney Water undertakes a range of research projects, specifically targeted at delivering a safe water supply and protecting public health. These include:

- Microfluidic ammonia analyser
- Environmental E. coli Management
- Invitro bioassay
- Floc strength instrument
- Graphene oxide membrane
- Nitrification project
- NOM early warning system
- Microbial risk monitoring project
- Novel polyelectrolytes.
- Intelligent Network Optimisation

Examples of documents that support Sydney Water's research in 2017-18 were provided as evidence.

Sydney Water undertakes validation for new technology and instrumentation for drinking water monitoring as required. As an example, eight (8) different online turbidity meters were trialled in 2017-18 audit period. The trial included online monitoring of these instruments for about six (6) months, under "process water" conditions and "controlled environment" conditions where water quality was varied to identify instruments accuracy, response and reliability. This trial recommended the best online turbidity meter be used for CCP monitoring for filtered water, and for process monitoring of feed water (raw water) to provide early warning for events. The technical report was sighted as evidence. C.*t* calculation models have also been developed for the water supplies, viewed onsite.

### Element 10

The Integrated Management System was viewed onsite, including the version control, change request, review date, review frequency features. Key records are maintained in systems such as MAXIMO, SWIRL, SWIM, Compass, SCADA central, which were viewed onsite.

The currency of documents is monitored against agreed KPIs and reported monthly to stakeholders and management (examples were provided – CD dashboard report and networks performance report June 18).

External compliance reports are specified by the IPART Reporting Manual. Examples of reports produced were shared e.g. Annual DWQ Compliance and Performance Report 2017-18 and Quarterly Monitoring Report on Drinking Water Quality for NSW Health. Samples relevant procedures on reporting were also sighted.

### Element 11

The procedure for preparing the Quarterly Drinking Water Quality Reports, with data assessment, was provided. The procedure for compiling the report for NSW Health each quarter was provided. The water quality reports were also provided. These reports include analyses involving a 12-month rolling window of data in addition to the relevant quarter's data.

The documented procedure for internal audits was also seen (SDIMS0010). The list of completed IMS audits in 2017-18 was sighted. The audit report for Cascade WFP was provided, good level on investigation was undertaken for the audit. BMIS was viewed onsite to verify how audit reports and findings are recorded and improvement actions tracked.

### Element 12

The Management Review Procedure (SDIMS0012) was provided. The Annual Management Review for 2017 occurred on 31 January 2018. The calendar invitation for the review meeting and minutes were provided as evidence. In addition, JOG and SLG meetings, CD dashboard reports to Group executive team and monthly water performance meetings provide a level of executive reviews. Relevant agenda (17 May 18), minutes (18 May 18) and CD dashboard report (June 18) were sighted as evidence.





The Product Management Improvement Framework (BMIS0214) and the Product Management Improvement Register (Excel), were sighted.

The following strategic improvement initiatives have been closed out during the audit period:

- the catchment-to-customer risk review 'mid-term review' was completed (DWQual6.1)
- the Drinking Water Management Manual was revised to reflect changes to the DWQMS consequential to the 2016-17 operational audit and to better reflect existing practice. However, approval of the revision occurred after the audit period (DWQual6.2).
- the Policy was revised to broaden the scope of the 'awareness' section to explicitly include contractors (DWQual6.3).
- an independent investigation into N-Nitroso-dimethylamine (NDMA) analysis was performed (DWQual6.6).

At the strategic level, there are improvement items that were not closed out in this audit period. However, these are identified as having a target closing date later than the end-date of the audit period in the Product Management Improvement Register. In line with the Product Management Improvement Framework, the Water Product Team maintains and tracks improvement actions in a Water Product Improvement Action list (Excel - Q4\_June 18\_Water Products Improvement Actions seen as evidence). The actions in this list are updated quarterly and the list is kept within the Product Management Improvement Register. The Water Product Improvement Action list has a column stating the priority level (high, medium, low), the Product Management Improvement Register also.

The operational improvement actions/register is set at a lower operational level with target dates assigned. Due to changes in risk/priority levels and balanced with business needs and resource availability, some actions were not completed within the target dates set (e.g. DC18/19\_12.12 Nepean – Clearwater pump 2 overhaul/replace, which had a target finish date of Jan 18 and a high priority, although it was noted that the pump was being procured). This is a minor shortcoming as few improvement actions were not completed within the timeframe set and new timeframes were not identified, although this did not impact product delivery and public health. It is recognised that in some cases it may not be possible to complete the action within the identified target finish date, but appropriate commentary and new dates should be identified and tracked. On the same token, if it is a high priority action then it should be completed within the set timeframe.

It will be useful if the Product Management Improvement Register includes some additional columns, for example, priority level, and revised date (REC-SWC-2017/18-02).

### Recommendations

The following recommendations have been identified in respect of this sub-clause:

### Element 3

• REC-SWC-2017/18-01: Expedite relevant training and equipment for inspectors to ensure that they can access reservoir roofs during inspections, where Lad-Saf system, which is a fall arrest system, has been installed (e.g. reservoir location RS0449).

#### Element 12

- REC-SWC-2017/18-02: Implement the improvement actions within the target finish dates identified. In cases where the action in not able to be completed within the original due date, a revised date should be assigned and tracked, noting the reasons for the delay. It is recommended that the Product Management Improvement Register includes/notes the following, in addition to the existing details:
  - column for priority level to determine a timeframe which is risk based (new column)
  - date action was identified column (currently only in the DW strategic tab of the Register, make uniform)
  - target finish date column, from initial assessment (already captured, maintain)
  - revised date column to assign a revised finish date, if required, following progress meetings (new column)
  - commentary or comments column to note progress on actions and where necessary justification and reasoning for not meeting the original target finish date assigned (already captured, note).

### **Opportunities for improvement**

The following opportunity for improvement has been identified in respect of this sub-clause:

### Element 3

• OFI-SWC-2017/18-08: Investigate possibility of enabling the Cascade WFP shut off values to be viewable on SCADA screen, with read-only access. The same should be investigated for other WFPs, where relevant.

### 2.2.6. Water Quality - Recycled Water (2.2.1)

Sub- Clause	Requirement	Compliance Grade
2.2.1	Sydney Water must maintain a Management System that is consistent with the Australian Guidelines for Water Recycling, except to the extent that NSW Health specifies otherwise	
	(the Recycled Water Quality Management System).	
	[Note: It is expected that the Recycled Water Quality Management System will be consistent with the Australian Guidelines for Water Recycling, including the Framework for Management of Recycled Water Quality and Use. However, where NSW Health considers it appropriate, the application of the Australian Guidelines for Water Recycling may be amended or added to, to take account of Sydney Water's circumstances and/or Recycled Water quality policy and practices within New South Wales.]	Compliant



Risk	Target for full compliance		
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 water quality and protect public health and the environment.	Evidence that a Recycled Water Quality Management System is established, maintained and kept up to date, and that it is consistent with the AGWR, as specified by NSW Health.		
Fyidence sighted:			
Evidence sighted: BMIS0260-Recycled Water Management Manual BMIS0260.01-Recycled Water Management Policy D0000096-Recycled Water Product Specifications Recycled Water Improvement Plan: • BMIS0214-Product Management Improvement Framework (overarching framework for all products) • 617839 - Product Management Improvement Register (specific recycled water actions listed) • 528774 - Recycled Water Scheme Improvement Register (scheme specific improvement plan)			
Element 1			
2018 Compliance Accountability Register 598845 – Gerringong Gerroa_Recycled Water_Risk Assessment Report 598846 – Penrith WRP_Recycled Water_Risk Assessment Report 598849 – St Marys WRP_Recycled Water_Risk Assessment Report			
DMIS0260.01 Desculad Water Management Deliev			
BMIS0200.01-Recycled water Management Policy			
SDIMS0200-Recycled water Management Manual SDIMS0006-Stakeholder Management Procedure SWEMS0172-MOU with EPA			
Sydney Water Operating Licence 2015-2020			
WPIMS5015-MOU with NSW Health			
Element 2			
598847 - Risk Assessment Report – Rouse Hill WRP 790431 - Process Flow Diagram – Rouse Hill WRP D0000096 Recycled Water Product Specification QMAF0021 – Operational Risk Technical Requirement Risk Assessment Briefing Paper – Rouse Hill WRP RW0001 - RW0MP – Rouse Hill WRP	c of 598847)		
Flement 3			
598847 - Risk Assessment Report – Rouse Hill WRP D0000096 – Recycled Water Product Specification RHTP0017 Process and Equipment Monitoring SOP RW0001 - RWQMP – Rouse Hill WRP			
Element 4			
2018 new roles check sheet D0000643- List of Approved Chemicals MAXIMO Work Orders Example for Calibration and Maintenan RHTP0017- Process and Equipment Monitoring SOP RHTP0018 Lab sampling and analysis SOP RHTP0036-Tertiary Filtration UPG – Rouse Hill WRP RHTP0053 – Bulk Chemicals Delivery SOP – Rouse Hill WRP RHTP0056- Master Calibration List – Rouse Hill WRP RHTP0059 Recycled Water SIP - Rouse Hill WRP RHTP0067- Chlorine Analyser SOP – Rouse Hill WRP RHTP0067- Chlorine Analyser SOP – Rouse Hill WRP ROUSE Hill List of Documents _210918 RW0001- RWQMP – Rouse Hill WRP WR5271 Recycled Water Quality Event Management Plan <b>Element 5</b>	ce – Rouse Hill WRP		
735113 – Customer Complaint Procedure			
/35113 – Customer Complaint Procedure Annual Recycled Water Quality Compliance & Performance Report 2016-17			
AWQS Development Roster update Jan 17 to Feb 18			
CMS – cross connection Example – 27 Waterford Ave			
CMS-Maximo – Customer Complaints Monthly Report -June 2018			
Competency assessment – Pip Bain - AWQS			
Example of Effluent Knowledge and Management System (EKAMS) exceedance and notification to stakeholders			
INC18669 -SWIRL record – Example – Network cross connection – 24 Laughton Cres			
IPART – Sydney Water Reporting Manual - Operating Licence 2015-2020			



Network Performance Report -June 2018 PBP0001 Development and Succession Planning WQ Scientist Process Meeting Minutes - Rouse Hill WRP - 14-06-18 Process Meeting Minutes - Rouse Hill WRP -19-04-18 Quarterly Recycled Water Quality Monitoring Report for NSW Health - 2017-18 4th Quarter Recycled Water Compliance & Operational Monitoring Plan 2017-18 Recycled Water Qual update - JOG 21 May 2018 Recycled Water Qual update - JOG August 2018 RH Plot - quality plots June 2018 RHTP0017 Process and Equipment Monitoring SOP RHTP0018 Lab sampling and analysis SOP RHTP0059 Recycled Water SIP - Rouse Hill WRP RHTP0059 Recycled Water SIP - Rouse Hill WRP Rouse Hill Recycled Water Scheme Monthly Performance Report 2017-18 RW0001 RWQMP - Rouse Hill WRP SCADA screen shot for CCP monitoring - Rouse Hill WRP Sydney Water Annual Report 2016-17 WOQ5162 Managing WQ Customer Complaints WR5271 - Recycled Water Quality Event Management Plan WRHQ5050 - Plant Recycled Water Production Interruptions WRHQ5050.01 - Recycled Water Notification Contact List Element 6 D0000503- Business Resilience Policy D0000504- Business Resilience Manual D0000506- Incident Management Procedure D0000507- Emergency Management Procedure Mandatory criteria IMP V1.7 - Treatment gap analysis (Excel document) RHTP0059 - Recycled Water SIP - Rouse Hill WRP WPIMS5015 MoU with NSW Health WR5271 Recycled Water Quality Event Management Plan WRHQ5050 Notification of Plant Recycled Water Production Interruptions WRHQ5050.01 Recycled Water Notification Contact List **Element 7** 598847 Risk Assessment Report - Rouse Hill WRP 789195 - Recycled Water Forum Meeting Minutes - August 2017 789196 - Recycled Water Forum Agenda - August 2017 E-Training Package - Recycled Water Quality Event Management Plan E-Training Package - RWQMP - Rouse Hill IWES course certificate - Recycled Water Management - Azhar Nomani Other records of staff training can be viewed during audit if required within Compass PBP0001 Development and Succession Planning for Area Water Quality Scientist Position Description - Business Customer Representative Position Description – Process Controller Position Description - Process Manager Position Description - Production Manager Position Description - Production Officer Position Description - Senior Process Engineer Production Capability Development Guide -Product Quality Qualification - TAFE Water Operations Certificate - Business Customer Representative Qualification - TAFE Water Operations Certificate - Business Customer Representative 2 Training program - New or Transferred Operator - Rouse Hill WRP Training Records - Compass (E-learning) - Recycled Water Quality Event Management Plan Training Records - Compass (E-learning) - RWQMP - Rouse Hill Training Records - site specific SOP - Rouse Hill WRP Treatment Competency Development Program - Production Officer Element 8 BMIS0260 Recycled Water Management Manual Contact Us pages: http://www.sydneywater.com.au/SW/Contactus/index.htm 1. Recycled water - what to consider http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdu3/~edisp/dd 057020.pdf 2. Recycled water network (incl. treatment & water quality): http://www.sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/recycled-water-network/index.htm 3. Producing Recycled Water



 $\underline{http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/recycling-and-reuse/producing-recycled-water/index.htm}$ 

4. Using Recycled Water

 $\underline{http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/recycling-and-reuse/using-recycled-water/index.htm}$ 

5. Recycled Water

http://www.sydneywater.com.au/SW/plumbing-building-developing/plumbing/recycled-water/index.htm

6. Recycled Water Treatment Process

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq1/~edisp/dd\_045708.pdf

7. Working with Recycled Water

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq2/~edisp/dd\_046348.pdf

Customer Council Charter:

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd\_047785.pdf

Customer Council Minutes published on the Sydney Water website:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm

598845 - Gerringong Gerroa\_Recycled Water\_Risk Assessment Report

598846 – Penrith WRP\_Recycled Water\_Risk Assessment Report

598849\_St Marys WRP\_Recycled Water\_Risk Assessment Report

Example onboarding letter including recycled water brochure

### Element 9

iConnect - Sydney Water's Research & Innovation Strategy BMIS0260 Recycled Water Management Manual Recycled Water Improvement Plan is made up of BMIS0214 Product Management Improvement Framework 528774 - Recycled Water Scheme Improvement Register Online UVT analysers Report on trial of 6 instruments CPDMS0023 Technical specification Part1 Civil Works BMIS0209 Technical specifications Part2 Mechanical Works ACP0026 Sewerage code of Australia SW edition 2017 ACP0028 Water Supply Code of Australia SW Edition 2014 ACP0166 Supplement to WSA 201 Technical specification PAMWP0001 RW Treatment Verification for Pathogen Reduction RW0001 - RWQMP - Rouse Hill WRP Quarterly Update to NSW Health in JOG meeting: Email to and from NSW Health Update four-year schedule RWQMP Update four-year schedule RWQMP-NSW Health - Q4 2017-18 Log Reduction Value (LRV) performance verification Summary - NSW Health - Q4 2017-18 Recycled Water Qual update - JOG 21 May 2018 Recycled Water Qual update - JOG August 2018

### Element 10

776589-Quarterly recycled water quality monitoring report for NSW Health Q3 2017-2018 802969 - CD Dashboard Report (Group Executive team – Sample) iConnect - Networks Performance Report June 2018 MP0021-Preparation of Recycled Water Quarterly Reports PAMAM0003-EPA Annual Return Reporting Procedure Quarterly Recycled Water Quality Monitoring Report for NSW health 2017-18 Quarterly Update to NSW Health in JOG meeting:

- LRV performance verification Summary NSW Health Q4 2017-18
- Recycled Water Qual update JOG November 2017
- Recycled Water Qual update JOG February 2018
- Recycled Water Qual update JOG 21 May 2018
- Recycled Water Qual update JOG August 2018
- SDIMS0008-Document Management
- SDIMS0017-Records Management

### Element 11

598847 Risk Assessment Report – Rouse Hill WRP 776589-Quarterly recycled water quality monitoring report for NSW Health Q3 2017-2018 BMIS-1718 Completed Internal Audit List 090818 CIR Dunheved Golf Club Oct 2017



Office of Fair Trade, *Works Requiring Inspections*, accessed 1/11/2018 <https://www.fairtrading.nsw.gov.au/trades-and-businesses/construction-and-trade-essentials/plumbers-and-drainers/work-requiring-inspections>

RH Plot - quality plots June 2018 RW0001 – RWQMP – Rouse Hill WRP

SDIMS0010–Assurance & Monitoring Procedure (Audit & Inspections)

WOQ5162.03 Guidelines to Check Cross Connection

### Element 12

SDIMS0012 – Management Review BMIS0214-Product Management Improvement Framework 617839-Product Management Improvement Register 528774 - Recycled Water Scheme Improvement Register BMIS0260 Recycled Water Management Manual (Section 12.1; Review by Senior Executive) SDIMS0012 - Management Review Associated slides for Management review:

- Agenda Mgt Review 16-17
- Annual management review 2017

Recycled Water Improvement Plan is made up of

- BMIS0214-Product Management Improvement Framework (overarching framework for all products)
- 528774 Recycled Water Scheme Improvement Register
- Quarterly Update to NSW Health in JOG meeting:
- LRV performance verification Summary NSW Health Q4 2017-18
- Recycled Water Qual update JOG November 2017
- Recycled Water Qual update JOG February 2018
- Recycled Water Qual update JOG 21 May 2018
- Recycled Water Qual update JOG August 2018

789196 - Recycled Water Forum Agenda - August 2017

- 789195 Recycled Water Forum Meeting Minutes August 2017
- Minutes\_JOG\_May 2018

Agenda JOG 21 May 2018

Sydney Water Annual Report 2016-17

#### Summary of reasons for grade

Sydney Water was assessed as being Compliant for this sub-clause. Sydney Water's Recycled Water Management Manual (RWMM) and Recycled Water Quality Management Plans (RWQMPs) cover the requirements of the AGWR adequately. Water quality management is a mature process and it is generally done well.

The risk assessments have been undertaken using the corporate framework and this definitely has advantages for a large organisation like Sydney Water. It allows for risks to be escalated and be comparable across the business, which ensures that significant risks are given the priority they require. However, there were some items that didn't quite align with the AGWR, but the intent was there, which was why these were only identified as OFIs. Although, the items were considered at the risk assessments they should more clearly documented.

A new risk procedure has been brought in and is currently being rolled out. This is an improvement on the existing process, which does meet the AGWR requirements. This procedure is not fully implemented at this stage and is currently being rolled out. A gap analysis has been undertaken (outside the audit period), to assist in closing the gaps due dates and identified responsibilities would be beneficial. NSW Health has also indicated that Sydney Water has effectively managed incidents over the audit period.

### Discussion and notes

Sydney Water have a recycled water management system, which is comprised of a number of key documents:

- Recycled Water Management Manual
- Recycled Water Management Policy
- Recycled Water Product Specification
- Scheme Recycled Water Quality Management Plans
- Recycled Water Improvement Plan
  - Product Management Improvement Framework
  - Product Management Improvement Register
  - Recycled Water Scheme Improvement Register

Based on the evidence provided and stakeholder feedback from NSW Health it appears that NSW Health have not specified any amendment or addition to the requirements of the AGWR.

#### Element 1

#### Responsible use of Recycled Water

The RWMM describes how Sydney Water engages with stakeholders in Sections 1.1 and 1.3. Stakeholders relevant to recycled water are listed in Table 1-1 (pp. 17-18). Sydney Water holds Memorandum of Understanding (MoU) with key stakeholders. The MoUs specify the engagement process with these key stakeholders.

Section 1.3 of each scheme RWQMP also refers to stakeholder engagement, with reference to scheme-specific stakeholders.

More detailed stakeholder management details are in the Stakeholder Engagement Procedure.

### Regulatory and Formal Requirements

The governance model of the recycled water schemes is illustrated in section 7.1 of the RWMM.

The Customer Accountability Register details regulated activities. Non-regulated requirements are in the External Requirements Register (not sighted).

Partnerships and Engagement of Stakeholders

As well as the regulatory stakeholders, the RWMM also identifies Critical Partnerships in section 1.3.

Customers are managed through customer agreements (not sighted), except residential customers which are subject to the Customer Contract. Both documents detail the end-user's responsibilities for the safe use of recycled water.

Recycled Water Policy

Sydney Water have a Recycled Water Policy that was last updated in June 2018 in consultation with the Recycled Water Forum.

### Element 2

Intended Uses and Sources of Recycled Water

The Recycled Water Product Specifications is a key part of the recycled water management system, it specifies:

- Key Performance Indicators
- Critical Control Points and Operational Control Targets
- Critical Limits
- Target Performance Levels

Appendix 10 of the Recycled Water Product Specifications has the specification for Rouse Hill (site visited). It identifies the intended use of the recycled water as dual reticulation and firefighting. Log reduction values have been specified based on Table 3.7 of the AGWR, firefighting having the highest LRVs of any end use.

The scheme risk assessment reports discussed the source water, intended use, routes of exposures, receiving environment and inadvertent or unauthorised use. The RWQMPs are updated after the risk assessments and also contain information on the intended uses and sources of recycled water.

### Recycled Water System Analysis

The system analysis is undertaken at the time of the risk assessment. The risk assessment reports contain details of the schemes and detailed data analysis. The risk assessment team is also specified in this document.

There were three different flow diagrams for the Rouse Hill scheme. One in the Risk Assessment Report, one in the RWQMP and another new schematic (790431), as a standalone document. The most recent schematic includes CCPs and OCPs and has been field verified. However, it is slightly ambiguous in that it has a boundary on it showing a handover point between Sydney Water controls and trade waste management and general controls. Hand over points in flowcharts of this nature usually show a change is asset ownership and or operation. In this instance Sydney Water own and operate all the asset from catchment to customer. It is suggested to make the flow diagrams clear that there is no hand over of ownership or operation within the schemes (OFI-SWC-2017/18-9). The Rouse Hill RWP flow diagram was reviewed onsite and was accurate.

### Assessment of Water Quality Data

The risk assessment reports include a risk assessment briefing paper that has a tabulated summary of 10 years of influent and effluent water quality data. This data is also in the Rouse Hill RWQMP as well as long-term trends for the effluent and influent that are considered to be important. The Rouse Hill RWQMP also details the key characteristics of the scheme including: outlining the source water, intended use, receiving environment, routes of exposure, inadvertent use, scheme target LRV and process description.

The data review, from the evidence provided, showed a focus of verification monitoring. It would also provide some insight to the risk assessment team if there were some data presented on operational monitoring. At these assessments it is also important to understand how each process unit is performing. It is useful when assessing the risk of failure and when reviewing CCPs. When undertaking the periodic system analysis consider plotting operational data trends (e.g. UVT, UV dose, chlorine, turbidity) using appropriate methodologies, such box and whisker plots and control charts (OFI-SWC-2017/18-10).

### Hazard Identification and Risk Assessment

Hazard Identification and Risk Assessment workshops are undertaken using the corporate Risk Management Framework, part of the framework is the Operational Risks procedure, which has the consequence and likelihood criteria and risk matrix. Having a standardised approach to risk assessment methodology is good from a corporate perspective and allows risk across the business to be considered and prioritised appropriately.

The risk assessments identify hazardous events and consequence, environmental or public health, however, the hazards that may be an issue due to an event are not documented. Individual microbial hazards are considered in the Product Specifications, where types of pathogen is considered in terms of the LRV removal required. Chemical hazards have clearly been considered, as shown by the data analysis, however, there is limited coverage in the RWQMP. Hazards, both chemical and biological, could be more clearly identified in the risk assessment process, such as in the consequence field. This information would assist in subsequent components of the RWQMP process, such as monitoring, preventive measures, operational controls (OFI-SWC-2017/18-11). The limitations of a risk assessments are an important consideration and helps to direct further research and increase understanding. Sydney Water do have a well-developed Research and Development Program. The risk assessments identify continuous improvement actions, which aim to fill these knowledge gaps.

### Element 3

Preventive Measures and Multiple Barriers

Sydney Water completed the Risk Assessment for all recycled water schemes in 2015-16 and 2016-17. As part of each scheme



risk assessment, preventative measures were identified and documented, where those measures help to reduce the risk. The risk assessment framework allowed Sydney Water to determine if the risk was reduced to an acceptable level (or as low as reasonably practicable). The risk registers of the final risk assessment report for each scheme, and as reproduced in Appendix B of the Scheme RWQMPs, contains the recently reviewed risk assessments for the scheme.

Section 3.1 of the RWQMP details the presence of multiple barriers. The LRV assessment in section 9 of the RWQMP demonstrates that for pathogens there are multiple barriers in place.

Cross-connections are inevitable risk with dual reticulation schemes. The AGWR states that inadvertent cross-connections with drinking water systems should be considered in the risk assessment process and that cross-connection controls and backflow prevention should be considered as preventive measures. Sydney Water have two hazardous events identified for this, the first is a cross-connection in the Sydney Water distribution and the second is a cross-connection in a residential property. The control measures for a cross-connection in the Sydney Water System includes SW flow testing and visual inspection on all properties prior to installation of the meter. Controls for a residential cross-connection are reactive to customer complaints and management by external parties such as NSW Office of Fair Trading such as plumbing controls and regulatory inspections.

Preventive measures implemented at the treatment plant are detailed in a procedure, Process and Equipment Monitoring SOP.

### Critical Control Points

The Recycled Water Product Specifications collates CCPs for all recycled water schemes. The Recycled Water Product Specification identifies the methodology used to identify CCPs. These are points, procedures, activities or processes at which control can be applied, and which is essential to either prevent the hazard from occurring or to reduce the hazard to an acceptable level

Section 3.2 of the individual scheme RWQMPs also refers to how CCPs and OCPs are identified. Section 9 of the scheme RWQMPs explains the design of the critical limit of the CCP parameters and mentions that the LRVs are being achieved for the key process steps.

There was a review of CCP 2, UV Disinfection, during the audit period. The measurement of UV dose and setting of operational limits for UV dose is complex and this was therefore selected for further investigation, to determine that appropriate considerations had been made in setting the critical limit. The UV reactor dose CCP was reviewed onsite at Rouse Hill and it was determined that to achieve 4 log Cryptosporidium deactivation a dose of 28 mJ/cm<sup>2</sup> RED MS2 is required. The UV system calculates dose and provides a reading as mJ/cm<sup>2</sup> RED MS2 (dose can be provided in a variety of units), the critical limit is 30 mJ/cm<sup>2</sup> and the target dose is 40 mJ/cm<sup>2</sup>. The AGWR states that a critical limit is a prescribed tolerance that distinguishes acceptable from unacceptable performance, the limits set are considered to be appropriate.

### Element 4

### **Operational Procedures**

Operational processes for unit operations are documented in Sydney Water's UPG. There are 17 UPGs for Rouse Hill, covering each process step. Plant daily checks are documented in the Plant and Equipment Monitoring SOP (RHTP0017), this is operationalised using the 2018 New Roles Check Sheets.

Procedures are stored and managed through IMS.

### **Operational Monitoring**

Operational monitoring processes are documented in the Plant and Equipment Monitoring SOP (RHTP0017) and Lab Analysis SOP (RHTP0018). Daily workflow (SCADA/field monitoring) check-sheets (2018 New Roles Check Sheets) are used to monitor / record plant performance and CCPs. The Lab Analysis SOP details the daily monitoring undertaken by operators.

### **Operational Corrections**

The RWQMP for each scheme details the critical limits and actions taken if they are triggered, which is in most instances is an interlock preventing the production of recycled water.

The Plant and Equipment Monitoring SOP and 2018 New Roles Check Sheets detail the target criteria for operational monitoring. The UPGs are a reference document that are used to troubleshoot issues that arise with a process.

Data from the daily lab analysis is entered into SCADA central, which flags values outside of the acceptable range.

Section 4.3 of the RWQMP refers to the Recycled Water Quality Event Management Plan (RWQEMP), this document explains how issues are escalated if operational monitoring/observations identify an issue.

The Rouse Hill Recycled Water Guidelines, Non-Conforming RE Supply - Standard Incident Procedure identifies the immediate action to be taken on failure of a CCP interlock.

Equipment Capability and Maintenance

Preventive Maintenance is scheduled and work orders are set-up in Sydney Water's MAXIMO system. MAXIMO Work Orders for Calibration and Maintenance - Rouse Hill WRP were provided as a sample of jobs programmed through MAXIMO. Calibrations are scheduled according to the Master Calibration List.

### Materials and Chemicals

Sydney Water maintains an Approved List of Chemicals which are only to be used for RWPs. This list of approved chemicals also includes approved suppliers and technical specification for each chemical.

This procedure also describes the change management process for trial and use of alternative chemicals / suppliers. The procedure requires that chemicals supplied to the WRP meet the quality requirements and will not impact water quality. There is a site-specific SOP for receiving bulk chemicals which confirms that chemicals are checked and verified according to the order and confirms that correct chemicals are delivered.

Chemical testing data is maintained for 10 years.

Chemical supply contracts state that chemicals not conforming with the Sydney Water Specification will not be accepted, which is in the Approved List of Chemicals procedure.



### Element 5

### Recycled Water Quality Monitoring

Monitoring characteristics are outlined in section 5 of the relevant scheme RWQMP. These details have been used to develop the Recycled Water Quality Compliance & Operational Monitoring Plans, in Appendix D. Verification monitoring is split into compliance monitoring and operational monitoring. The rational being that compliance monitoring is the monitoring that is required for regulatory compliance and operational monitoring is to monitor the performance of the system and may be adjusted annually to meet requirements. Both these plans fall under the AGWR definition of verification monitoring. The AGWR states *verification should be regarded as the final overall check that preventive measures are working effectively and that the target criteria or critical limits set from relevant guidelines are appropriate. As such, the purpose of verification is different from that of operational monitoring, and the two types of monitoring also differ in what, where and how often water quality characteristics are measured. However, it is not clear in the Sydney Water RWQMP why analyses and/or sampling points are on one list as opposed to the other. The results of the monitoring are treated differently in terms of reporting, it should therefore be clear why some parameters and locations are classed as being compliance points and reportable and others are not (OFI-SWC-2017/18-12). The Recycled Water Quality Compliance & Operational Monitoring Plan outlines the characteristics, sampling location and frequency of monitoring. Routine Monthly, Quarterly and Annual reporting is performed in accordance with the sampling plan. <i>Documentation and Reliability* 

As discussed above the Sydney Water monitoring has been documented into a monitoring program. Monitoring is undertaken by Sydney Water's NATA accredited laboratory, as documented in section 5.2.1 of the RWQMP, which meets the reliability requirements of the AGWR.

#### Application Site and Receiving Environment Monitoring

The Rouse Hill scheme is dual reticulation, water is supplied to residents and the water is used externally in gardens and internally where it is discharged to sewer. Section 5.2 of the RWQMP states that water quality is monitored in consideration of the potential impact on the receiving environment and soil and ground water monitoring is not performed. The customer Contract also requires that recycled water is fit for use. The water quality monitoring program appears to be appropriate to monitor that the water is fit for use. Using the data collected it would be possible to calculate the sodium adsorption ratio (SAR) and in conjunction with electrical conductivity (AGWR Figure A4.3) determine the likelihood of soil structure breakdown. It is suggested to calculate SAR in the recycled water and feed this back into the risk assessment (OFI-SWC-2017/18-13). Risk No. 19 in the Rouse Hill RWQMP risk assessment identifies that the use of recycled water could lead to the degradation of the natural environments. One of the existing control measures is the *SW compliance water quality monitoring program (weekly, monthly, 6 monthly and yearly*).

Corrective Responses

Non-conformances in relation to water quality grab sampling data are reported through daily exception reports, Effluent Knowledge and Management System (EKAMS). Daily exception notifications are sent to relevant internal stakeholders via EKAMS actions databases. Immediate notification by phone will occur for any positive results for *Cryptosporidium*, *Giardia* or virus, section 12 of the Recycled Water Compliance & Monitoring Plan.

The Plant production team has regular process meetings which documents the operational issues, process checks and nonconformances list and actions. Process meeting minutes for Rouse Hill WRP were sighted.

The Rouse Hill Recycled Water Guidelines, Non-Conforming RE Supply – Standard Incident Procedure identifies the immediate action to be taken on an EKAMS alert.

#### Documentation and Reliability

The monitoring plan is documented in the Recycled Water Compliance & Monitoring Plan. Section 12.3 to 12.6 of the plan detail the data management, quality management, systems and certification and quality control procedures. *Satisfaction of Users of Recycled Water* 

The overarching procedure for managing customer complaints is outlined in the Customer Complaint Procedure. Recycled Water Quality Complaints from residential customers are received through the Sydney Water Call Centre. Sydney Water has a

Complaint Management System (CMS), all complaints are entered into this system. Water Quality complaints are managed using the Managing WQ Customer Complaints Work Instruction.

Business customers that have entered into Recycled Water Supply Agreements are assigned a Business Customer Representative (BCR) as a relationship manager whom they can contact directly with any inquiries.

Area Water Quality Scientists are responsible for managing recycled water quality complaints for residential schemes. *Short-term Evaluation of Results* 

Sydney Water produces monthly and quarterly reports for internal and external stakeholders (e.g. NSW Health, Recycled Water Customers) for recycled water verification monitoring results. These reports provide the short-term evaluation of results.

All monthly performance reports and NSW Health quarterly licence grab sample reports are stored in SWIM. These reports are reviewed and discussed at the quarterly JOG meetings.

The Rouse Hill Recycled Water Quality Trend report is a rolling 3-year trending of recycled water quality and is a useful visualisation of the performance of the recycled water scheme. This is produced monthly.

A Scorecard is produced monthly to track performance of the drinking water and recycled water systems.

#### Element 6

Communications

The MoU with NSW Health explains the high-level considerations for Sydney Water's communication with NSW Health on any events in relation to Sydney Water's systems or services. NSW Health are to be notified immediately of any event with public health significance.

The RWQEMP outlines the communication protocols with all relevant agencies in relation to recycled water events / incidents. It details responses to foreseeable events, general and scheme specific in appendices 1 and 2.

Contact details are in the Recycled Water Notification Contact List, which contains all the relevant internal and external contacts, names, numbers and email.

The document Notification of Plant Recycled Water Production Interruptions describes the communication and notification



process for recycled water customers during supply interruptions, due to planned or unplanned shutdowns. In the case of residential customers, it is networks and Business Customer Representatives that are contacted. This is to trigger the drinking water top up, so supply would only be lost in exceptional circumstances.

### Incident Response Protocols

Sydney Water's Incident Management Procedure (D0000506) was finalised in July 2017 and follows a new business resilience framework. It has mandatory requirements for incident prevention, including Threat and Vulnerability analysis, Business Impact Assessment, Risk Assessment and the identification of critical customers. This is currently being rolled out and a gap analysis has been prepared for the Treatment Business (Mandatory criteria IMP V1.7 – Treatment gap analysis). There are a number of gaps identified and actions required to address them. However, the gap analysis is high-level, some gaps are yet to be addressed and responsibilities and due dates are not included. Ensure that the gap analysis for incident management (D0000506) is finalised, including specific actions assigned with responsible positions and a due date, applicable to the risk of the gap (OFI-SWC-2017/18-14).

Emergency Management Procedure (D0000507) is the overarching corporate emergency management procedure, this is supported by the RWQEMP, which has specific information on the events and incidents managed by the recycled water schemes. The RWQEMP has triggers for reporting events and incidents to NSW Health and any escalation that may be required and also defines Events, Notifiable Events and Incidents.

In addition to the immediate incident and emergency management Sydney Water also have a Business Resilience Manual, which outlines the initiatives to support business resilience principles.

### Element 7

Operator, Contractor and User Awareness and Involvement

Sydney Water raises awareness of the consequence of system failure through scheme Risk assessment workshops with treatment operations (managers, operators, process / technical staff etc), contractors and recycled water customers. Sydney Water completed all the fourteen scheme risk assessment workshops in 2015-16 and 2016-17.

Sydney Water also achieves awareness through site induction programs, newsletters, noticeboards, meetings, internal forums (including Recycled Water Forum), Sydney Water's intranet, internal social media and emails. The Recycled Water Forum discusses relevant recycled water issues and is a way of disseminating information from the JOG meetings to those responsible for recycled water.

Sydney Water is currently developing Compass based e-learning training packages for each scheme RWQMP, which provides information about the scheme and raises awareness of system failure. Each scheme e-learning training module covers the 12element management framework of the RWQMP. Six (6) e-learning training packages were developed and delivered in Compass for the Liverpool, Wollongong stage 1 and 2, Rouse Hill, Quakers Hill and Western Replacement Flows schemes. The remaining schemes training packages are currently under development.

Sydney Water also developed and delivered compass based e-learning for RWQEMP, which outlines the awareness and actions during any recycled water quality events and incidents. The e-learning training package and training records on RWQEMP were provided as evidence.

Each WRP also carries out site specific training for the operators for plant operations, recycled water quality, awareness and management process. The Rouse Hill Cattai Hub-Rouse Hill & Castle Hill WRPs New or Transferred Production Officer Training Schedule was provided as evidence. This is a list of training including recycled water awareness and required on the job training. This is a relatively new process and is only applicable to new staff.

A process to carry out end user recycled water awareness training is also in place. Scheme specific RWQMP e-training packages are being rolled out for end user awareness.

Business customers that have entered into Recycled Water Supply Agreements are assigned a BCR as a relationship manager, not a technical subject matter expert.

Operator, contractor and End-user Training

Qualifications, skills, and experience requirements are listed on staff position descriptions. This is part of the recruitment process and is there to ensure appropriately skilled staff are employed. On the job training is covered by the New or Transferred Production Officer Training Schedule, which is mentioned above.

The employees are qualified and/or trained to undertake their roles. However, it will be useful to develop a training needs matrix for staff and contractors to ensure that they have and maintain appropriate experience and qualifications. The matrix can be used as a Training Needs Analysis tool. In addition, the matrix can visually, at a glance, identify individual skill levels and training gaps. The matrix should also capture the periodic renewal or refresher requirements for trainings undertaken (OFI-SWC-2017/18-15).

### Element 8

Consultation with Users of Recycled Water and the Community

Section 8 of the Recycled Water Management Manual identifies Sydney Water's strategy for consultation with business and residential recycled water customers.

Information aiming to communicate with and educate the community is published on the Sydney Water website, included at times in Waterwrap (customer newsletter with bills), and in fact sheets on the appropriate end use of recycled water.

Sydney Water has long-running education programs to build awareness of recycled water, particularly using the Water Recycling Education Centre at St Marys Advanced Water Treatment Plant. These programs target schools (secondary), universities and TAFE, stakeholder and community groups and professional delegations. Educational resources have been developed and are available on the website.

#### Communication and Education

Community consultation is undertaken via public discussion documents, public forums, through the groups like the Customer Council and Business Customer Representatives.

The Customer Council's role is to provide high quality advice on the interests of residential customers and community groups of



Sydney Water and on the Customer Contract, in accordance with the terms of the Customer Council charter, and on such other key issues related to Sydney Water's planning and operations. From time to time the Council also has meetings at various Sydney Water sites, including treatment plants, to assist in their understanding and awareness.

Business Customer Representatives are assigned to business customers using recycled water under Recycled Water Supply Agreements. They act as a point of contact for customers to engage with Sydney Water regarding recycled water.

Recycled water customers (business) are involved in the risk assessment for the specific scheme, which includes an assessment of unauthorised uses.

New residential customers are sent an onboarding letter to advise them that they are supplied with recycled water and what the do's and don'ts are.

### Element 9

### Validation Process

Section 9.2 of the RWMM has a general description of how equipment and infrastructure are validated. The RWQMPs have a scheme specific validation information. Sydney Water has detailed that recycled water plants, rather than specific unit process validation, treatment system detailed verification will be undertaken to verify that log reduction values required for each scheme are being achieved. The process for undertaking this is detailed in the Recycled Water Treatment Detailed Verification Monitoring for Pathogen Reduction procedure. The procedure specifies that detailed verification monitoring will be undertaken at each recycled water plant on a four-year rolling cycle, to ensure that every plant is reviewed within the five-year Operating Licence cycle.

### Design of Equipment

Equipment is selected based on its ability to meet a Functional Design Specification, these are in the Technical Design Specification Part 1 – Civil Works or Technical Design Specification Part 2 – Mechanical Works. Commissioning of the equipment is detailed in the Technical Specifications.

Investigative Studies and Research Monitoring

Section 9.3 of the RWMM has high-level information on recycled water research.

Sydney Water has a dedicated research function within the Corporate Strategy group. The Research and Development Program sets out Sydney Water's current research portfolio, Sydney Water's Research & Innovation Strategy Towards 2020. These are at a strategic level and cover the whole business. These high-level strategies don't always have measures for success, although the objectives of the research are understood.

Scheme specific improvement actions are identified through recycled water risk assessment workshops and during the review of the RWQMP these are detailed in the Recycled Water Scheme Improvement Register.

### Element 10

### Management of Documents and Records

Documentation related to delivering drinking water to customers are managed through a certified IMS (ISO90001, ISO14001, AS/NZ4801, ISO17025). Version control is managed by the rules built into the database.

There are documented procedures for managing documents and records under the IMS. Records are managed as per Sydney Water's records management requirements. Key records are maintained in systems such as MAXIMO, SWIRL, SWIM, Compass, SCADA central. Records related to specific areas are maintained locally as well (e.g. plant log sheets).

The documentation is controlled through the BMIS database with specified review periods. Automated emails are sent to document owners as review reminders. Documents are reviewed at specified frequency or when there are significant changes to the process. The currency of documents is monitored against agreed KPIs and reported monthly to stakeholders and management.

Monitoring performance of key processes and regular reporting occurs at all levels. Monthly reports are prepared and circulated to all business managers and portfolio holders to inform performance and take necessary action.

### Reporting

Section 10.2 of the RWMM specifies the internal reporting concepts and 10.3 details the external regulatory report that are required. Details of the internal reports are in the Preparation of Recycled Water Quarterly Report Procedure. For external reports there is the IPART Reporting Manual, Preparation of Recycled Water Quarterly Reports Procedure, and the Environment Protection Authority (EPA) Annual Return Reporting Procedure.

### Element 11

### Long Term Evaluation of Results

The long-term evaluation of recycled water quality is undertaken every 4 years as part of the risk assessment process. The statistical analysis of water quality data (10 years) is trended and checked against AGWR microbiological, long-term value (LTV) and short-term values (STV). This analysis is presented in scheme risk assessment reports to inform the stakeholders and is included in the final risk assessment report. This information is incorporated into the next revision of the RWQMPs. In addition to the risk assessment process the monthly Rouse Hill Recycled Water Quality Trends report shows three years of rolling data.

Long-term water quality analyses are performed every quarter. They are reported on in the *Quarterly Recycled Water Quality Monitoring Report for NSW Health*. The report includes analyses involving a 12-month rolling window of data in addition to the relevant quarter's window of data.

Audit of Recycled Water Quality Management

External audits of the operating licence are undertaken annually (financial year period).

RWQMS audits are incorporated into the IMS audits. All audit related information is recorded in a database (BMIS Audit database). Audits are scheduled through the database and the reports resulting from the audits are also recorded in the same database. Improvement actions arising from audits are also raised in BMIS and completion of actions are managed through a workflow within the system (BMIS).



Sydney Water visits commercial customers regularly and completes an onsite checklist. Although, this is not classed as an audit, it does cover compliance with the user agreement.

Inspections of residential properties are conducted by plumbing inspectors, which is regulated by the Office of Fair Trading. An inspection of all new houses is undertaken and are re-inspected if there are building works that require a notice of work (only minor works are excluded, such as changing a tap). Sydney Water conducts a cross-connection checks of all properties in a recycled water area, if there is a water quality complaint.

### Element 12

Review by Senior Managers

Section 12.1 of the RWMM references the Management Review Process, which includes the following:

- Safety performance review
- Customer perspective review
- Integrated Management System review for adequacy, suitability and effectiveness (risk, quality, safety, environment and user feedback)
- Water & Recycled Water process integrated review on performance (quality, risk, cost and customer satisfaction)
- Wastewater process integrated review on performance (quality, risk, cost and customer satisfaction)

Recycled Water Quality Improvement Plan

The Recycled Water Improvement Plan is made up of:

- the Product Management Improvement Framework
- the Product Management Improvement Register, which currently captures the strategic / overarching recycled water improvement initiatives

• the Recycled Water Scheme Improvement Register, which captures the scheme-specific recycled water improvement initiatives. Progress in implementing the strategic-level improvements recorded in the Product Management Improvement Register is reported in the annual Compliance and Performance Report to IPART.

### Recommendations

There are no recommendations identified with respect to this obligation.

### **Opportunities for improvement**

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

### Element 2:

- OFI-SWC-2017/18-9: Make the flow diagrams clear that there is no hand over of ownership or operation within the schemes.
- OFI-SWC-2017/18-10: When undertaking the periodic system analysis consider plotting operational data trends (e.g. UVT, UV dose, chlorine, turbidity) using appropriate methodologies, such box and whisker plots and control charts.
- OFI-SWC-2017/18-11: Hazards, both chemical and biological, could be more clearly identified in the risk assessment process, such as in the consequence field. This information would assist in subsequent components of the RWQMP process, such as monitoring, preventive measures, operational controls.

### Element 5:

- OFI-SWC-2017/18-12: Consider making it more transparent, in the Sydney Water RWQMP, why verification monitoring is considered compliance monitoring or not. The results of the monitoring are treated differently in terms of reporting, it should therefore be clear why some parameters and locations are classed as being compliance points and reportable and others are not.
- OFI-SWC-2017/18-13: Calculate SAR in the recycled water and feed this back into the risk assessment.

### Element 6:

• OFI-SWC-2017/18-14: Ensure that the gap analysis for incident management (Procedure D0000506) is finalised, including specific actions assigned with responsible positions and a due date, applicable to the risk of the gap.

### Element 7:

• OFI-SWC-2017/18-15: Develop a training needs matrix for staff and contractors to ensure that they have and maintain appropriate experience and qualifications. The matrix can be used also as a Training Needs Analysis tool and can visually show individual skill levels and training gaps. The matrix should capture the periodic renewal or refresher requirements for trainings undertaken.

### 2.2.7. Water Quality Recycled Water (2.2.2)

Sub- Clause	Requirement	Compliance Grade
2.2.2	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.	Compliant (minor shortcomings)



<b>Risk</b> 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 water quality and protect public health and the environment.	<b>Target for full compliance</b> Evidence that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, including to the satisfaction of NSW Health.
<ul> <li>Evidence sighted</li> <li>BMIS0260-Recycled Water Management Manual</li> <li>BMIS0260.01-Recycled Water Management Policy</li> <li>D0000096-Recycled Water Product Specifications</li> <li>Recycled Water Improvement Plan:</li> <li>BMIS0214-Product Management Improvement Framework (over</li> <li>617839 - Product Management Improvement Register (specific reference)</li> <li>528774 - Recycled Water Scheme Improvement Register (scheme)</li> </ul>	rarching framework for all products) ecycled water actions listed) e specific improvement plan)
RW0001 – RWQMP – Rouse Hill WRP	
Element 1 BMIS0260.01-Recycled Water Management Policy Sydney Water. <i>Recycled Water Management Policy</i> . [online] Ava http://www.sydneywater.com.au/web/groups/publicwebcontent/d [Accessed 8/10/18] Email-New Version Form BMIS0260.01 - Active-260618 Screenshot-iConnect Policies tab showing Drinking Water Manag http://www.sydneywater.com.au/SW/about-us/our-publications/p 789173-Recycled Water Forum Agenda - Q1 2018 789171-Recycled Water Forum Minutes - Q1 2018 Email-Legislative update 11-24 Nov 2017 -27 November 2017 WPIMS5015-MOU with NSW Health SDIMS0006-Stakeholder Management Procedure 789296-Minutes JOG meeting 21 May 2018 789274-Agenda JOG 21 May 2018 598845 – Gerringong Gerroa_Recycled Water_Risk Assessment Repor 598849 – St Marys WRP_Recycled Water_Risk Assessment Report	ailable at: ocuments/document/zgrf/mtg0/~edisp/dd_184261.pdf gement Policy availability.png <u>olicies/index.htm</u> Report rt ort
Sydney Water Operating Licence 2015-2020	
Customer Council Minutes, 14 March 18	
CCP0001 Regulatory Scanning Procedure	
CCP0002 Compliance Accountability Register procedure CIR Dunheved Golf Club Oct 2017	
Element 2 598847 - Risk Assessment Report – Rouse Hill WRP Risk Assessment Briefing Paper – Rouse Hill WRP (Appendix C RW0001 - RWQMP – Rouse Hill WRP 790431 - Process Flow Diagram – Rouse Hill WRP Quarterly Recycled Water Quality Monitoring Report for NSW H Rouse Hill Recycled Water Scheme Monthly Performance Report Recycled Water Qual update – JOG 21 May 2018 Recycled Water Qual update – JOG August 2018 RH Plot - quality plots June 2018	of 598847) Health – 2017-18_4 <sup>th</sup> Quarter t 2017-18
Element 3	
2018 new roles check sheets CMS – cross connection Example – 27 Waterford Ave Competency Assessment – Pip Bain – AWQC Email - RE: SW flow Testing on Recycled Water Connections (1 INC 18669 - SWIRL record – Example – Network Cross Connec MAXIMO Work Orders Example for Calibration and Maintenand Process Meeting Minutes – Rouse Hill WRP -14-06-18 Process Meeting Minutes – Rouse Hill WRP -19-04-18 RHTP0017 Process and Equipment Monitoring SOP RHTP0040 Trade Waste SIP RHTP0056 Master Calibration List RHTP0059 – Recycled Water SIP – Rouse Hill WRP Rouse Hill _ SCADA screen shots of alarms _ CCP and OCP par Rouse Hill Stage 1 checksheets June18 RHTP0017 Rouse Hill Stage 2 checksheets June18 RHTP0017	/11/18) tion ce


RW001 RWOMP - Rouse Hill WRP SCADA screen shot for CCP interlocks (Turbidity, Chlorine etc) SCADA screen shot for CCP monitoring - Rouse Hill WRP WOQ5162 Managing WQ Customer Complaints WOQ5162.03 Guidelines to check cross connection WR5271 - Recycled Water Quality Event Management Plan Element 4 MAXIMO Work orders Example for Calibration and Maintenance - Rouse Hill WRP Calibration Record - Chlorine Analyser - Rouse Hill WRP Delivery Docket - Sodium Hypochlorite - Rouse Hill WRP Certificate of Compliance Alum February 2018 OS0015 Bulk Chemical Data Capture and Assessment 2018 Composite NaOCL HRL report #18-0577-07 Process Meeting Minutes - Rouse Hill WRP-19-04-18 Process Meeting Minutes - Rouse Hill WRP -14-06-18 Rouse Hill Stage 1 checksheets June18 RHTP0017 Rouse Hill Stage 2 checksheets June18 RHTP0017 SCADA Central data June 2018 Rouse Hill WRP (RHTP0018) Element 5 Annual Recycled Water Quality Compliance & Performance Report 2016-17 CMS - cross connection Example - 27 Waterford Ave Competency assessment - Pip Bain - AWOS Example of EKAMS exceedance and notification to stakeholders Quarterly Recycled Water Quality Monitoring Report for NSW Health - 2017-18 4th Quarter RHTP0017 Process and Equipment Monitoring SOP RHTP0018 Lab sampling and analysis SOP RHTP0059 Recycled Water SIP - Rouse Hill WRP Rouse Hill Recycled Water Scheme Monthly Performance Report 2017-18 RW0001 RWQMP - Rouse Hill WRP SCADA screen shot for CCP monitoring - Rouse Hill WRP SWIRL record - Example - Network cross connection - 24 Laughton Cres WOQ5162 Managing WQ Customer Complaints AWQS Development Roster update Jan 17 to Feb 18 Process Meeting Minutes - Rouse Hill WRP -19-04-18 Recycled Water Qual update - JOG 21 May 2018 CMS-Maximo - Customer Complaints Monthly Report -June 2018 Network Performance Report -June 2018 Process Meeting Minutes - Rouse Hill WRP - 14-06-18 June 18 Rouse Hill data Report Recycled Water Qual update - JOG August 2018 Element 6 Email - Recycled Water Production Interruption - Rouse Hill WRP Email - Reduced Production of Recycled Water - Rouse Hill WRP Email from Sydney Water - SW flow Testing on Recycled Water Connections, dated 6/11/18 in relation to the North Head WWTP cross connection incident on 8 June 18 INC 15750 - Email Evidence INC 15750 - Incident for Rouse Hill Turbidity Exceedance INC 18669 - SWIRL record - Example - Network Cross Connection INC-21862 - SWIRL record Potable water at North Head - investigation reportcross connection North Head Investigation report (final) Recycled Water Quality Incidents SWIRL 2017-18 Element 7 CIR Dunheved Golf Club Oct 2017 IWES course certificate - Recycled Water Management - Azhar Nomani Other records of staff training can be viewed during audit if required within Compass Qualification - TAFE Water Operations Certificate - Business Customer Representative Qualification - TAFE Water Operations Certificate - Business Customer Representative 2 Resume - Azhar - Senior Process Engineer Resume - Manav - Process Controller Resume - Stella - Process Engineer Resume – Mohiuddin – Process Manager Screening Questions - Process Controller - Recruitment Screening Questions - Process Engineer - Recruitment Screening Questions - Senior Process Engineer - Recruitment Training Records - Compass (E-learning) - All RWQMPs an RWQEMP Training Records - Compass (E-learning) - Recycled Water Quality Event Management Plan Training Records - Compass (E-learning) - RWQMP - Rouse Hill



Training Records – site specific SOP – Rouse Hill WRP
Element 8
Customer Council Minutes published on the Sydney Water website:
http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm
Water & the environment - Using Recycled Water': <u>http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-</u>
doing/recycling-and-reuse/using-recycled-water/index.htm
Fact sheets for residential RW:
General one for Rouse Hill Recycled Water residential scheme customers:
http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdgw/~edisp/dd_080939.pdf
Gardening with Recycled Water $1/(1 + 1)$ $1/(1 + 1)$ $1/(1 + 1)$
http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/Zgr1/mdgw/~edisp/dd_080940.pdf
Using Recycled water with Fruits and vegetables $1/(1 + 1)$
http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/Zgr1/mdgw/~edisp/dd_080941.pdf
Sydney Water Education tours and excursions programs
http://www.sydneywater.com.au/SW/education/Programsresources/excursion-requests/index.htm
Unline Educational resources:
Water recycling
http://www.sydneywater.com.au/SW/education/Wastewater-recycling/Water-recycling/index.htm
Primary school – recycled water and purple taps
http://www.sydneywater.com.au/SW/education/Programsresources/Primaryschool/index.htm
St Mary's Water Recycling Plant – plant page fact sheet
http://www.sydneywater.com.au/SW/education/Wastewater-recycling/Water-recycling/st-marys-water-recycling-plant/index.htm
Rouse Hill Recycling Plant – plant page fact sheet
http://www.sydneywater.com.au/SW/education/Wastewater-recycling/Water-recycling/rouse-hill-water-recycling-
<u>prant/index.nun</u>
Sample letter - Rouse rini Sales new Owner letter to customer_190018
The source of the second
Element 9
PAMWP0001 RW Treatment Detailed Verification Monitoring for Pathogen Reduction
Online U V I analysers _ Report on trial of 6 instruments Ouerterly Undate to NSW Health in IOG meeting:
Email to and from NSW Health Undate four-year schedule RWOMP
<ul> <li>Update four-year schedule RWOMP-NSW Health – O4 2017-18</li> </ul>
<ul> <li>LRV performance verification Summary – NSW Health – O4 2017-18</li> </ul>
Recycled Water Qual update – JOG 21 May 2018
Recycled Water Qual update – JOG August 2018
RW0001 -RWQMP – Rouse Hill WRP
SCADA screenshot – online UVT interlock – Rouse Hill
SCADA screenshot – online UVT interlock – Castle Hill SCADA screenshot – online UVT interlock – Wellongong
UV performance assessment report – Rouse Hill
UV performance assessment report – Castle Hill
UV performance assessment report – Wollongong
UV performance assessment report – Gerringong Gerroa
Element 10
79004-IMS Monthly Report 2018 07 02 (Dashboard)
SDIMS0008-Document Management
SDIMS001/-Records Management WOO5162.03 Guidelines to Check Cross Connection
MP0021-Preparation of Recycled Water Ouarterly Reports
Office of Fair Trade, Works Requiring Inspections, accessed 1/11/2018 < https://www.fairtrading.nsw.gov.au/trades-and-
businesses/construction-and-trade-essentials/plumbers-and-drainers/work-requiring-inspections>
PAMAM0003-EPA Annual Return Reporting Procedure
1Connect - Networks Performance Report June 2018 802060 - CD Dashboard Report (Group Executive team Sample)
Ouarterly Recycled Water Quality Monitoring Report for NSW health 2017-18
Quarterly Update to NSW Health in JOG meeting:
<ul> <li>LRV performance verification Summary – NSW Health – Q4 2017-18</li> </ul>
Recycled Water Qual update – JOG November 2017
Recycled Water Qual update – JOG February 2018
Recycled Water Qual update – JOG 21 May 2018
Recycled Water Qual update – JOG August 2018
18NS15-REC-18-172-1.0 51
November 2018

# Element 11

598847 Risk Assessment Report – Rouse Hill WRP 776589-Quarterly recycled water quality monitoring report for NSW Health Q3 2017-2018 A0000316-RWQ Rouse Hill audit A0000320-RW awareness and training audit Annual Statutory Declaration- Camden Council July 18 BMIS-1718 Completed Internal Audit List 090818 CIR Dunheved Golf Club Oct 2017 RW0001 – RWQMP – Rouse Hill WRP

# Element 12

Calendar-Management Review-310118 BMIS0260 Recycled Water Management Manual (Section 12.1; Review by Senior Executive) SDIMS0012 - Management Review 754470-16-17 Mgt Review - Minutes, Actions & Process Reviews

Recycled Water Improvement Plan is made up of:

- BMIS0214-Product Management Improvement Framework (overarching framework for all products)
- 617839 Product Management Improvement Register
- 528774 Recycled Water Scheme Improvement Register
- Quarterly Update to NSW Health in JOG meeting:
- LRV performance verification Summary NSW Health Q4 2017-18
- Recycled Water Qual update JOG November 2017
- Recycled Water Qual update JOG February 2018
- Recycled Water Qual update JOG 21 May 2018
- Recycled Water Qual update JOG August 2018
- 789196 Recycled Water Forum Agenda August 2017
- 789195 Recycled Water Forum Meeting Minutes August 2017
- Minutes\_JOG\_May 2018
- Agenda JOG 20 August 2018

Sydney Water Annual Report 2016-17 Annual Recycled Water Quality Compliance & Performance Report 2016-17

# Summary of reasons for grade

Sydney Water was assessed as being Compliant (with minor shortcoming) for this sub-clause. In general Sydney Water has good systems in place and manages the recycled water schemes well. Staff appear to be competent and engaged.

In the implementation of dual reticulation schemes, it is inevitable that cross connections with drinking water will occur. There are a number of barriers and preventive measures that are put in place to manage this issue. The main control is the high treatment standard that is required for the supplied water. At the Rouse Hill scheme the quality of the water is good and the plant is well maintained. However, one of the preventive measures is that all properties will have a check for cross-connections prior to connection of the service, to ensure that in the first instance it is set up correctly. In a January 2018 event, when clearing the backlog of these inspections a cross-connection to the meter of a residential property was identified and it had been in place for over 2 years. Although cross-connections are undesirable and must be minimised, this instance did not appear to exceed the level of exposure that has been planned for in determining the level of water treatment, which is the reason the audit grade is Compliant (with minor shortcomings).

The improvement plans for recycled water don't appear to be actively maintained and there are a number of items that have slipped, this process needs to be tightened up. It is possible that priority issues could be missed with the current system. Based on the evidence, the two issues identified have not impacted on recycled water quality, public health or the environment.

### **Discussion and notes**

Implementation was sampled across the 12 Elements through relevant examples and onsite observations as discussed below.

### Element 1

# Responsible use of Recycled Water

The main stakeholder is NSW Health and through the MoU, quarterly JOG and SLG meetings are held to facilitate liaison. JOG and SLG meetings are also specified in the Environment Protection Authority MoU.

### Regulatory and Formal Requirements

The Customer Accountability Register (CAR) details regulated activities. This is updated as detailed in the Compliance Accountability Register procedure. Changes in regulation with a high significance are updated as they arise, minor significant changes are amended in the CAR at the annual review. Changes in regulatory requirements are identified through the Regulatory Scanning Procedure. It was advised that changes in the regulatory environment are scanned every 2 weeks and legislative updates are available on iConnect.

### Partnerships and Engagement of Stakeholders

Business Customer Representatives manage the agreements with business customers. Six monthly visits are undertaken to liaise with these customers. Details of risk assessments were provided that demonstrate communication and engagement with customers with agreements. Risk assessments are held every 4 years.

The customer Council is how Sydney Water liaises with residential customers. The Council meets quarterly and discuss issues that affect residential customers.



# Recycled Water Policy

The Recycled Water Policy is available through iConnect and is available publicly on the Sydney Water website.

### Element 2

#### Intended Uses and Sources of Recycled Water

This information is considered every 4 years as part of the risk assessment review. This was not reviewed within the audit period and the RWQMP seemed to be consistent with the sources of water and uses, as observed during the audit. The Rouse Hill risk assessment was last completed on 28 July 2016.

#### Recycled Water System Analysis

The flowcharts were updated post the risk assessment and subsequent RWQMP review. This process is undertaken every 4 years. The flowcharts were again reviewed in 2018 and verified in the field by a process engineer. The Rouse Hill flowchart was updated on 18 July 2018 by Nigel Van and Manav Kaur.

Assessment of Water Quality Data

Every 4 years the water quality trends are reviewed as part of the risk assessment process. This was last undertaken for Rouse Hill 28 July 2016.

In the interim a monthly report is produced, Rouse Hill Recycled Water Quality Trend. This is a rolling three-year plot of water quality data from the outlet of the chlorine contact tank and at monitoring points within distribution.

#### Hazard Identification and Risk Assessment

Scheme Risk Assessments are performed every four years, along with review of RWQMP, no risk assessment workshops were held in the audit period. The risk assessment of Rouse Hill RWP was undertaken on 5/09/2016. It is intended that following risk assessments will use the KnowRisk software, which is used for corporate risk assessments.

Sydney Water has undertaken LRV verification studies for their 14 recycled water plants, which is detailed in the RWQMPs. This is evidence that uncertainties in the risk assessment process are being addressed.

It will be useful to identify and document some general triggers for re-visiting or reviewing the risk register in between the 4-year review period. These could include for example, changes to the water quality criteria, significant scheme changes, an incident or emergency, an unscheduled/unplanned stoppage of production or supply (**OFI-SWC-2017/18-16**).

### Element 3

#### Preventive Measures and Multiple Barriers

Preventive measures are detailed in the scheme risk assessments as 'Existing Control Measures'. NSW Health in their submission to the audit mentioned that there had been cross-connections over the audit period, so these were considered during the audit in most detail.

The control measures for a cross-connection in the Sydney Water system are as follows:

- Sewage Treatment Plant (STP) treatment processes, primary disinfection, maintenance of chlorine residual
- NSW Fair Trading plumbing requirements (incl. cross connection checks, occupancy certification)
- Sydney Water Asset Inspection program (6 monthly)
- Sydney Water reservoir security systems (alarms, 24-hour response, restricted access, locked hatches, multiple doors, 5 yearly diver inspection)
- STP chlorine residual
- Sydney Water in system recycled water rechlorination
- Sydney Water in system compliance monitoring program (incl specified points & parameters)
- Sydney Water ability to flush network with potable water
- Sydney Water compliance water quality monitoring program (weekly, monthly, 6 monthly and yearly)
- Sydney Water online monitoring of chlorine residual leaving STP
- Sydney Water specific WQ complaints handling SOP in recycle water areas (e.g. personal visits, checks for cross-connections etc.)
- Sydney Water /STP 24/7 telemetry/call out process (ops & maintenance)
- Sydney Water incident management procedures (incl SIPs & ERPs)
- Sydney Water flow testing and visual inspection on all properties prior to installation of meter
- Sydney Water air gap on potable water top up at in-system recycled water storages
- Check valves on water meters
- Sydney Water documentation of recycled water and potable water network
- Sydney Water drinking water compliance monitoring program (incl. conductivity testing in potable networks)
- Backflow prevention maintenance program (annual testing)

With dual reticulation schemes the main control is maintaining log reductions for protozoa, virus and bacteria. This is calculated to maintain an average residual risk across the population of less than  $10^{-6}$  DALYs (Disability Adjusted Life Years) per person per year. DALYs for a disease or health condition are calculated as the sum of the Years of Life Lost due to premature mortality in the population and the Years Lost due to Disability for people living with the health condition or its consequences. The AGWR states that in determining the log reductions required cross-connections represent a significant portion of the exposure associated with dual reticulation. In the exposure assessments it assumes that up to one person per 1000 could have a cross-connection.

*SW flow testing and visual inspection on all properties prior to installation of the meter* is the main onsite control measure to prevent cross-connections in Sydney Water's network. There has been a delay in implementing this control measure over the audit period, there was a backlog of inspections of over two years. In clearing the backlog of inspections, a cross-connection from Sydney Water's recycled water main to the drinking water meter was identified on 21/11/17 (INC-18669). As a result of



this incident a family were supplied recycled water for over two years instead of drinking water. The incident report stated that the family had no noticeable health issues and were given contact details for NSW Health, as per NSW Health's requirements.

The backlog of inspections was anecdotally cleared as of July 2018. Sydney Water has stated that *the main to meter inspections* are now conducted at the same time as new mains are disinfected. As a check, a weekly report is generated to ensure that the main to meter flow tests have been completed. If any property is identified as not having completed a main to meter test it will be immediately scheduled to have the main to meter flow test conducted.

Controls for cross-connections within residential properties are addressed reactively by Sydney Water based on customer complaints. Other controls are education and third-party controls such as NSW Office of Fair Trading plumbing controls.

Although Sydney Water did not implement their testing program in a timely fashion, it is still within the acceptable risk for a scheme of this nature. However, control measures must be implemented as specified in the RWQMP, therefore, all properties must be tested for cross-connections prior to supply of recycled water and a hold point established (REC-SWC-2017/18-03). Checklists are completed at the plants to demonstrate that the Process and Equipment Monitoring Procedure is used and a record

# is maintained.

# Critical Control Points

Critical limits are monitored using online instruments and SCADA. There were no critical limits triggered over the audit period. Critical limits in SCADA were checked to ensure consistency with the Product Specification. It was noted that some did have small time delays. It is normal that critical limits have a numeric value and time, this reduces false alarms as a result of spikes in the analyser. However, if they are to be used the delays should be specified in the documentation. At present the delays are only up to 2 minutes. Specify the time delays in CCP and OCP critical limits (**OFI-SWC-2017/18-17**).

UVT is now being analysed as part of CCP 2. The instrument has been validated by the manufacturer down to a UVT of 70%. The feed at Rouse Hill, at the time of the site inspection was 71.9%, lower than the low alarm, the critical limit is set at 70%. However, it was noted that the instrument in the field had a plate on it which stated a UVT of 75%. It is unclear what this value represents, and it appears to contradict the validation report. Clarify why the UV reactor has a plate on it with a UVT of 75% and clear up the contradiction between the instrument and the validation report (OFI-SWC-2017/18-18).

# Element 4

**Operational Procedures** 

Records are maintained for the implementation of the Process and Equipment Monitoring Procedure:

• Daily Checklist – Rouse Hill WRP

• Daily Checklist – stage 2 – Rouse Hill WRP

Process meeting minutes are maintained:

• Process Meeting Minutes – Rouse Hill WRP -14-06-18

• Process Meeting Minutes - Rouse Hill WRP-19-04-18

BMI is used store plant procedures, all of the UPG procedures were observed during the interviews.

Operational Monitoring Online operational data is stored in Sydney Water's SCADA PDMS system (database). SCADA trends were viewed during the site audit.

Operational monitoring undertaken by the operators is entered in to SCADA Central. The system was observed onsite and an extract of data was provided for June 2018.

Corrective Action

No CCPs failed to operate as required over the audit period. Whilst onsite SCADA trends were observed and it could be seen that the interlock worked, operating the penstock and diverting non-compliant water from the Deep Bed Filters to the wetland when required.

Corrective actions due to observations and grab sample monitoring could be seen documented on the comments section of the Daily Checksheets.

Equipment Capability and Maintenance

Calibration and maintenance records were provided as evidence:

- MAXIMO Work orders Example for Calibration and Maintenance Rouse Hill WRP
- Calibration Record Chlorine Analyser Rouse Hill WRP
- Materials and Chemicals

Records were provided to support the chemical delivery procedure:

- Delivery Docket Sodium Hypochlorite Rouse Hill WRP
- 2018 Composite NaOCL HRL report #18-0577-07
- Certificate of Compliance Alum February 2018
- OS0015 Bulk Chemical Data Capture and Assessment

Whilst onsite bulk chemical delivery processes were reviewed and it was evident that the procedures are being followed.

# Element 5

# Recycled Water Quality Monitoring

Sydney Water stores all the verification monitoring data. Data generated by the labs is saved in the LIMS. Data is then uploaded to Sydney Water's Business Intelligence System (BI).

Data for June 2018 was reviewed and based on the sample of evidence review the monitoring program is being adhered to. The data did show that sample site RHRW04 had no detectable chlorine and the HPC count was >5700 CFU/mL. There is no limit for HPC and total coliform were not detected, the water is in specification, but does indicate stagnation. *Application site and receiving environment monitoring* 



Application site monitoring is not undertaken by Sydney Water, therefore there is no discussion on this item in relation to this licence clause.

Documentation and Reliability

As discussed above the Sydney Water monitoring has been documented into a monitoring program. Monitoring is undertaken by Sydney Water's NATA accredited laboratory, as documented in section 5.2.1 of the RWQMP, which meets the reliability requirements of the AGWR.

Satisfaction of Users of Recycled Water

There were no complaints regarding the quality of recycled water over the audit period.

CMS entries were viewed for a cross-connection at Waterford Av on 29/1/2018. Cross connections are categorised as a drinking Water Complaint, as the customer is calling about the quality of the drinking water, although the cause of the issue is a cross-connection with the recycled water. From this event it could be seen that the procedures had been followed and contact had been made with the customer within an hour, based on the comments. The actual timeline in the CMS didn't seem to be correct, the time of the initial complaint was after the face-to-face meeting.

It is inconsequential whether cross-connections are logged as a drinking water or recycled water complaint, however it may be beneficial to have the sub category as Recycled Water Cross-connection instead of 'Other – Drinking'. This would allow better tracking of this issue and feedback into the recycled water risk assessments (**OFI-SWC-2017/18-19**). *Short-term Evaluation of Results* 

Sydney Water produces monthly and quarterly reports for internal and external stakeholders (e.g. NSW Health, Recycled Water Customers) for recycled water verification monitoring results. These reports provide the short-term evaluation of results. All monthly performance reports, NSW Health quarterly licence grab sample reports are stored in SWIM. These reports are reviewed and discussed at the quarterly JOG meetings.

The Rouse Hill Recycled Water Quality Trend report is a rolling 3 year trending of recycled water quality and is a useful visualisation of the performance of the recycled water scheme. This is produced monthly.

A Scorecard is produced monthly to track performance of the drinking, water and recycled water systems, the Network Performance Report. The main indicator for recycled water is the amount of drinking water used to top-up the recycled water schemes, this is an indirect way of monitoring recycled water treatment performance. When the recycled water plants are out of specification water is diverted to environmental discharge. The Network Performance report only shows TDS in relation to recycled water quality. Consider increasing the range of recycled water performance indicators in the Network Performance Report, such as those used for drinking water, as this would assist RWQMP review process (OFI-SWC-2017/18-20). *Corrective Responses* 

Non-conformances in relation to water quality grab sampling data are reported through daily exception reports (EKAMS). Daily exception notifications are sent to relevant internal stakeholders via EKAMS actions databases. This will trigger a corrective action if required. The Daily Process Meeting Minutes were provided as evidence of this being undertaken. BI exceptions was a standing agenda item.

It was observed during the site inspections that Water Quality Scientist receives water quality issues in the network via text. If the water quality issue requires a change in the disinfectant residual this can be changed via an app on a mobile phone. Note it is not a direct adjustment in the SCADA set point, it generates a work order for the Rechlorination Team to adjust the dosing. During the site visit at Rouse Hill it could be seen that the operators were competent and understood the treatment processes.

### Element 6

There were no declared Sydney Water incidents or emergencies at any of Sydney Water's RWPs in 2017/18.

There were five notifiable events that were reported in the SWIRL database. This is a database that is accessible by Sydney Water, Water NSW and NSW Health, which promotes transparency between organisations. A turbidity exceedance event that occurred on 21/04/2017 at Rouse Hill WRP was provided as an example, INC 15750. During the interviews a cross-connection incident (21/11/2017, INC-18669) was viewed in SWIRL and the record indicated that NSW Health had been notified on the same day as the cross-connection was identified.

NSW Health have indicated that they are satisfied with Sydney Water's notification of incidents during the audit period. The Recycled Water Notification Contacts List appears to be up to date.

Incident and Emergency Managing Protocols

For those reportable events that occurred during the audit period, based on the evidence supplied protocols were followed.

A joint exercise program between Sydney Water, WaterNSW, and NSW Health is developed routinely. An exercise was undertaken during the audit period (Hume), the post exercise report was provided as evidence.

A cross-connection incident occurred at the North Head Waste Water Treatment Plant (WWTP) on 8 June 2018. The North Head WWTP produces recycled water for exclusive use on site i.e. for various plant processes (e.g. cleaning scrubbers), as such is not in the scope of Sydney Water's RWQMP (out of audit scope, however, is a relevant issue). The North Head WWTP recycled water was cross-connected with the drinking water within the plant. Sydney Water confirmed that the cross-connected drinking water was not fed into the drinking water network that supplies customers. North Head drinking water reservoir only supplies the plant. The reservoir has an air gap as a control on the drinking water inlet main, which ensures no backflow into Sydney Water's drinking water network.

The Incident (SWIRL) (INC-21862) and Investigation (Excel) Reports in relation to the cross-connection at the North Head WWTP was provided to demonstrate how such other related incidents are investigated and how lessons learnt process works. The investigation was consistent with Sydney Water's protocols and appropriate actions were undertaken to rectify the issue.

# Element 7

Operator, Contractor and User Awareness and Involvement

Sydney Water raises awareness of the consequence of system failure through scheme Risk assessment workshops, this was confirmed by the workshop attendance sheets.

Agenda and minutes for the Recycled Water Forum were provided as evidence to demonstrate recycled water awareness training. The managers, operators, contractors, end-users and network representatives have completed the online training on RWQMP for



Rouse Hill. Training records were provided for these schemes for RWQMP e-learning packages developed and for the RWQEMP.

BCRs are trained in scheme specific RWQMPs E-training program, records provided. Irrigators and industrial recycled water users are visited every 6 months to ensure continued awareness and an onsite checklist is completed. *Operator, contractor and End-user Training* 

Qualifications, skills, and experience requirements are listed on staff position descriptions. Position descriptions and resumes of staff were provided as evidence.

Staff also receive external training on Recycled Water Management such as IWES courses. BCR require broad skills in the water industry to manage Recycled Water Supply Agreements on behalf of Sydney Water. These skills are outlined in their position descriptions. An example of the qualifications obtained was provided, TAFE Water Operations Certificate.

Area Water Quality Scientists are developed through a dedicated program that involves practical hands on training and a competency-based program run alongside experienced Water Quality Scientists as per procedure PB0001 Development and Succession Planning for Area Water Quality Scientist. Reviews of their performance are documented to improve their understanding and performance, an example was provided.

#### Element 8

Information aiming to communicate with and educate the community is published on the Sydney Water website on topics such as appropriate end use for residential customers, benefits of water reuse and recycling, extent of water recycling programs across the network (via irrigation, industrial and environmental re-use).

There are fact sheets for residential customers focusing on the benefits of using recycled water and on appropriate end uses. Fact sheets and web pages state that water is not for drinking.

Sydney Water also sends out information to new customers who move into a residential recycled water area. A letter and an information brochure are sent out to make customers aware of what recycled water is and how it can be used. A sample letter was supplied as evidence.

In 2017-18, Sydney Water delivered school and public education tours on our sites to young professionals, university and high school students, community, staff and industry stakeholders to learn about the urban water cycle, including recycling, sustainable water management and water recycling treatment technology and innovation.

#### Element 9

#### Validation of Processes

Sydney Water completed the first scheme LRV verification (Liverpool WRP) in 2016 and the last scheme (Picton WRP) was due in August 2018. This meant that full LRV verification should be completed on all fourteen (14) RWPs. LRV verification results and detail validation / design of CCP parameters were updated after this process in the scheme RWQMP. Details of the verification is in section 9 of the RWQMP and Appendix A. The program has been presented to the JOG in the quarterly Update of Recycled Water Quality Management Plan Review.

The LRV verification at Rouse Hill showed that when using the 5<sup>th</sup> percentile 5.4, 5.9, 6.7 (protozoa, virus, bacteria) LVRs could be demonstrated. The targets for the scheme are 5.1, 6.5, 5.3 (P,V,B), which was 0.5 log short for virus. However, there was insufficient influent concentration to calculate the required LVR, treatment processes removed 100% of the influent pathogen concentrations.

As part of the UVT implementation project Sydney Water also undertook verification validation of the UV systems at Rouse Hill, Castle Hill Wollonggong and Gerringong Gerroa RWPs. The validation used native pathogens and pathogen indicators. However, the concentrations of the native microorganisms were generally too low to validate the systems at the desired LRVs. The methodology used to determine the LRVs for the UV reactors did not appear to follow a recognised guideline. The average LRVs were used and in one instance the sum of multiple analyses was used, influent and effluent, to calculate LRV. This by no means shows the UVs cannot achieve the desired LRVs, only that the conditions were not right to demonstrate it. When claiming an LRV for a process the 5<sup>th</sup> percentile should be used, as specified in the *Guidelines for validating treatment processes for pathogen reduction: Supporting Class A recycled water schemes in Victoria* (Victorian Department of Health, 2013), as specified in the Sydney Water *Recycled Water Treatment Detailed Verification Monitoring For Pathogen Reduction* procedure. (**OFI-SW-2017/18-21**)

#### Design of Equipment

An example was provided of specific R&D, Sydney Water completed the trial of six (6) online UVT analysers, which was one of the improvement actions in the Recycled Water Improvement Register. The trial project validated and assessed the instruments accuracy, reliability and response time to process change. The trial identified the best online UVT instrument and it was then recommended for installation and commissioning at the WRPs.

Investigative Studies and Research Monitoring

During the LRV verification for each treatment processes for each WRP, Sydney Water also validated the chlorine disinfection process using aspects of the Victorian Dept. of Health Guidelines for Validating Recycled Water and/or US EPA Disinfection Profiling and Benchmarking Technical Guidance Manual. Each scheme RWQMP provides details of the C.*t* validation in section 9.0. Through this process Sydney Water has also developed a C.*t* model for each WRP, which was sighted during the audit. This model can be used to calculate C.*t* under given conditions, to ensure the required LVRs are achieved and was used in developing the chlorine disinfection CCP critical limits.

#### Element 10

### Management of Documents and Records

The Integrated Management System was viewed onsite, including the version control, change request, review date, review frequency features. Key records are maintained in systems such as MAXIMO, SWIRL, SWIM, Compass, SCADA central, which were viewed onsite.



The currency of documents is monitored against agreed KPIs and reported monthly to stakeholders and management (examples were provided – CD dashboard report and networks performance report June 18).

Whilst onsite, although there are multiple systems for documents and records, staff could retrieve them effectively and the sample of procedures reviewed onsite were current.

### Reporting

Monitoring performance of key processes criteria and regular reporting occurs at all levels. Sample reports seen were: Network Performance Report and the Group Executive CD Dashboard Report

A number of quarterly reports are specified in the Health MoU and these are tabled at the JOG.

External compliance reports are specified by the IPART Reporting Manual. An annual report is also produced for consumers and published on Sydney Water's website.

### Element 11

Long Term Evaluation of Results

The procedure for preparing the Quarterly Recycled Water Quality Reports, with data assessment, was provided. The procedure for compiling the report for NSW Health each quarter was provided. The water quality reports were also provided. These reports include analyses involving a 12-month rolling window of data in addition to the relevant quarter's data.

Audit of Recycled Water Quality Management

The documented procedure for internal audits was also seen (SDIMS0010). The list of completed IMS audits in 2017-18 was provided as evidence. The audit report for Cascade WFP was provided, good level on investigation was undertaken for the audit. BMIS was viewed onsite to verify how audit reports and findings are recorded and improvement actions tracked.

Sydney Water has a number of recycled water supply agreements with business customers. Sydney Water's assigned BCR meet with these end users on a 6-monthly basis to confirm they are complying with the purchaser controls contained within their supply agreement. This confirmation is in the form of a meeting with the end user rather than an independent audit. During these 6-monthly meetings, the end user is asked to confirm they are implementing each of the required controls. An example of Compliance Inspection Reports (CIRs) has been provided as evidence.

Sydney Water confirmed this approach with NSW Health via the "Operational audit 2016-2017 water quality recommendations". In addition to the 6-monthly meetings, Sydney Water requires end users to provide an annual statutory declaration, confirming their implementation of the controls. Sydney Water then reviews these statutory declarations to verify the implementation of the controls. An example of an annual declaration was provided as evidence.

Inspections of residential properties are conducted by plumbing inspectors, which is regulated by the Office of Fair Trading. Sydney Water conducts a cross-connection checks of all properties in a recycled water area, if there is a water quality complaint. This was verified during the site inspections with the AWQS.

### Element 12

### Review by Senior Managers

The Management Review Procedure was provided. The Annual Management Review for 2017 occurred on 31 January 2018. The calendar invitation for the review meeting and minutes were provided as evidence. In addition, JOG and SLG meetings, DC dashboard reports to Group executive team and monthly water performance meetings provide a level of executive reviews. Relevant agenda (17 May 18), minutes (18 May 18) and CD dashboard report (June 18) were sighted as evidence.

Recycled Water Quality Improvement Plan

The Product Management Improvement Framework (BMIS0214) and the Product Management Improvement Register (Excel), were sighted.

The following strategic improvement initiatives have been closed out during the audit period:

- 4 year rolling risk assessment and RWQMP review
- UVT monitoring and interlocks

At the strategic level, there are improvement items that were not closed out in this audit period. However, these are identified as having a target closing date later than the end-date of the audit period in the Product Management Improvement Register. There were a number of items open at the end of the reporting year and it is unclear why not all of the open items in the register and items that were closed out in the period were not reported in the Annual Recycled Water Quality Management Compliance and Performance Report. The Product Management Improvement Register does not look like it is regularly maintained.

There are also a number of items in the Recycled Water Scheme Improvement Register that have slipped passed the due date. There is no real justification for this and there is no priority on the action items. It would be beneficial to prioritise action items, low priority items may only be undertaken where time and budget is permitting, however high priority items would always be completed within a specific timeframe.

The Product Management Improvement Register and Recycled Water Scheme Improvement Register must be maintained and priority items closed out within an appropriate timeframe. Set priorities for improvement items and timeframes for each priority and ensure that improvements are completed and reported on in accordance with their priority. It is recommended that the Recycled Water Scheme Improvement Register includes/notes the following, in addition to the existing details:

- column for priority level to determine a timeframe which is risk based (new column)
- date action was identified column (currently only in the DW strategic tab of the Register, make uniform)
- target finish date column, from initial assessment (already captured, maintain)
- revised date column to assign a revised finish date, if required, following progress meetings (new column)
- commentary or comments column to note progress on actions and where necessary justification and reasoning for not meeting the original target finish date assigned (already captured, note). (REC-SWC-2017/18-04)

### Recommendations

The following recommendations have been identified in respect of this obligation: **Element 3**:

- Element 3:
- REC-SWC-2017/18-03: All properties must be tested for cross-connections prior to supply of recycled water and a hold point established.

### Element 12:

- REC-SWC-2017/18-04: The Product Management Improvement Register and Recycled Water Scheme Improvement Register must be maintained and priority items closed out within an appropriate timeframe. It is recommended that the Recycled Water Scheme Improvement Register includes/notes the following, in addition to the existing details:
  - column for priority level to determine a timeframe which is risk based (new column)
  - date action was identified column (currently only in the DW strategic tab of the Register, make uniform)
  - target finish date column, from initial assessment (already captured, maintain)
  - revised date column to assign a revised finish date, if required, following progress meetings (new column)
  - commentary or comments column to note progress on actions and where necessary justification and reasoning for not meeting the original target finish date assigned (already captured, note).

#### **Opportunities for improvement**

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

Element 2:

• OFI-SWC-2017/18-16: Identify and document some general triggers for re-visiting or reviewing the risk register in between the 4year review period. These could include for example, changes to the water quality criteria, significant scheme changes, an incident or emergency, an unscheduled/unplanned stoppage of production or supply.

Element 3:

- OFI-SWC-2017/18-17: Specify the time delays in CCP and OCP critical limits.
- OFI-SWC-2017/18-18: Clarify why the UV reactor has a plate on it with a UVT of 75% and clear up the contradiction between the instrument and the validation report.

Element 5:

- OFI-SWC-2017/18-19: It is inconsequential whether cross-connections are logged as a drinking water or recycled water complaint, however it may be beneficial to have the sub category as Recycled water cross-connection instead of 'Other – Drinking'. This would allow better tracking of this issue and feedback into the recycled water risk assessments.
- OFI-SWC-2017/18-20: Consider increasing the range of recycled water performance indicators in the Network Performance Report, such as those used for drinking water, as this would assist RWQMP review process.

#### Element 9:

• OFI-SWC-2017/18-21: When claiming an LRV for a process the 5<sup>th</sup> percentile should be used, as specified in the *Guidelines for* validating treatment processes for pathogen reduction: Supporting Class A recycled water schemes in Victoria (Victorian Department of Health, 2013), as specified in the Sydney Water Recycled Water Treatment Detailed Verification Monitoring For Pathogen Reduction procedure.



Sub- Clause	Requirement		Compliance Grade
2.3.1	Sydney Water must comply with the Fluoridation Code.		
			Compliant
RiskTargetNon-compliance with this sub-clause poses a risk that SydneyFlucWater is not achieving best practice in the establishment and operation of its fluoridation plants to meet the requirements of the Fluoride Code and prevent under/overdosing of fluoride in drinking water for the benefit of public.Fluc2012 mate		<b>Target for full compliance</b> Fluoridation systems and a practices comply with the fluoridation of public wate the fluoridation code was i 2018). For the auditing pur materially different from th	ee associated operational/management NSW Code of practice for er supplies 2011. A new revision of assued during the audit period (April rpose, this new revision is not he previous version.
Evidence sighted			
2018-BW011 Stor	age of fluoridating agent at Sydney Water Filt	ration Plants	
Veolia - Y18-0001	70-01 Storage of fluoridating agent at Veolia	Water Filtration Plants	
Macarthur - 22051	8 Storage of fluoridating agent at Macarthur V	Vater Filtration Plant	
Prospect - FROM	HEALTH_110919 Prospect fluoride storage		
List with dosing ca	apacities provided to NSW Health for 9 WFPs		
WTCS5012 Proc	utes JOG meeting 20 August 2018	))	
WTCS5012 – Process and Equipment Monitoring (Cascade WFP) WTCS5012 02 – Daily Bourda Visual Chaoldigt (Cascade WFP)			
WTCS5012.02 -D	– Water Monitoring Log Sheet (Cascade WFP	)	
DOC0542 - Proce	ss Decision and Abnormal Water Quality Mon	itoring WI	
Prospect - OHS-03	4L Workplace Inspection Chemical Building	Office Amenities. Issue 5	
Macarthur -MAC-	WI-P006 Loading of Powdered Sodium Silico	fluoride	
North Richmond -	DS100 Specific Technical Specification – Re	v 4	
WPIMS5228 Drin	king Water Quality Event Management Plan		
Compass Drinking	Water Quality Event Management Training R	eport - 140818	
BI-ALL PLANT 8	am Fluoride Result 2017-18		
BI-Fluoride Result 2017-18 Treated Water and Networks			
ORCHARD HILLS_Form 5 Interruption of Fluoride dosing 24 Feb 2018			
NEPEAN Form 5 Interruption of Fluoride dosing 28 Feb 2018			
OCS5002_Fluoride Audit Procedure			
OCS5002.01_Fluoride checklist August 18			
OCS5002.02 Fluoride Audit Schedule			
Summary of reasons for grade			
Sydney Water was assessed as being Compliant for this sub-clause. It has demonstrated compliance with the NSW Code of			

# 2.2.8. Water Quality Fluoridation Code (2.3.1)

Sydney Water was assessed as being Compliant for this sub-clause. It has demonstrated compliance with the NSW Code of practice for fluoridation of public water supplies 2011 from the evidence provided and sighted, and from onsite discussions and observations.

### Discussion and notes

Sydney Water fluoridates their WFPs (including BOO plants). Regular communication is maintained with NSW Health on levels of fluoride in the drinking water through performance reporting of CCPs (fluoridation is a CCP).

Relevant aspects of the Fluoride Code were considered as an audit sample to assess Sydney Water's compliance with the Fluoridation Code. These are discussed below:

### Chapter 1-3

Information on the Code - no auditable outcomes.

#### Chapter 4

During the plant visit to Cascade WFP, relevant staff were aware of the key design control measures to prevent under and over dosing of fluoride (flow switches upstream and downstream, and SCADA alarms).

### Chapter 5

It is ensured that the dosing capacity of the fluoride dosing equipment does not exceed 110% of the target dose rate. Sydney Water has confirmed with NSW Health that 110% of the target dose rate refers to the maximum design flow rate of the WFP. Sydney Water then verified and confirmed with NSW Health that the current settings for the pumps are set not to exceed 110% of the target dose rate of 1.0 mg/L. Evidence for all current pump settings for all 9 WFPs was provided to NSW Health and they were satisfied with it (although outside the audit period - JOG draft minutes 20 Aug 18).



Sydney Water's fluoride audit checklist (Chapter 14 discussed later) includes an assessment of whether the value is limited to 110% of the operating target dose rate. Hence there is a process to check that this is maintained, in the rare case of unauthorised changes to settings or pump sizes.

The plant operator performs daily fluoride system checks to ensure fluoride is dosed within the target range. SCADA alarms are also used to monitor system performance to ensure targets are met. A fluoride check each morning is undertaken to confirm fluoride concentration. The morning result is also provided to NSW Health monthly. Plant operators also perform daily visual and SCADA checks to verify dosing range and identify any anomalies. SCADA alarms are set to alert operators when fluoride set points are triggered.

The design of the fluoride plant provides a safe working environment (signage, bunding). Sydney Water also uses good Personal Protective Equipment (PPE) practices to ensure operator safety. This was observed during the site visit to Cascade WFP. There was also a water trap observed for preventing corrosive hydrofluosilicic acid fumes. An item in the monthly and daily safety inspection checklist ensures that water traps are checked and remain filled (WTCS5012.02 - Daily Rounds Visual Checklist Cascade WFP). There was a day tank and a weighing platform for it at the Cascade WFP.

Access to the fluoridation room is restricted through provision of a locked door. The pipes were marked with the fluoride chemical name and directional arrows were present. Sydney Water follows and specifies Fluoride Code of Practice when performing pipework pertaining to fluoride. Evidence for this was provided - Technical spec for renewing fluoride chemical dosing pipework at North Richmond.

### Chapter 6

Sydney Water provides a safe working environment and safe working practices for the plant operators (also discussed above under Chapter 5). The use of dust mask is undertaken at Prospect WFP and Macarthur WFP. Both plants have a checklist to ensure dust mask filters are replaced after 13 weeks. The checklists were sighted as evidence.

#### Chapter 7

The fluoridation plants (equipment and design) minimise the risk of fluoridating agent spills or leaks, and in case of a spill or leak it is designed to contain it to prevent harm (there is appropriate bunding). The Daily Rounds Visual Checklist also ensures that safety is maintained.

#### Chapter 8

Chemical quality is controlled as discussed under Clause 2.1.1 Element 4. This ensures that there are no impurities in the fluoridating agent to harm public health.

NSW Health has confirmed that it is satisfied with the long-term procurement contracts Sydney Water and the BOO WFPs have in place and that supply risk is low. It is thus exempted from having minimum of three months storage onsite. Sydney Water calculated their current storage and has submitted a formal letter to NSW Health to formalise the arrangement. NSW Health indicated satisfaction (JOG meeting draft minutes 20 Aug 18). Letters submitted to NSW Health and the JOG draft meeting minutes Aug 18 were supplied as evidence. NSW Health had formally provided response to Prospect WFP in 2011 (letter seen).

#### Chapter 9

Testing equipment is available to test fluoride, and these are calibrated. Calibration of equipment in general was discussed under clause 2.1.1 Element 4.

#### Chapter 10

Sydney Water uses an operating target of 1 mg/L. Fluoridation is a CCP and appropriate controls are implemented to ensure that there is no under or overdosing. Results for 2017-18 period showed that fluoride performance was very good, and there was no overdosing incident.

The operators at the Cascade WFP have the relevant qualification and training to operate fluoride plants.

A fluoride overdose response plan is available in Sydney Water's DWQEMP (Section 9). The response plan was written following consultation and discussion with NSW Health and was also submitted to Health for review and endorsement. Training and awareness sessions were rolled out to all fluoride plant operators (evidence was provided on training participants and dates).

### Chapter 11

Routine fluoride performance data is provided to NSW Health (reports and JOG/SLG meetings).

Exception reports are also provided as required. There were two instances where fluoridation was ceased due to maintenance: Orchard Hills - 24-27 Feb 18 (fluoride turned off due to a leak in the dosing system) and Nepean WFP - 27 -28 Feb 18 (fluoride turned off due to temporary pipe replacement work. Woronora had a full plant shutdown on 25 January 2018. No drinking water was provided during this time. Form 5 was submitted to NSW Health in relation to periods of no fluoridation and/or repairs / maintenance for Orchard Hills and Nepean events.

#### Chapter 12

The operators at the Cascade WFP have the relevant qualification and training to operate fluoride plants (as discussed under Chapter 10). In addition, operators receive other training e.g. incident management (discussed in Chapter 10).

### Chapter 13

Sydney Water maintains appropriate records, e.g. plant log sheets, SCADA and SCADA central.

#### Chapter 14

Sydney Water has an audit schedule in place for fluoride plants. No internal audit was undertaken during the operating licence audit period. Sydney Water has recently revised its audit questionnaires to ensure it includes detailed questions relating to Chapter 5. The revised questionnaires have been submitted to NSW Health. An external fluoride audit has been planned for end of 2018/early 2019. The audit procedure, checklist and audit schedule were sighted as evidence.

#### Recommendations

There are no recommendations identified in respect of this sub-clause.



### **Opportunities for improvement**

There are no opportunities for improvement identified in respect of this sub-clause.

# 2.2.9. Water Quantity - Economic Level of Water Conservation (3.2.6)

Sub-Clause	Requirement		Compliance Grade
3.2.6	By 1 September 2017, Sydney Water must develop a water conservation program consistent with its economic level of water conservation and in accordance with the methodology approved by IPART under clause 3.2.3. [ <i>Note: The water conservation program will be outlined in the first</i> <i>Water Conservation Report, which is to be submitted to IPART by</i> <i>1 September 2017 in accordance with clause 3.2.1 of the Reporting</i> <i>Manual.</i> ]		Compliant
Risk		Target for full compliand	er has developed a water
that water conservation measures implemented by		conservation program cons	sistent with the approved
Sydney Water may not be economically effective.		methodology.	

### **Evidence sighted**

Letter dated 21 December 2016 from IPART to Sydney Water (re: Approval of Sydney Water's Methodology for Determining its Economic Level of Water Conservation).

Sydney Water, Determining Sydney Water's Economic Level of Water Conservation; Part A: The ELWC Methodology, 20 December 2016.

Sydney Water, Water Conservation Report; 2016-17, undated.

Email dated 31 August 2017 from Sydney Water to IPART and IPART response (re: Transmittal to IPART - Sydney Water OL Compliance and Performance reports 2017-18 (1 September package)).

Sydney Water, Sydney Water; Water Conservation Report; 2017-2018, undated.

#### Summary of reasons for grade

Sydney Water demonstrated that it had developed a Water Conservation Plan (program) consistent with the approved methodology. The Plan is documented in the 2016/17 Water Conservation Report, which also details how the methodology was applied, a description of the planned projects and an estimate of the expected water savings (based on the current value of water). Performance against and a review of the Plan is documented in the 2017/18 Water Conservation Report (prepared subsequent to the audit period).

Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

### **Discussion and notes**

Sydney Water provided a copy of a letter advising of IPART's approval of the methodology for determining the economic level of water conservation pursuant of clause 3.2.3 of the *Operating Licence*. It also provided a copy of the document *Determining Sydney Water's Economic Level of Water Conservation; Part A: The ELWC Methodology*.

The 2016/17 Water Conservation Report, which was submitted to IPART on 1 September 2017 (confirmed by IPART), includes details of a 5-year Water Conservation Plan (program) and how it was developed using the approved methodology. Water Conservation Plan projects include:

- Ongoing projects:
  - Water efficiency Waterfix residential;
  - Water efficiency Waterfix strata;
  - Water efficiency PlumbAssist;
  - Water efficiency Supporting and research and development projects; and
  - Leakage Active Leak Detection Program
- To be implemented in 2017/18 (subject to business case/funding approval Water efficiency Rainwater Tank Repairs.
  - More viable with an increase in the value of water:
  - Water efficiency Council partnerships;
  - Water efficiency Development and Business Customer Services Online Monitoring;
  - Water efficiency Development and Business Customer Services Efficiency Audits; and
  - Water efficiency -Love Your Garden

Each initiative is described and the predicted water savings over 5-year forward program (based on the current value of water) identified.

The 2017/18 Water Conservation Report, which was submitted to IPART on 1 September 2018 (i.e. after the audit period), shows performance against the Plan during 2017/18 and a review of the Plan for the next (rolling) 5-year period (based on the current value of water).

It is noted that water savings resulting from the use of recycled water is acknowledged, but not included as part of the program. This is principally due to the fact that no new schemes are currently planned and that the levelised costs are greater than the

current value of water.

#### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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

# 2.2.10. Water Quantity - Economic Level of Water Conservation (3.2.7)

Sub-Clause	Requirement		Compliance Grade
3.2.7	Sydney Water must report to IPART, in accordance with the Reporting Manual, on water conservation.		Compliant
Risk		Target for full compliance	ce
Failure to comply with this obligation presents low risk in respect of Sydney Water's operational performance; however, in the absence of monitoring and reporting there is a moderate risk that water conservation measures may not be effectively implemented. Evidence that Sydney W of water conservation in <i>Manual</i> , and more specifi matters identified in the submitted on time.			cordance with the <i>Reporting</i> cally, that the report addresses the <i>eporting Manual</i> and that it has
Evidence sighted			
IPART, Sydney Water Reporting Manual; Operating Licence 2015-2020 (Issue No: RM-SWC-V7), 31 August 2017. Sydney Water, Water Conservation Report; 2016-17, undated. Email dated 31 August 2017 from Sydney Water to IPART and IPART response (re: Transmittal to IPART - Sydney Water OL Compliance and Performance reports 2017-18 (1 September package)). Sydney Water, Sydney Water: Water Conservation Report: 2017-2018, undated			
Summary of reasons for grade			
Sydney Water demonstrated that it had reported to IPART with respect to water conservation (Water Conservation Report) during the audit period as required by the <i>Reporting Manual</i> . Review of the 2016/17 Water Conservation Report confirmed that it addressed each reporting requirement to the extent applicable and that the report was submitted in accordance with the specified timeline.			
Discussion and no	otes		
The <i>Reporting Manual</i> sets out the matters that must be addressed in a report with respect to water conservation (Water Conservation Report) that must be submitted annually by Sydney Water. Reporting requirements vary in some respects following approval of the methodology for determining the economic level of water conservation pursuant of clause 3.2.3 of the <i>Operating Licence</i> . The <i>Reporting Manual</i> also acknowledges that the Water Conservation Plan may not be fully implemented and may still be subject to change at the time that the first report subsequent to approval of the methodology is submitted. The <i>2016/17 Water Conservation Report</i> was submitted to IPART on 1 September 2017 (confirmed by IPART), as required by the <i>Reporting Manual</i> . The <i>Report</i> identifies the section(s) in which the various requirements of the <i>Reporting Manual</i> have been addressed.			
Review of the <i>Report</i> reveals that it addresses each of the requirements of the <i>Reporting Manual</i> , with the exception (as acknowledged by Sydney Water) of the requirement to:			

"... describe and explain Sydney Water's progress against each of the elements of its water conservation program for the previous financial year (or for the period the Methodology was approved if approved during that financial year), including any deviations from this program."

As the Water Conservation Plan (program) was not required to be developed until 1 September 2017, the date by which the *Water Conservation Report* was required to be submitted, it follows that Sydney Water was not able to report progress against each element of the Plan at that time.

The 2017/18 Water Conservation Report, which relates to water conservation during the 2017/18 financial year (i.e. the audit period), was submitted to IPART on 1 September 2018 (i.e. after the end of audit period). Although not reviewed in detail, this appears to appropriately address the requirements of the Reporting Manual, including progress in implementing the various elements of the Water Conservation Plan.

# Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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



# 2.2.11. Assets - Asset Management System (4.1.1)

Sub-Clause	Requirement		Compliance Grade
4.1.1	By 30 June 2018, Sydney Water must develop a Management System that is consistent with the International Standard ISO 55001:2014 Asset Management System - Requirements (the Asset Management System).		Compliant
RiskTarget for full complianceFailure to develop its Asset Management System to be consistent with ISO 55001:2014 presents a risk that Sydney Water may not be able to effectively manage the safe and reliable performance of its assets consistent with contemporary asset management practices.Target for full complianceEvidence that Sydney Water has developed its Asset Management System such that it is consistent with ISO 55001:2014.Evidence that Sydney Water has developed its Asset Management System such that it is consistent with ISO 55001:2014.			ce ter has developed its Asset that it is consistent with
Evidence sighted Sydney Water responses PowerPoint presents Asset Management Asset Management Asset Management Asset Management Asset management D0000875Asset Project Implement Asset Management AMQ0049 Wate AMQ0049 Wate AMQ0021 SPS AMQ0122 WPS AMQ0120 Resert AMQ0123 WFP AMQ0113 WW AMQ0119 Contri Decision Framewor	onse to 2017/18 Operational Audit Questionna ation: <i>Sydney Water' Asset Management Syste</i> System documentation: egic Asset Management Framework (SAMF). gic Asset Management Plan (SAMP). ent Policy approval. Management Policy. ent objectives (see page 19 of the SAMP). Management System narratives. Intation Plan – AM Framework and ISO 55001. (Master) Plans: r main AMP. r main AMP. AMP. AMP. AMP. TP AMP. TP AMP. rol and Monitoring System AMP. ks: water main DE	ire. em (AMS).	
<ul> <li>AMQ0100 Retic water main DF.</li> <li>AMQ0035 Critical water main DF.</li> <li>AMQ015 Avoid fail sewer DF.</li> <li>AMQ0139 Dry weather overflow DF.</li> <li>AMQ0552 Reservoir DF.</li> <li>AMQ0136 Above ground pipeline DF.</li> </ul>			
<ul> <li>System Blueprints:</li> <li>Greater Parramatta to Olympic Servicing Strategy 2016-2046</li> <li>Nepean Water System Blueprint 2016-2046</li> <li>Orchard Hills and Cascade Water System Blueprint 2016-2046</li> <li>Training:</li> <li>ISO55000 requirements training 20 Oct 2017 (email)</li> <li>Asset Management System implementation plan (page 22 Training &amp; Support Approach)</li> </ul>			
Summary of reason	ns for grade		lation to the second
Sydney Water demonstrated that it has developed its Asset Management System (AMS) such that it is consistent with the requirements of ISO 55001. The AMS, which encompasses a portfolio of processes and supporting documentation, effectively details the manner in which Sydney Water manages its asset management activities in accordance with its Strategic Asset Management Plan (SAMP), under the umbrella of its adopted Asset Management Framework. The Asset Management Framework is consistent with international asset management practice, thereby providing a strong basis for compliance with the requirements of ISO 55001.			
Accordingly, it is as	ssessed that Sydney Water has demonstrated f	ull compliance with this ob	ligation.

# Discussion and notes

<u>Overview</u>

During the audit period, Sydney Water worked progressively in developing its AMS to ensure that it is consistent the provisions



of ISO 55001:2014. It is apparent that this has been achieved through a process of evolution, not reinvention, the result of ongoing continual improvement.

To guide development and the certification of its AMS, Sydney Water prepared a *Project Implementation Plan* that identified the key planning, governance and change management requirements. Prepared following completion of a gap analysis in May 2017, the *Project Implementation Plan* outlined two project Stages:

- Stage 1 (AMS Build Phase) considered to have been completed at the end of June 2018, this phase involved planning and design of the AMS; building of the AMS and key supporting artefacts; and demonstrating consistency with ISO 55001.
- Stage 2 (AMS Implementation Phase) to be implemented during the year July 2018 to June 2019, this phase involves administration and governance of the AMS implementation; preparation for and undergoing external audits (including certification audits); delivery of communication and change activities; and management of the AMS (including performance review, risk assessment, internal audit, management review, business planning and continual improvement); and transitioning to Business as Usual operation.

The updated *Project Implementation Plan*, prepared at the end of June 2018, includes an assessment of status (key deliverable summary) in respect of Stage 1. This indicates that all measures required to develop an AMS consistent with ISO 55001 had been completed and endorsed under the adopted governance arrangements.

Key elements of the implementation plan are the arrangements in respect of project governance and change management. Strong and effective governance arrangements have been developed, with roles and responsibilities for the development of the AMS and supporting documentation, and the review, endorsement and approval of technical deliverables clearly defined. These arrangements, which will be broadly applied as part of Sydney Water's approach to the management of its assets, are discussed further below.

An assessment completed in early 2018 concluded that, reflective of the extent of process changes involved, effective implementation of the ISO 55001 consistent AMS would require careful change management and justified the engagement of a qualified full time change management practitioner. A change impact assessment was completed and a change readiness assessment undertaken. To communicate and make staff ready for the change, a comprehensive training and support program was being developed as at June 2018; whilst AMS awareness (e-Learning modules) required minimal change, more extensive training required attention. Sydney Water has also developed a communication and engagement action plan; it is noted that several communications to staff were scheduled for the third quarter of 2018 to ensure staff are updated on project implementation and management responsibilities under ISO 550001, and will continue throughout 2018 and up to project certification the second quarter of 2019.

A detailed assessment of consistency with the requirements of ISO 55001 is presented (and has been monitored) through a set of *AMS Narratives* developed by Sydney Water. This document identifies each clause of ISO 55001 and provides a supporting narrative and list of evidence that demonstrates compliance with the specific requirements. All elements of ISO 55001 are covered, including context of the organisation, leadership, planning, support, operation, performance evaluation and improvement. Based on Sydney Water's self-assessment, as at the end of June 2018, all elements had been effectively addressed. Although some processes and documentation had not yet been finalised, it is not considered that these outstanding matters compromise an assessment that the AMS is generally consistent with the requirements of ISO 55001.

Further assessment of consistency of the AMS with the requirements of ISO 55001 is based on information presented by Sydney Water during the audit interviews and review of a sample of AMS and supporting documentation. Selected elements are discussed in the following.

# Strategic Asset Management Framework (SAMF)

Sydney Water advised that it has developed a series of processes, systems, practices and plans that aim to ensure its assets are optimally delivering the services demanded by customers and regulators, both now and into the future. Together these form the *SAMF* which incorporates business, service and asset planning, asset creation, operations, maintenance, renewals and disposal of assets, along with key enablers of people, information and systems.

Sydney Water further advised that the SAMF is an adaption of the Institute of Asset Management's (IAM) model that meets the requirements of ISO 55001:2014 and is also consistent with the Water Services Association of Australia (WSAA) Asset Management Assessment Framework and NSW Treasury Total Asset Management (TAM) Guidelines.

Key elements of the adopted SAMF include (1) Organisation and people; (2) Product and asset strategy and planning; (3) Product and asset management decision making; (4) Lifecycle delivery of assets (including acquisition, operation, maintenance and disposal); (5) Asset information; and (6) Risk management and performance improvement. Sydney Water's

Sydney Water's commitment to the management of its assets, in accordance with the principles of the SAMF and the detailed arrangements presented in the *SAMP*, is encapsulated in its *Asset Management Policy*.

# The Strategic Asset Management Plan (SAMP) and Supporting Documentation

The *SAMP* is a central document to Sydney Water's AMS. Its purpose is to articulate Sydney Water's strategic plan in relation to managing its infrastructure ("the assets"). It provides a link between the organisational context and strategy, the Asset Management Policy, and Sydney Water's asset management processes and plans.

More specifically, the SAMP:

- summarises Sydney Water's organisational context and overarching business strategy;
- defines the objectives in managing the assets and the links between those objectives and the organisational objectives;
- defines the AMS, including definition and elaboration of the key elements of the SAMF; definition of the scope of the AMS in respect of asset class boundaries, geographic area boundaries, business function boundaries, contractual arrangement boundaries and business processes; and definition roles and responsibilities; and

references the plans and processes that underpin the SAMP and its implementation.

The processes outlined in the SAMP are underpinned by an extensive portfolio of documentation, including but not limited to, Asset Management (Master) Plans, Decision Frameworks and System Blueprints. Review of a sample of these reveals that they provide effective guidance and support for management of the assets. For example:

- Asset Management Plan 2015-2020; Reservoirs describes the approach taken to the planning, creation, operation, maintenance, renewal and disposal of reservoirs and outlines a 30-year capital and operating investment program to manage the risks associated with this class of assets. More specifically, it documents:
  - An overview of the existing assets.
  - Performance capability requirements, including regulatory requirements, and corporate performance requirements.
  - $\circ$  Future capacity demand, including allowance for growth and the impact of climate change.
  - o Current asset performance against regulatory and corporate requirements, including financial performance.
  - Life cycle management of the assets, including identification of the management strategy and details in respect of each lifecycle component.
  - An analysis of issues and gaps.
  - Strategy and strategic action plan.
  - Investment requirements.
  - Planned actions in respect of performance monitoring and review.
- Decision Framework Water Service Reservoirs Major Periodic Maintenance (MPM) describes a 'decision logic' and 'assessment criteria' to underpin the selection, evaluation and approval of reservoir renewals or rehabilitation. This decision framework relates specifically to the inside of reservoirs, including internal lining systems and roof support structures. A business process that incorporates decision logic is outlined in both flow chart and step-by-step activity description formats. Guidance for the initiation of actions based on condition assessment (degree of corrosion) is also included.
- Orchard Hills and Cascade Water Systems Blueprint 2016-2046 in summary, documents the current state of this water delivery system, the forecast future state and a 5-year action plan. More specifically, document provides an overview of the system and an assessment of current system performance; identifies strategic risks, issues and opportunities, describes the tiered approach implemented to define the problem and develop strategic responses; and outlines a blueprint for the future management of the system including an action plan based on identified monitoring triggers and future investment plans (5-year and 30-year).

# Leadership and Commitment – Project Governance

Sydney Water has developed a three tiered leadership/governance model that is implemented in respect of the management of the assets. This comprises:

• The Board (business owner) which is responsible for stewardship of Sydney Water, and is supported in fulfilling this obligation by the Executive (asset owner) and the Planning and Infrastructure Committee (PIC).

The Executive has a responsibility to oversee and monitor the direction and performance of the AMS in meeting the asset management obligations and corporate objectives; endorse the asset management policy and asset management obligations; and set AMS accountabilities.

The PIC monitors and reports to the Board on compliance of the AMS with regulatory requirements.

The abovementioned *Asset Management Policy* was signed and endorsed by the Managing Director (the Executive), which demonstrates that the Executive has fulfilled this obligation.

• The Executive Sponsor (AMS owner) is accountable for the AMS, and responsible for the implementation and review of the asset management policy. The Executive Sponsor is also the conduit between (and a member of) the Product and Asset Leadership Group (PALG) and the Executive.

The roles and responsibility of the PALG are set out in the *Terms of reference for the Product & Asset Leadership Group* (*PALG*). This leadership group has collective accountability for product and asset capability across the business and sets the direction to meet the corporate strategy. The terms of reference were self-endorsed (by the PALG) and approved by the Executive Sponsor.

The PALG is supported by the Product Leadership Group (PLG), comprises senior product management practitioners that ensure effective implementation of product management policies and practices across the business, and the Asset Management Forum (AMF).

The roles and responsibility of the AMF (or EAM Forum) are set out *Terms of Reference for the Enterprise Asset Management Forum*. In summary, this group comprises senior asset management practitioners from across the asset management value chain; it is responsible for identifying, prioritising and recommending actions for asset management improvement capability.

• Functional Process Councils and Working Groups (service providers) represent the service providers and are accountable for review and improvements activities associated with delivering asset management plans. These groups liaise with/inform the AMF.

The *AMS Narratives* (section 5.1) documents the status in respect of leadership and commitment as at the end of June 2018. This indicates that the *Asset Management Policy* has been endorsed by the Managing Director (the Executive), as reported above. It also indicates that the SAMP and AMOs (Asset Management Objectives) are to be endorsed by the Executive for approval by the General Manager LCS (Liveable City Solutions), who is the Executive Sponsor (AMS owner) and a member of the Executive. Records in the SAMP indicate that it was endorsed by the Head of Service Planning and Asset Strategy, who is also chair of the



PALG; this is considered appropriate, although not consistent with the commentary presented in the Narratives.

Other examples of governance implementation include (as reported above) self-endorsement of *Terms of reference for the Product & Asset Leadership Group* by the PALG and approval by the Executive Sponsor; and endorsement of the *Terms of Reference for the Enterprise Asset Management Forum* by the PALG and approval by the executive Sponsor.

Evidence of leadership and commitment to ISO 55001 cascading from the PALG to lower levels of the organisation was evident during the site inspections. Staff interviewed verbally conveyed information on the asset management activities they perform and the business processes they follow, which was consistent and aligned with documentation provided for review. Staff explained how the ROM (reliability operability and maintenance) team members/engineers participate in Sydney Water maintenance process councils and the renewals process council. They also confirmed that ROM and operations staff work closely together; the operations team perform day-to-date routine checks whilst the ROM team manages the ongoing maintenance and reliability of assets.

Field staff also confirmed their knowledge of the implementation of the AMS consistent with ISO 55001, which had been communicated to them from the head office. Formal training was, however, yet to be provided.

# Asset Management Improvement Plan

Sydney Water provided a copy of the *Asset Management Improvement Plan*, which outlines the business protocols surrounding the management of continual improvement initiatives and provide a record of agreed priority improvement initiatives and their status. The associated *Asset Management Improvement Plan Register* provides a record of each agreed priority improvement initiative, details of the project scope, and the assignment of accountability and responsibility. Each initiative is mapped to Sydney Water's asset management objectives.

# Performance Evaluation and Improvement

Commitment to continual improvement was observed when discussing asset management activities with a staff member who provided an example of the response to a failure of a drainage pump at a wastewater treatment plant. In addition to replacing the defective pump, conduct of a root cause analysis demonstrated that there was a high risk that all three drainage pumps were likely to fail simultaneously as they were always operated at the same time and therefore had similar run times. Pump operation was altered and optimised to improve maintenance reliability, so that the three drainage pumps had different run times and failure was unlikely occur simultaneously, thereby reducing the risk treatment process failure.

This example was an initiative of the monthly ROM meetings which involve plant reliability, operations and maintenance staff. The strategy and approach to alter and optimise the process for improved maintenance reliability was shared with Service Planning and Asset Strategy staff the Asset Management Council, so that lessons learned could be shared across the business. Sydney Water presented various excerpts from the new enterprise wide asset reporting dashboard which helps make up-to-date key asset management data more visible to the organisation. The dashboard included asset performance, asset risk and asset reliability metrics. The Asset Management Forum and Maintenance and Process Council are the primary audience and they will most frequently use the available data.

### <u>Summary</u>

In summary, Sydney Water demonstrated that it has developed its AMS such that it is consistent with the requirements of ISO 55001. The AMS, which encompasses a portfolio of processes and supporting documentation, effectively details the manner in which Sydney Water manages its asset management activities in accordance with its SAMP, under the umbrella of its adopted Asset Management Framework. The Asset Management Framework is consistent with international asset management practice, thereby providing a strong basis for compliance with the requirements of ISO 55001.

### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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

# 2.2.12. Assets – Asset Management System (4.1.2)

This sub-clause is covered in a separate report. Completion of this obligation, which requires certification of Sydney Water's Asset Management System, is not required until 30 June 2019; however, IPART requested that a separate report on the status of implementation be provided.

# 2.2.13. Assets – Asset Management System (4.1.5)

Sub-Clause	Requirement	Compliance Grade
4.1.5	<ul> <li>Until the Asset Management System has been developed in accordance with clause 4.1.1, certified in accordance with clause 4.1.2(a) and implemented in accordance with clause 4.1.4:</li> <li>a) Sydney Water must continue to maintain and implement the</li> </ul>	

	b)	asset management framework that was required to be maintained and implemented by Sydney Water under the licence that was the immediate predecessor to this Licence (the Asset Management Framework), to avoid doubt, until the Asset Management System has been developed in accordance with clause 4.1.1, Sydney Water may only make changes to the Asset Management Framework that will assist in the transition of the Asset Management Framework that to the Asset Management System; and		
	0)	Reporting Manual, of any significant c make to the Asset Management Frame	hanges that it proposes to work.	
Risk			Target for full compliance	ce
Failure to comply presents a high lev health, the enviror meet its business of	with the day of of of the day of	he requirements of this obligation operational risk in respect of public and the ability of Sydney Water to ves.	Evidence that Sydney Wat implement the Asset Mana	ter has continued to maintain and agement Framework.
<b>Evidence sighted</b>				
Sydney Water resp	ponse	to 2017/18 Operational Audit Questionn	aire.	
Asset Managemen	ii Syste	em documentation:		
<ul> <li>AMQ0234 Stra</li> <li>D0000876 Stra</li> </ul>	ategic A tegic A	Asset Management Framework (SAMF). Asset Management Plan (SAMP).		
AMQ0033 Ass	et Mar	nagement Policy.		
Asset Manager	nent In	nprovement Plan.		
Asset Managemen	it (Mas	ster) Plans:		
<ul> <li>AMQ0049 Wa</li> <li>AMQ0022 S</li> </ul>	ter mai	in AMP.		
<ul> <li>AMQ0032 Sev</li> <li>AMQ0122 WP</li> </ul>	ver ma	IN AMP. D		
<ul> <li>AMO0021 SPS</li> </ul>	S AMP	1. )		
<ul> <li>AMO0120 Res</li> </ul>	ervoir	AMP.		
<ul> <li>AMQ0123 WF</li> </ul>	P AM	Р.		
• AMQ0113 WV	WTP A	MP.		
AMQ0119 Control and Monitoring System AMP.				
Decision Framework - AMQ0552 Reservoir.				
Maintenance records:				
Cascade WFP				
Condition History	for Sy	dney Water Cascade WFP WT0041MIX	X3202 Rapid Speed Mixer N	lo.2 Motor.
Work orders:				
• 75973174 Residual Chlorine Analyser, - / Operations / 1 Month.				
• 75483045 Non PMO - Chlorination Equipment - Chlorine Residual Analyser Mech – PM.				
• 73054053 Safety - repair leaking pipe work over GPO in laboratory.				
Maximo records:				
• WT0041 PM 10053956 WO Records.				
• WT0041 Blowers CoF and CAG.				
WT0041 Existing Pipework Concepts in ART.				
WT0041 Pipe Work Inspection PM Record.				
Parklag				
<u>runneu</u> AIS Reservoir inspection RS0/40 various since 2016				
AIS Kesei voli Inspection_KS0449, various since 2010. AIS Water SHID inspection_RS0449, various since 2017				
AIS WPS inspection WP0290 various since 2016				
ANO WES Inspection_wE0290, various since 2010. AMO0120 - Asset Plan - Reservoirs				
AMO0552- Decision Framework Reservoirs				
WS00327 Coating Inspection				
WS00337 Improvement to Level 1 process				
WS00337 Improvement to Level 2 process.				
WS00337 Level 1 Inspection Report 2013				
WS00337 Parklea Reservoir WS0337 Level 2 Inspection GHD 2014				
WS00337 Parklea WS0337 Level 1 Inspection Report 2007.				



WS00337 Parklea WS0337 Level 1 Inspection Report 2017.

Rouse Hill Water System Schematic.

SWC Asset Services Inspection Manual\_extract\_section 9 SHID.

WD1Z/RD1Z Inspection reservoir/dam – internal – diver/robotics operations.

WP1Z/RP1Z Structural/civil inspection of dewatered Reservoir/dam -internal.

Parklea mixers – email describing run to fail operation.

<u>Rouse Hill RWP</u>

20170816 (Weekly Plant meeting Minutes).

20180314 (Weekly Plant Meeting Minutes).

August 17 Cattai Hub Maintenance Meeting Minutes 190717.

Backlog report for Rouse Hill and Castle Hill 17-08-2017.

Facility Failures Data ST0024 - CastleHill 201701 Jul17.

Facility Failures Data ST0031 - RouseHill 201701 Jul17.

Lub Run - Route JP ST0031LUBAREA602-V1 (Centrifuge included).

Maintenance strategy for RW pump and Centrifuge.

MPM Sample Clarifier at RouseHill.

PM Sequence by Facility.

Sample calibration records.

UV Units (UV Minor Service) PM level 10048290.

#### NSW Health identified issue

Letter dated 17 August 2018 from NSW Health to IPART (re: Sydney Water Corporation's performance against its Operating Licence during the 2017-18 audit period).

Document: SWIRL INC-18259 (ACT-3354) Potential cross contamination from shared process equipment.pdf.

Document: AR0000688 Action Request in BMIS.pdf.

Sydney Water, Drinking Water Management Manual (Revision 3), 27 July 2018.

Sydney Water, Operational Risk Assessment Report; Nepean Water Filtration Plant - 2017 (Version 2.0), 31 May 2018.

Sydney Water, Agenda; WFPs operational risk assessment Improvement Actions Planning Workshop (for meeting held on 24 October 2018).

MS Excel workbook: Treatment Actions all WFPs - Knowrisk 2017- with references numbers - Update – 241018.xlsx. Sydney Water, Minutes and Actions; WFP Know Risk 2017 Action – Rotable Parts Cross-contamination (WW to Water Plants) Meeting #1 (meeting held on 30 October 2018).

PowerPoint presentation: DWQ RWQ update - 20 Nov JOG\_BB\_MO.

#### Summary of reasons for grade

It is apparent that Sydney Water has continued to maintain the *Asset Management Framework* whilst it has developed and transitioned to an AMS consistent with ISO 55001. Any changes to Sydney Water's approach to the management of its assets has been the result of continual improvement and refinement of its system as it has transitioned to be consistent with the requirements of ISO 55001; there has been no significant changes that warranted specific notification to IPART.

On the basis of observations made during both the audit interviews and field verification visits, it is apparent that Sydney Water has continued to implement sound asset management practices consistent with the arrangements detailed in the Asset Management Framework. Field staff, principally members of the ROM (reliability operability and maintenance) team, demonstrated a high level of 'ownership' and pride in their work and it was apparent that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

Accordingly, it is assessed that Sydney Water has demonstrated full compliance with this obligation.

#### Discussion and notes

#### <u>Overview</u>

Sydney Water manages its assets in accordance with its *Asset Management Framework*, which sets the strategic direction for the management of its assets. As reported in Section 2.2.11, the *Asset Management Framework* is supported by the *SAMP*, a series of Asset Management Plans (now referred to as Master Plans) and other supporting documentation and processes. The *Asset Management Policy* promotes Sydney Water's commitment to the managing the life cycle of assets to achieve a desired level of service and financial return within an acceptable risk framework.

Pursuant to its obligations under the 2015-2020 Operating Licence and as also reported in Section 2.2.11, Sydney Water has developed its current asset management practices such that its AMS is consistent with the requirements of ISO 55001:2014.

For the purposes of assessing compliance with this obligation, which requires that Sydney Water continues to maintain and implement the Asset Management Framework (that was in place under the previous Operating Licence) until an ISO 55001 compliant AMS has been certified and implemented, consideration has been given to both maintenance of the Framework and the implementation of effective asset management practices.

### Maintenance of the Asset Management Framework

The latest revision of the SAMF was approved in September 2015, approximately 3 months into the term of the current 2015-



2020 Operating Licence. This document has previously been assessed to appropriately detail Sydney Water's the approach to managing its asset portfolio consistent with the obligations set in Schedule 2 of the Operating Licence.

The *SAMP*, a principal component of the new AMS which is dated 28 June 2018, states that the *Asset Management Framework* is superseded by the AMS and the SAMP. Notwithstanding, the principles enunciated in the SAMF, i.e. the framework that defines the scope of asset management, remains applicable.

In developing the AMS to be fully consistent with ISO 55001:2014, Sydney Water has mapped and updated each of its core asset management activities and business functions, as documented in the SAMF, to the various elements of ISO 55001. These have then been reflected in the SAMP, thereby ensuring that all elements are effectively addressed and the attributes of the previous system maintained. As suggested in Section 2.2.11, development of an ISO 55001 consistent AMS has been achieved through a process of evolution, not reinvention, and is reflective of ongoing continual improvement.

An example of the transition of documentation and processes to meet the defined requirements of the AMS relates to the asset class management plans, previously known as Asset Management Plans, but now called "Master Plans". These lower-level management plans provide high-level strategic planning activities for a specific context (regional, product or asset) over the long term. They set the strategic need for system plans, product plans, asset plans and sub-regional plans, and include artefacts covering topics such as: planning need, gap analysis, options assessment/adaptive pathway, design standards, build needs, operational change needs, basis of planning and knowledge improvement. Sydney Water has twenty-six Master Plans covering:

- Product Master Plans: water, energy, waterways and bio-resources;
- Asset Master Plans: asset reliability, monitoring and control, water filtration plants, water pumping stations, water storages, water mains, wastewater treatment plants, wastewater pumping stations, sewer mains, stormwater; and
- Region Master Plans: Western Sydney, Central Sydney, Eastern Sydney and the Illawarra.

Several Asset Management Plans, which covered the planning period 2015-2020, were provided for review (refer commentary in Section 2.2.11). These plans were most recently revised circa 2015 (in preparation for the last Pricing Determination) and are currently undergoing an update as part of the implementation of the AMS.

Sydney Water advised that the implementation of the AMS has resulted in asset management planning now being conducted as part of ongoing business practice, with planning based around issues and opportunities. Outputs are refined and incorporated into business plans and included in Sydney Water's issues and opportunities register. Strategic asset management improvement initiatives are recorded in the *Asset Management Improvement Plan Register* (refer Section 2.2.11 for further discussion) In summary, it is apparent that Sydney Water has continued to maintain the *Asset Management Framework* whilst it has developed and transitioned to an AMS consistent with ISO 55001. Any changes to Sydney Water's approach to the management of its assets has been the result of continual improvement and refinement of its system as it has transitioned to be consistent with the requirements of ISO 55001; there has been no significant changes that warranted specific notification to IPART.

# Implementation of Asset Management Practices

Implementation of the Asset Management Framework and the specific processes and practices that it encompasses was assessed:

- from the corporate/system management perspective on the basis of information presented by and discussions with Sydney Water personnel during the audit interviews; and
- from a practical perspective on the basis of observations made, discussions with field personnel and the explanation and demonstration of Sydney Water's practices and its maintenance management system.

# Implementation – System Perspective

Implementation of the Asset Management Framework from a system perspective is discussed (in part) in Section 2.2.11. Continual improvement, managed in accordance with the Asset Management Improvement Plan, and the implementation of robust leadership/governance processes are key examples.

Another example relates to development of the asset knowledge base, specifically the capture of asset condition data. Sydney Water advised that asset condition data is typically received within 1-3 days of a condition assessment being undertaken. Entry of asset condition data is usually undertaken immediately. The entry of asset condition data from condition reports into Maximo (the maintenance management system) can only be undertaken by the asset management team.

Delivery partners (contractors) have some limited permissions in Maximo to add new asset data, and can access validated data and view planned preventative maintenance schedules entered by Sydney Water, but are unable to provide other input. Standardised asset codes have been rolled out across Sydney Water. This initiative commenced implementation in 2012/13; legacy asset codes are still maintained within the database, and in some case on site labels.

# Field Implementation

The field verification visits undertaken as part of the audit enabled the auditors to inspect a range of assets, make observations regarding their condition and discuss asset management practices and their implementation with the field staff. Discussions were held primarily with Reliability Team Leaders, (Maintenance) Service Delivery Officers and an Operation and Maintenance Coordinator.

On the basis of the observations made, the inspected assets were found generally to be in good condition. A number of observations led to enquires in respect of maintenance and renewal planning and a review of maintenance records to ensure that condition and performance is being appropriately managed. In each case, Sydney Water was able to demonstrate how it fulfils its asset management obligations, with a focus on specific selected assets.

A sample of the items/assets in respect of which the auditors sought explanation, including the provision of maintenance and/or planning records, are as follows:

Cascade WFP – Rapid Mix 2 ME3202. This mixer was observed to be noisy. Sydney Water provided a condition analysis



report prepared by the maintenance service provider, which indicated that vibration analysis was conducted and minor problems may exist, with a bearing the cause of the fault; notwithstanding, the mixer remains serviceable. Sydney Water advised that asset condition reports provided by service providers are loaded into Maximo so that reports can be generated to inform future maintenance, including renewal/refurbishment, requirements that may include predictive maintenance.

Cascade WFP – linear assets. Surface corrosion was observed on sections of air scour pipework, which led to an enquiry
in respect of the maintenance of linear assets. An extract from Maximo demonstrating that inspections on pipework were
conducted every 6 months. Expenditure allocated in previous financial years was provided for a chemical pipework
upgrade and the renewal of SDB pipework.

With regard to blowers, which are considered linear assets, the consequence of failure (CoF) and Condition Asset Grade (CAG) for the blowers was also provided, for which all blowers had a CoF of negligible (1) and a CAG of 3. Condition assessments are updated as part of the routine 6-monthly inspections.

Linear assets can be assigned maintenance and rehabilitation budgets. Reporting on linear assets is undertaken by creating a concept in the TIBCO/ART platform. The condition reports are then discussed at as part of monthly reporting meetings and at workshops.

- Cascade WFP safety management items. Sydney Water advised that safety management has been the greatest priority in recent years. Work Order 73054053 Safety repair leaking pipe work over GPO in laboratory was reviewed and it was noted that it did not contain any work procedures; it did, however did include a priority rating and scheduled date. This is considered reasonable given the ongoing scope of work since the chemical pipework upgrade would be unknown. Furthermore, the work required would be standard practice for a qualified practitioner.
- Cascade WFP Chlorine Analyser ARC5365. Work orders for both operations and maintenance of the chlorine analysers were provided. These described the required operation and maintenance procedures/work instructions and the implementation frequency, e.g. monthly calibration (operations) and 6-monthly mechanical and electrical maintenance. Criticality and scheduled dates were also listed on the work order. Calibration history was provided, however, was had only been undertaken every two months (not monthly as shown on the work order and Maximo description). Maintenance history has two entries approximately six months apart, which demonstrates that maintenance is undertaken as scheduled.
- Parklea Potable Water Storage (WS0337) AIS reservoir inspection records & inspection procedures. During the site inspection, the auditors undertook several spot checks of the vermin barrier under the roof sheeting. The barrier was observed to be missing at one location adjacent to the chlorine mixer hatch. Staff verbally advised that 10 randomly selected locations are checked as part of each routine inspection, which is consistent with the inspection procedure. Review of records for inspections undertaken in January and July 2018 confirmed that no issues had been identified or action required.

Level 1 reservoir maintenance inspection reports (internal inspections) were provided. The timing of the Level 1 inspections/reports (approximately every 5 years) matched the identified requirement in the *Reservoir Asset Management Plan.* The rehabilitation of reservoirs is justified on the basis of the Level 1 reports, and observations may trigger conduct of a Level 2 inspection and structural assessment.

During the site inspection, staff advised that the need to reline walls and repair corrosion issues within the water storage which was a result of the Level 2 assessment conducted in 2015. The reservoir was refurbished, and the bitumen coating was replaced with an epoxy coating in 2016. This decision was guided by the *Decision Framework – Water Service Reservoirs – Major Periodic Maintenance (MPM)*, an overview of which is provided in Section 2.2.11. Sydney Water also provided evidence of suggested improvements to Level 1 and Level 2 inspection processes, in response

to which changes were accepted based on lessons learned for WS0337. *Parklea Potable Water Storage (WS0337) – potable water mixers R337.* Sydney Water advised that mixers at reservoirs are run to fail assets with a design life of 15-20 years, and therefore do not have scheduled preventative maintenance. If a mixer fails, an alarm is triggered in the IICTAS monitoring system and a work order to inspect and repair the mixer would be issued. If the mixer is not repairable, the asset would be replaced on a like-for-like basis.

A sample work order, issued in response to a fault, was provided. In this case (Work Order #72480485) a power fault was identified and remedied.

Rouse Hill RWP – Maintenance. During the site inspections, the auditors sought an explanation regarding how
maintenance is managed at the plant. Sydney Water advised that a contractor was responsible for undertaking preventative
maintenance. The reliability team meets with the preventative maintenance contractor weekly to discuss plant issues. Two
examples of weekly meeting process meeting minutes were provided. Topics included discussion of operational
preventative maintenance, review of operational maintenance reports from Maximo and BI, the weekly maintenance
backlog report and key items in the fortnightly backlog meeting.

An example backlog and failures lists, which included a description, reporting data, priority and priority response date, was provided; the backlog status appeared to be consistent with that typically observed. Examples of condition assessment data reports and calibration records were also provided.

- Rouse Hill RWP UV disinfection PM level (10048290). The auditors reviewed Maximo entries in respect of the UV units. It was noted that the maintenance frequency requirement had been changed from quarterly to monthly. Upon further analysis, the reliability staff confirmed that the intended maintenance regime comprised servicing one of the three units each month, such that unit is service every three months. The change has been made when following the award of a new maintenance contract. Maximo was updated to reflect the intended approach, which the auditors consider appropriate.
- Rouse Hill RWP Example job plans and maintenance strategy. Sydney Water provided example job plans covering
  mechanical maintenance for items including aerators, pumps, centrifuges, mixing tanks and conveyors. The maintenance
  strategy for the centrifuge and recycled water pumps was provided, including relevant matching PMs and job plans.
  Further detail on major preventative maintenance for the clarifiers included historical and forecast expenditure, budgeting



notes and management measures.

Rouse Hill RWP – preventative maintenance schedule. A copy of the preventive maintenance schedule covering the entire facility was provided. The schedule included PM codes, a description of the required work, estimated time inputs, maintenance frequency, job plan numbers and relevant dates relating to work orders.

Whilst some minor issues were identified in relation to the timely performance of maintenance activities and a previously unidentified localised failure of the vermin barrier on a potable reservoir roof, these are not considered to be reflective of any failure to implement effective asset management practices. The practices being implemented are consistent with leading industry practice and do not warrant any further observation or action from the perspective of this audit.

More specifically:

- Issues in relation to the timing of maintenance activities had either been addressed or remained consistent with typical maintenance practices.
- The localised failure of the vermin barrier represented a negligible proportion of the total length of barrier in place at the reservoir (approximately 250 mm compared to 1,000 metres). Furthermore, any impact on water quality would be identified by water quality monitoring whilst re-chlorination at the site provides an additional level of protection.

During discussions with the field staff, principally members of the ROM team, they demonstrated a high level of 'ownership' and pride in their work and it was apparent that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role. It is understood (although not verified) that Sydney Water was recently the recipient of an Asset Management Award in respect of its asset maintenance practices.

### NSW Health Comments

In comments provided to IPART in respect of Sydney Water's performance during the audit period, NSW Health noted that: "In late 2017 Sydney Water became aware that a mixer motor from North Head Wastewater treatment plant was planned for installation at Orchard Hills Water filtration plant. There may have been an impact on water quality if the motor were installed. However, this risk was recognised and the motor was not installed. NSW Health understands that this situation was associated with a new spare parts management program."

Sydney Water advised/provided information to demonstrate that:

- The operator at Orchard Hills WFP detected that a mixer motor from a wastewater treatment was due to be installed at the Orchard Hills WFP. Although the risk to public health in this case was considered low as the motor would not have been in contact with the drinking water, the event raised broader concerns in respect the potential transfer and use of parts and materials from wastewater to drinking water installations, particularly where parts may come into contact with drinking water.
- A hazard was raised in Sydney Water's SWIRL incident recording and learning system (Incident No: INC-18259 and Action: ACT-3354) for assessment and action.
- The issue was elevated through an Action Request (No: AR0000688) and allocated to the Service Planning and Asset Strategy group. A review identified a policy gap in respect of the separation of parts used in wastewater and drinking water treatment plants, which was subsequently addressed and the *Drinking Water Quality Manual* updated accordingly.
- The Hazards and incidents were shared internally at the treatment management and production meetings in November 2017.
- The issue (cross contamination from wastewater to water due to shared rotable equipment/tools) was also identified through the annual risk assessment process and is documented in the *Nepean Risk Assessment Report*. Actions from the risk assessments were reviewed in a workshop held on 24 October 2018 (which was subsequent to the audit period); action in respect of this issue is planned to be complete by 30 June 2019.
- A meeting was held on 30 October 2018 to address potential issues within the supply chain.
- The actions taken in respect of this issue have been discussed with NSW Health, including at the November 2017 Joint Operations Group (JOG) meeting (for example).

The actions taken by Sydney Water demonstrate that:

- Operational/maintenance personnel are sufficiently aware to identify potential risks to water quality arising from asset management practices.
- Sydney Water's incident and risk management processes/procedures have been/are being appropriately implemented.

#### <u>Summary</u>

In summary, on the basis of observations made during both the audit interviews and field verification visits, it is apparent that Sydney Water has continued to implement sound asset management practices consistent with the arrangements detailed in the Asset Management Framework.

#### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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



Sub-Clause	Requirement	Compliance Grade
4.2.1	a) Sydney Water must ensure that, in any financial year, no more than 6,000 Properties experience a Water Pressure Failure (the <b>Water Pressure Standard</b> ).	
	b) A Property is taken to have experienced a Water Pressure Failure:	
	i. when 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	
	<ul> <li>when Sydney Water identifies that the Property has experienced a Water Pressure Failure (including through its data collection systems and hydraulic analysis).</li> </ul>	
	c) Despite clause 4.2.1(b), a Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of:	
	i) water usage in the case of a fire or other abnormal demand; or	
	<ul> <li>a short term or temporary operational problem (such as a main break) which is remedied within Four days of its commencement.</li> </ul>	Compliant
	d) For the purpose of the Water Pressure Standard:	
	i. each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property; and [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.]	
	ii. each Property that experiences one or more Water Pressure Failures in a financial year is to be counted once only in that financial year.	
Risk	Target for full complian	ce

# 2.2.14. Water Pressure Standard (4.2.1)

### Risk

Failure to comply with the requirements of this obligation Evidence that Sydney Water has achieved its Water Pressure presents a high risk to public health as it would indicate that Standard in the audit year. Sydney Water has failed to maintain an adequate level of service.

# **Evidence sighted**

Sydney Water, Operating Licence 2015-2020 Compliance and Performance Report; System Performance Standards Report 2017-18, undated.

Sydney Water, SDIMS Work Instruction for Investigating and Reporting Water Pressure Failure - Networks W&RWP Team (Version 2), 10 April 2017.

Sydney Water, Compiling Water Pressure Failure Data in Table 2; Work Instruction, 27 October 2015.

Sydney Water, Investigation and Reporting Water Pressure Failure; Service Delivery Integrated Management System (Version 2), 18 August 2017.

MS Excel workbook: BI - Water Pressure Report 2017-18 - 200718.xlsm.

Process flow chart: Water pressure customer complaint management process (Version 1), 21 October 2015.

Sydney Water, HYDRA Water Pressure Customer Rebate Process; Service Delivery Integrated Management System (Version 2.0), 10 October 2015.

Text document: HYDRA - Low Pressure Rebate Log - 090718.txt.

# Summary of reasons for grade

Sydney Water reported that 152 Properties had experienced a Water Pressure Failure during the 2017/18 financial year and demonstrated that the process used to determine the number of Properties was both robust and consistent with the definitions and exclusions set out in the Operating Licence. As the number of Properties that had experienced a Water Pressure Failure was less than the specified limit, Sydney Water is assessed to have been fully compliant with this obligation.



### Discussion and notes

Sydney Water reported that 152 properties had experienced a *Water Pressure Failure*, as defined in the *Operating Licence*, during the 2017/18 financial year. On this basis, Sydney Water is compliant with this obligation.

Sydney Water has documented procedures for determining the number of Properties that have experienced a *Water Pressure Failure*, including:

- Work Instruction for Investigating and Reporting Water Pressure Failure, which describes the method followed for investigating and reporting the number of properties that have received inadequate water pressure at the point of connection.
- Compiling Water Pressure Failure Data in Table 2; Work Instruction, which provides the instructions for compiling pressure failures so that the failures can be analysed and reported on. This process draws pressure gauge data from the IICATS BI IT system (SCADA system).
- Investigation and Reporting Water Pressure Failure; Service Delivery Integrated Management System, which provides the instructions for analysing data in the Water Pressure Report (also referred to as Table 2). Data is sourced IICATS (SCADA system), MAXIMO (maintenance management system) and HYDRA (GIS). This procedure references the minimum pressure requirement (15 metres) and period for which pressure must remain below the minimum (15 minutes) before being recorded as a Water Pressure Failure, consistent with the Operating Licence.

*Water Pressure Failure* analysis is based principally on pressures recorded by approximately 1000 gauges located across the network, typically at (or close) to local high points. These are generally logged every 15 minutes via IICATS, with online alarming for some installations. Sydney Water advised that it is considering the inclusion of pressure monitors with Customer meters to provide greater visibility of pressure performance.

Temporary gauges may also be installed in response to Customer complaints. Sydney Water advised that it receives approximately 80 customer complaints in respect of water pressure each year. Whilst some complaints are received following the implementation of pressure management works and some relate to Customer perception following a move to a lower pressure area, all are assessed and where necessary investigated. The *Water pressure customer complaint management process* flow chart outlines the process for addressing customer complaints.

*Water Pressure Failures* are determined and/or confirmed by comparing recorded pressures and the vertical offset to individual Properties, where the duration for which the inadequate pressure is experienced exceeds 15 minutes. The number of Properties affected is determined using contour polygons in HYDRA (GIS).

Review of the *Water Pressure Report* (MS Excel workbook in which the data is compiled and analysed) confirms to the extent possible that data has been robustly compiled. Checks made on data for the North Richmond Delivery System (for example) confirms that the maximum number of properties each affected each month has been correctly carried forward to the reported value. A check on data for the Potts Hill Delivery System reveals that, although not flagged on the basis of duration, compliant water pressure failures appear to have been captured on the basis of maintenance comments.

It is noted that, whilst it does not directly affect compliance with this obligation, Sydney Water has processes in place to determine when Customers are entitled to a rebate if they have experienced a *Water Pressure Failure*. This process is detailed in the *HYDRA Water Pressure Customer Rebate Process*; each instance is captured in a *Low Water Pressure Rebate Log* in which the date, location, minimum pressure, and number of properties affected/sent for rebate is recorded.

### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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

# 2.2.15. Water Continuity Standard (4.2.2)

Sub-Clause	Requirement	<b>Compliance Grade</b>
4.2.2	<ul> <li>a) Sydney Water must ensure that, in any financial year:</li> <li>i. no more than 40,000 Properties experience an Unplanned Water Interruption that lasts for more than five continuous hours; and</li> <li>ii. no more than 14,000 Properties experience there or more</li> </ul>	
	Unplanned Water Interruptions that each lasts for more than one hour (the <b>Water Continuity Standard</b> ).	
	b) 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 and the duration of the Unplanned Water Interruption.	Compliant
	c) 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 purpose of clause 4.2.2(a).	
	d) For the purpose of the Water Continuity Standard:	
	<ul> <li>each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property;</li> </ul>	



<ul> <li>Water Interruption that lasts for more than five continuous hours; and</li> <li>iii. for the purpose of clause 4.2.2(a)(ii), each Property that experiences, in a financial year, three or more Unplanned Water Interruptions that each lasts for more than one hour is to be counted once only in that financial year.</li> </ul>	
<ul> <li>ii. for the purpose of clause 4.2.2(a)(i) each separate instance, in a financial year, of a single Property experiencing an Unplanned Water Interruption that lasts for more than five continuous hours is to be counted as a separate Property that has experienced in that financial year, an Unplanned</li> </ul>	

Failure to comply with the requirements of this obligation presents a high risk to public health as it would indicate that Sydney Water has failed to maintain an adequate level of service.

Evidence that Sydney Water has achieved its *Water Continuity Standard* in the audit year.

### Evidence sighted

Sydney Water, Operating Licence 2015-2020 Compliance and Performance Report; System Performance Standards Report 2017-18, undated.

Sydney Water, Performance Indicator Sheet; SPS 2 – Water Continuity Standard OL 4.2.2a (i) – Number of properties that experience an unplanned water interruption exceeding 5 hours, (Version 1), 8 May 2018.

Sydney Water, Performance Indicator Sheet; SPS 3 – Water Continuity Standard OL 4.2.2a (ii) – Number of properties that experience 3 or more unplanned water interruptions exceeding 1 hour (Version 1), 8 May 2018.

Sydney Water, Integrated Management System; Field Reporting Guide; Service Delivery Integrated Management System (Version 1), undated.

MS Excel workbook BI - Water Continuity Standard - Property Compliance V1.3.4.xlsx.

MAXIMO Screenshot of records for: Work Order 73521251 WOR- WAHROONGA-@M TC2 RO hyd rewasher A/H 21.

### Summary of reasons for grade

Sydney Water reported that during the 2017/18 financial year 39,308 Properties had experienced an *Unplanned Water Interruption* for more than five continuous hours and that 7,491 Properties had experienced three or more *Unplanned Water Interruptions* of more than one hour, and demonstrated that the processes used to determine the number of Properties was both robust and consistent with the definitions and exclusions set out in the *Operating Licence*. As the number of Properties that had experienced an *Unplanned Water Interruption* was less than the specified limits, Sydney Water is assessed to have been fully compliant with this obligation.

### **Discussion and notes**

Sydney Water reported that during the 2017/18 financial year:

- 39,308 Properties had experienced an Unplanned Water Interruption that lasted for more than five continuous hours; and
- 7,491 Properties had experienced three or more *Unplanned Water Interruptions* that each lasted more than one hour; as defined in the *Operating Licence*.

Sydney Water has documented procedures for determining the number of Properties that have experienced Unplanned Water Interruptions, including:

- SPS 2 Water Continuity Standard OL 4.2.2a (i) Number of properties that experience an unplanned water interruption exceeding 5 hours; and
- SPS 3 Water Continuity Standard OL 4.2.2a (ii) Number of properties that experience 3 or more unplanned water interruptions exceeding 1 hour.

In each case, the indicator is defined consistent with the *Operating Licence*, the report to be extracted from MAXIMO and the BI (Business Intelligence) database is defined and the query information (data extract code) is presented. Specific data used includes: Work Order Number; Interruption Type; Duration (determined by analysis of Reported Date/Time; Actual Water Off Date/Time; and Actual Water On Date/Time); Problem Type; Task Code/Remedy Code; Third Party Indicator; and Property Count

Data used for analysis of *Unplanned Water Interruptions* is based on information recorded in Work Order reports, as captured in MAXIMO. The requirements for capture of the relevant data is detailed in the *Field Reporting Guide*, which provides guidance for completion of each field of the Work Order form (may also be captured via the new Field Mobility Platform, "Click" that is now being introduced). Review of the *Field Reporting Guide* confirms that the captured data is appropriate for the purposes of reporting against the Water Continuity Standard.

The MS Excel workbook *BI* - *Water Continuity Standard* - *Property Compliance V1.3.4* captures all water continuity events by Work Order Number. Analysis of the data presented therein confirms that the total number of properties that experienced *Unplanned Water Interruptions* of more than five hours duration was 39,308, as reported by Sydney Water. As the number of properties experiencing multiple *Unplanned Water Interruptions* is determined by data extract, this was not checked.

It is noted that there was a significant time lapse between the "Reported date & time" and "Actual Water Off Date & Time" for some entries, which may have indicated a failure to respond to an Unplanned Water Interruption in a timely manner. Sydney Water advised that these entries related to planned interruptions for which the required advance notification had not been provided; these events are therefore considered to be "unplanned" for the purposes of reporting.



To confirm the data captured in the above referenced workbook, the auditor reviewed the MAXIMO records for Work Order 73521251 *WOR- WAHROONGA-@M TC2 RO hyd rewasher A/H 21*; the timelines were consistent. A review of HYDRA mapping confirmed that, based on isolation valve locations, six (6) properties would have been affected as report.

#### Recommendations

There are no recommendations in respect of this obligation.

# **Opportunities for improvement**

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

# 2.2.16. Wastewater Overflow Standard (4.2.3)

Sub-Clause	Requirement		Compliance Grade
4.2.3	<ul> <li>a) Sydney Water must ensure that, in any f</li> <li>i. no more than 14,000 Properties (ot Properties) experience an Uncontro Overflow in dry weather; and</li> <li>ii. no more than 175 Properties (other experience three or more Uncontrol</li> </ul>	inancial year: her than Public olled Wastewater than Public Properties) lled Wastewater	
	Overflows in dry weather (the Was Standard).	stewater Overflow	
	b) For the purpose of the Wastewater Over	flow Standard:	
	i. each Multiple Occupancy Property single Property; [Note: For example, a complex of J each townhouse receives a separat is to be counted as a single Proper	is to be counted as a five townhouses where e bill from Sydney Water ty.]	Compliant
	<ul> <li>for the purpose of clause 4.2.3(a)(i, in a financial year, of a single Prop Uncontrolled Wastewater Overflow counted as a separate Property that financial year, an Uncontrolled Wa weather; and</li> </ul>	), each separate instance, erty experiencing an v in dry weather is to be has experienced, in that istewater Overflow in dry	•
	<ul> <li>iii. for the purpose of clause 4.2.3(a)(ii experiences three or more Uncontro Overflows in a financial year is to that financial year.</li> </ul>	i), each Property that olled Wastewater be counted once only in	
Risk		Target for full compliance	ce
Failure to comply presents a high rist it would indicate th	with the requirements of this obligation k to public health and/or the environment as hat Sydney Water has failed to maintain an	Evidence that Sydney Wat Overflow Standard in the	ter has achieved its <i>Wastewater</i> audit year.

**Evidence sighted** 

adequate level of service.

Sydney Water, Operating Licence 2015-2020 Compliance and Performance Report; System Performance Standards Report 2017-18, undated.

Sydney Water, Performance Indicator Sheet; SPS 4 - Sewage Overflow Standard OL 4.2.3 (a) – Number of properties (other than public properties) that experience an uncontrolled sewage overflow in dry weather; SPS 5 - Sewage Overflow Standard OL 4.2.3 (b) – Number of properties (other than public properties) that experience 3 or more uncontrolled sewage overflow in dry weather (Version 1), 8 May 2018.

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Sydney Water, Integrated Management System; Field Reporting Guide; Service Delivery Integrated Management System (Version 1), undated.

MS Excel workbook: BI - RAW Property Compliance Sewage v1.3 1718.xlsx.

Sydney Water, Response to Operational Audit 2017-18; Wastewater Overflow Standards (4.2.3), 2 November 2018.

#### Summary of reasons for grade

Sydney Water reported that during the 2017/18 financial year 7,816 Properties (other than Public Properties) had experienced an *Uncontrolled Wastewater Overflow* in dry weather and that 50 Properties (other than Public Properties) had experienced three or more *Uncontrolled Wastewater Overflows* in dry weather, and demonstrated that the processes used to determine the number of Properties was both robust and in most respects consistent with the definitions and exclusions set out in the *Operating Licence*. As the number of Properties that had experienced an *Uncontrolled Wastewater Overflow(s)* was less than the specified limits, Sydney Water is assessed to have been fully compliant with this obligation.

#### **Discussion and notes**

Sydney Water reported that during the 2017/18 financial year:



- 7,816 Properties (other than Public Properties) had experienced an Uncontrolled Wastewater Overflow in dry weather; and
- 50 Properties (other than Public Properties) had experienced three or more *Uncontrolled Wastewater Overflows* in dry weather; as defined in the *Operating Licence*.

Sydney Water has a documented *Sewage Overflow Standard* for determining the number of *Uncontrolled Wastewater Overflows* that occur in dry weather. Each indicator is defined consistent with the *Operating Licence*, the report to be extracted from MAXIMO and the BI (Business Intelligence) database is defined and the query information (data extract code) is presented. Specific data used includes: Work Order Number; Task Description; Task Code; Property Number; Calendar Period; Network; SCAMP; Property Type Description and Eligibility Indicator.

Sydney Water advised that civil maintenance staff are trained to be able to identify different categories of overflows, and more specifically:

"Civil staff are trained to be able to identify if the overflow was related to a wet capacity issue or a choke in dry weather where a sewer overflow has been caused by an identified blockage in the utility's sewerage system (eg tree root intrusion) or a system failure not related to capacity (eg pumping station failure)."

As noted, assessment as to whether an overflow occurs as a dry weather incident is largely dependent upon determining whether the overflow was due to a fault (blockage) or inadequate capacity. Accordingly, appropriate training is considered essential. The number of properties affected by an overflow event is determined on-site by maintenance staff.

Data used for analysis of *Uncontrolled Wastewater Overflows* is based on information recorded in Work Order reports, as captured in MAXIMO. The requirements for capture of the relevant data is detailed in the *Field Reporting Guide*, which provides guidance for completion of each field of the Work Order form (may also be captured via the new Field Mobility Platform,

"Click" that is now being introduced). Review of the *Field Reporting Guide* confirms that the captured data is appropriate for the purposes of reporting against the *Wastewater Overflow Standard*.

The extracted data is presented in an MS Excel workbook *BI* - *RAW Property\_Compliance\_Sewage\_v1.3 1718*. Analysis of the data reveals:

- a total of 7,819 entries, which may indicate a minor discrepancy from the reported 7,916 Properties affected by *Uncontrolled Wastewater Overflows*. Clarification with Sydney Water, however, reveals that the data includes three (3) wet weather entries (Maintenance Task Code SR2D); when excluded, the total number of Properties is consistent with the reported number.
- a total of 50 Properties that were affected by three or more *Uncontrolled Wastewater Overflows*, which is consistent with the reported value.

Upon further investigation, however, it appeared that some other maintenance task codes included in the data may not be appropriate for the purposes of these indicators. For example:

- Maintenance Task Codes SR2A and SR2P relate to private chokes (chokes on a customer's service line).
- Maintenance Task Code SR2C is a "Service Call No further action required" (problem not responsibility of Sydney Water or not found) and SR9A is "Investigate/Rectify Subsidence"; it is not apparent how these codes reflect an overflow event.
- Maintenance Task Code SS1Z "Environmental Cleanup Following A Declared Incident"; the descriptor appears to indicate that this is a secondary task following a SR1A, SR2B, SR2E and SR2J task, so may result in double counting (although a review of the data suggests that this has not occurred).

In response to further enquiry, Sydney Water clarified that the reported number of *Uncontrolled Wastewater Overflows* is actually based on a remedy task code rather than the initially assigned task code shown in the data provided. The initially assigned task code is based on the customer report, whilst the remedy code is based on site assessment of the actual problem.

To further demonstrate this point, Sydney Water provided further details in respect of a number of events (work orders) where the initially assigned task code appeared to be inappropriate. Whilst this process demonstrated that in most cases the remedy code reflected reportable overflow events, it did identify one overflow event that was the result of a choke on a customer's service line (which should not have been included) and three events where a multiple occupancy properties had been affected, however, incorrectly counted (for the purposes of the *Wastewater Overflow Standard*, a multiple occupancy property counts as a single property).

As identified by Sydney Water, these discrepancies result in the number of Properties (other than Public Properties) that had experienced an *Uncontrolled Wastewater Overflow* in dry weather being reduced from the reported 7,816 Properties to 7,784 properties, a reduction of 32 Properties. The number of Properties (other than Public Properties) that had experienced three or more *Uncontrolled Wastewater Overflows* in dry weather remained unchanged at 50 Properties.

Given that the numbers of *Uncontrolled Wastewater Overflows* remain less than the specified limits irrespective of the events included, Sydney Water is deemed to have demonstrated full compliance with this obligation notwithstanding there were minor shortcomings in the manner in which the numbers had been determined (refer Section 2.2.28 for further discussion).

#### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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



# 2.2.17. Providing Information (5.2.1)

Sub-Clause	Requirement		Compliance Grade
5.2.1	<ul> <li>Sydney Water must prepare a pamphlet that:</li> <li>a) provides a brief explanation of the Cust</li> <li>b) summarises the key rights and obligation Customer Contract;</li> <li>c) refers to the types of account relief avait experiencing financial hardship;</li> <li>d) outlines the rights of Customers to claim conditions that apply to those rights;</li> <li>e) contains information regarding how to or telephone, email or post; and</li> <li>f) contains information regarding the abilition into agreements with Sydney Water (sep Contract) for the provision by Sydney Water (sep Contract) for the provision by Sydney Water (sep Customer.</li> </ul>	omer Contract; ns of Customers under the lable for Customers n a rebate and the contact Sydney Water by ty for a Customer to enter parate to the Customer Vater of Services to the	Compliant (minor shortcomings)
<b>Risk</b> Failure to prepare a pamphlet (and make it available pursuant to clause 5.2.3) presents a moderate risk that Customers and Consumers may not be fully aware of their rights and obligations under the Customer Contract.		<b>Target for full compliand</b> Evidence that Sydney Wat addresses the specified req and obligations of Sydney	er has prepared a pamphlet that uirements in relation to the rights Water's Customers and Consumers.

# **Evidence sighted**

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Our Contract with You pamphlet, available at:

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq0/~edisp/dd\_044115.pdf. Email dated 5 October 2018 from Sydney Water to Cobbitty Consulting (re: 2018 Sydney Water Audits - Licence clause 5.2.1). Sydney Water website "Agreements" page: https://www.sydneywater.com.au/SW/your-business/meeting-yourresponsibilities/agreements/index.htm.

### Summary of reasons for grade

Sydney Water has prepared a pamphlet that summarises the provisions of the Customer Contract consistent with the specified requirements, with the exception that the requirement of paragraph f) to provide information regarding the ability of Customers to enter into separate agreements (to the *Customer Contract*) is not fully addressed. Whilst information is provided in respect of pressure sewer service agreements, information in respect of other additional services agreements is not provided.

Accordingly, Sydney Water is assessed to be compliant with the requirements of this obligation, albeit with a minor shortcoming. Any potential impact of this minor shortcoming is not considered material as the information is otherwise readily available and would only be of interest to a small number of Customers or the public who would be directly informed by Sydney Water in the event that such separate agreements are required; it will not affect water quality, public health and safety, or the environment.

### Discussion and notes

Sydney Water has prepared pamphlet entitle *Our Contract with You*, which is available on the Sydney Water website at: <a href="http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq0/~edisp/dd\_044115.pdf">http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq0/~edisp/dd\_044115.pdf</a>.

Review of the contents of the pamphlet confirm that it addresses the specified requirements, as follows:

- a) A brief explanation of the *Customer Contract* is provided in the introduction at top of page 1 of the pamphlet.
- b) The rights of Customers under the *Customer Contract* are summarised principally under the headers *What will* Sydney Water do for me? (page 1 of the pamphlet); and What if there's a problem with Sydney Water's service? (pages 1-5, under several sub-headers). The obligations of Customers are also addressed in part under the header What if there's a problem with Sydney Water's service? (pages 1-5, under several sub-headers) and under the headers What about defective or illegal services? (page 5); What if I want to do some building work on my property? (page 6); Can I install a rainwater tank? (Page 6); What can't I do? (page 6); and How do I pay my bill? (page 6).
- c) Reference to the types of account relief available for Customers experiencing financial hardship is made under the header *What if I can't pay my bill on time?* (page 7 of the pamphlet). Reference is also made to concessions available to pensioners under the header *What if I'm a pensioner?* (page 7).
- d) The rights of Customers to claim a rebate and the conditions that apply to those rights are outlined under the header *How* will Sydney Water respond if there's a problem with my service? (pages 2-3 of the pamphlet);
- e) Information regarding how to contact Sydney Water by telephone, email or post is provided on the last page (back cover) of the pamphlet. Contact information is also provided under the headers *How can I talk to Sydney Water*? (page 8); *What if I'm not happy with Sydney Water's service*? (page 8); and *Can I get more involved*? (page 9).
- f) Information regarding the ability for a Customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision of Services is addressed in part under the header *What if I'm connected to a pressure wastewater system*? (page 3), where information regarding the requirement for a Customer to enter into an additional service agreement covering operation and maintenance of pressure sewer installations (where applicable) is outlined.



The pamphlet does not, however, provide more general information regarding the ability of Customers to enter into separate agreements, a point acknowledged in Sydney Water's response to the auditors specific enquiry. It is noted that such agreements are more typically put into place in response to specific service requests from non-residential Customers such as (for example) where water pressure boosting is required, Extended Private Services (Rural Water Supply), pump to sewer installations and connections to a pressure sewer system (as referenced above).

Information in relation to additional service agreements is available on the Sydney Water website. Notwithstanding, it is recommended (**REC-SWC-2017/18-05**) that Sydney Water revises the pamphlet prepared pursuant to clause 5.2.1 of the *Operating Licence* to fully address the requirement of paragraph f), i.e. to include information regarding the ability for a Customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sydney Water of Services to the Customer. Sydney Water has indicated that it will address this issue during the next review/update of the pamphlet.

# Recommendations

The following recommendation is made in respect of this obligation:

• **REC-SWC-2017/18-05:** It is recommended that Sydney Water revises the pamphlet prepared pursuant to clause 5.2.1 of the *Operating Licence* to fully address the requirement of paragraph f), i.e. to include information regarding the ability for a Customer to enter into agreements with Sydney Water (separate to the Customer Contract) for the provision by Sydney Water of Services to the Customer.

### **Opportunities for improvement**

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

# 2.2.18. Providing Information (5.2.3)

Sub-Clause	Requirement		<b>Compliance Grade</b>
5.2.3	<ul> <li>Sydney Water must:</li> <li>a) provide the pamphlet prepared under clause 5.2.1 and pamphlet updates made under clause 5.2.2, free of charge to: <ol> <li>Customers at least annually with their Bills; and</li> <li>any person upon request made to the Contact Centre; and</li> </ol> </li> <li>b) make the pamphlet prepared under clause 5.2.1 and pamphlet updates made under clause 5.2.2 available on its website for downloading by any person, free of charge, within 60 days of the commencement of the Customer Contract or pamphlet</li> </ul>		Compliant
Risk		Target for full compliand	<b>2</b>
NISK		ranget for fun compnant	
Failure to make the pamphlet available presents a moderate		Evidence that the pamphle	t has been made available to
11100			

Failure to make the pamphlet available presents a moderate risk that Customers and Consumers may not be fully aware of their rights and obligations under the Customer Contract. Evidence that the pamphlet has been made available to Customers at least annually with their Bills; that it is made available to any person upon request to the Customer Centre; and that it is available on the Sydney Water website.

# Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Sydney Water, Procedure; Producing quarterly customers newsletters (Version 1), 12 February 2018.

Email correspondence dated 9 July 2018 from Sydney Water to Computershare and response dated 10 July 2018 (re: *Confirmation of regulated notices*).

Email correspondence dated 9 July 2018 and 12 July 2018 from Sydney Water to Computershare and response dated 13 July 2018 (re: *Confirmation of regulated notices*).

Sydney Water internal email correspondence with entries dated 17 July 2018 and 19 July 2018 (re: Folio of Progress – Customer Contract).

Our Contract with You pamphlet, available at:

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq0/~edisp/dd\_044115.pdf.

### Summary of reasons for grade

Sydney Water demonstrated that the pamphlet prepared pursuant to clause 5.2.1 is provided free of charge to Customers in conjunction with the August-October billing cycle each year and upon request to the Customer Centre; it is also available on the Sydney Water website for downloading free of charge.

Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

### **Discussion and notes**

*Provision of Pamphlet to Customers with their Bills:* Sydney Water advised that:

"The "Producing quarterly customer newsletters" procedure defines the requirements under the Sydney Water Act 1994 and Operating Licence 2015-2020 to provide customers with regulatory information including (but not limited to) annual information providing a brief explanation of the Customer Contract, a summary of the key rights and obligations of customers under the Customer Contract, information on hardship, rebates and contacting Sydney Water. To meet this



requirement Sydney Water produces an annual contract in brief which is included in customers' bills in the August - October period each year."

Review of the *Procedure* confirmed that it details the process for producing the three quarterly customer publications (*Waterwrap*, Business update and Your water). It also specifically indicates that:

"Our contract with you the customer contract summary is also sent as a separate brochure with this edition" (i.e. the August-October edition).

Sydney Water also provided copies of email correspondence from its suppliers confirming that the *Our contract with you* pamphlet was included in Customer Bills issued on the August-October 2017 billing cycle.

Provision of Pamphlet upon request to Contact Centre:

Sydney Water provided a copy of internal email correspondence confirming that CERs (Customer Experience Representatives) can direct customers to the Customer Contract on the Sydney Water website, download and email it if necessary, or post a copy to the Customer upon request.

To test availability of the pamphlet, the auditor called the Contact Centre to request information in relation to the *Customer Contract* on 3 October 2018. The Customer Experience Representative clarified the request and offered either the full *Customer Contract* or the short version (pamphlet); she also offered to provide direction to access these documents on the Sydney Water website, to post copies or to go through the provisions over the phone. When requested if the documents could be sent via email, this was readily arranged and both documents were received within a few minutes. There was no mention of any charge for the provision of this service.

Availability of Pamphlet on Sydney Water website:

The auditor confirmed that the *Our contract with you* pamphlet was available on Sydney Water's website at the link provided by Sydney Water, as follows:

 $\underline{http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq0/~edisp/dd_044115.pdf.$ 

The auditor also sought to locate the pamphlet via a Google search for "Sydney Water Customer Contract". This approach led directly to the actual *Customer Contract*; the pamphlet was not identified as an option. A search for "Customer Contract" from the Sydney Water home page again led directly to the actual Customer Contract; the pamphlet was the fourteenth item (on page 2) of the list of search results.

The auditor then located the pamphlet on the website as follows:

- "Reports & publications" was selected from the "About us" drop down menu on the Home page;
- The "Regulatory information" drop down menu was then selected to reveal links to both the "*Customer Contract*" (first item) and "*Our contract with you* a summary of the full *Customer Contract*" (second item);
- Selection of the "Our contract with you a summary of the full Customer Contract" link opened the pamphlet (at the above link), which then downloaded without charge.

Whilst the pamphlet is available for download free of charge from Sydney Water's website, its availability was not readily apparent when undertaking a Google search or a search from the website Home page. As an opportunity for improvement (**OFI-SWC-2017/18-22**), it is suggested that Sydney Water considers making the availability of the *Our contract with you* pamphlet more readily identifiable on its website.

### Recommendations

There are no recommendations in respect of this obligation.

# **Opportunities for improvement**

The following opportunity for improvement is made in respect of this obligation:

• OFI-SWC-2017/18-22: It is suggested that Sydney Water considers making the availability of the *Our contract with you* pamphlet more readily identifiable on its website.

# 2.2.19. Assistance Options for Payment Difficulties and Actions for Non-Payment (5.4.1)

Sub-Clause	Requirement	Compliance Grade
5.4.1	<ul> <li>Sydney Water must maintain and fully implement:</li> <li>a financial hardship policy that assists residential Customers experiencing financial hardship;</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 financial hardship;</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 financial hardship,</li> <li>(the Assistance Options for Payment Difficulties and Actions for Non-Payment).</li> </ul>	Compliant



Risk	Target for full compliance
Non-compliance with the requirements of this sub-clause poses	Evidence that Sydney Water has maintained and fully
a high level of risk in respect of Sydney Water's customer	implemented arrangements for assisting residential customers
relations and the financial management of its business.	who are experiencing financial hardship to better manage their
	current and future bills.

### Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Sydney Water, Policy; Payment assistance (Version 2), 14 March 2018, available at:

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd\_047442.pdf. Sydney Water website "Help with your bill" page:

http://www.sydneywater.com.au/SW/accounts-billing/paying-your-bill/help-with-your-bill/index.htm.

Sydney Water, Procedure; Payment Assistance Scheme (PAS) (Version 3), 5 February 2018.

Sydney Water, *Payment Assistance Scheme; Assessment checklist for agencies* (Reference: SW167 03/17). Sydney Water, *Policy; Overdue payments* (Version 2), 22 February 2018, available at:

http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd\_047441.pdf.

### Summary of reasons for grade

Sydney Water provided evidence to demonstrate that it has maintained and fully implemented arrangements for assisting residential customers who are experiencing financial hardship. These arrangements, which are summarised in the *Payment Assistance Policy*, include both Government funded and Sydney Water sponsored programs. They include, but are not limited to, payment assistance plans.

The *Payment Assistance Policy* and Overdue Payments Policy identify the circumstances under which Sydney Water may disconnect or restrict the supply of water; these documents emphasise the need to exhaust all available debt recovery approaches before action is taken to disconnect or restrict a service.

Sydney Water is proactive in promoting the availability of assistance programs and information is available on the Sydney Water website.

On this basis it is assessed that Sydney Water has demonstrated full compliance with this obligation.

### Discussion and notes

Sydney Water has in place a *Payment Assistance Policy*, which is available on its website. The *Policy* provides an overview of the assistance that Sydney Water is able to provide; more specifically, it:

- explains how Sydney Water can help if a Customer is having trouble paying their bill;
- limits the scope of payment assistance to a Customer's home (i.e. residential properties); and
- identifies the policy objectives as:
  - helping Customers to keep the water on, regardless of their capacity to pay; and
  - helping Customers to pay their bill in a way that they can manage.

Assistance can be provided to Customers that are experiencing financial hardship payment through a number of programs or mechanisms, including:

- Government funded programs: government concessions (including Pensioner concessions); and the Payment Assistance Scheme (PAS); and
- Sydney Water support: Flexible payment arrangements; Centrepay; PlumbAssist; BillAssist; referral to a community service agency for relevant support; and providing tips to help reduce water use.

In respect of the Government funded programs:

- Pensioner concessions (and other rebates) relate only to the service component of the account.
- Sydney Water administers the Payment Assistance Scheme, which fulfils a community service obligation of the State Government, on its behalf. Under this scheme, debt can be "written off" on the basis of an assessment of ability to pay. Only the water use component of the account is considered in the case of tenants (the landlord pays the fixed component).
- The *Payment Assistance Scheme (PAS) Procedure* sets out the process for administrating the scheme from Sydney Water's perspective. Sydney Water actively engages community welfare agencies to participate in the scheme; they are trained and accredited to undertake this role. These agencies conduct eligibility assessments with Sydney Water's customers, using a Sydney Water checklist.

In respect of the support provided by Sydney Water:

- Flexible payment arrangements can be implemented as a "one-off" extension of time to pay an outstanding account, or an ongoing series of payments in smaller instalment than otherwise provided.
- Centrepay arrangements facilitate direct payment of instalments from Centrelink; a regular amount is deducted from an eligible customer's Centrelink payments.
- PlumbAssist provides assistance to undertake essential plumbing work; it is primarily aimed at reducing consumption.
- BillAssist provides longer term financial support through the provision of advisory services in respect of the suite of available assistance programs.
- Sydney Water may refer a Customer to a community service agency for help, which may include counselling services, emergency financial relief or medical advice and support.

Information in respect of these options/programs is provided on the "Help with your bill" page on the Sydney Water website at: <a href="http://www.sydneywater.com.au/SW/accounts-billing/paying-your-bill/help-with-your-bill/index.htm">http://www.sydneywater.com.au/SW/accounts-billing/paying-your-bill/help-with-your-bill/index.htm</a>.



Customers can access the abovementioned programs by contacting Sydney Water themselves, through referral by a welfare agency or following identification of hardship (principally due to outstanding bills) by Sydney Water. Sydney Water's on-line customer management system (CMS) includes specific screen prompts to guide the assessment of hardship.

Sydney Water is proactive in identifying and responding to potential cases of financial hardship. Points of note include:

- Cases are transferred from the Debt Recovery team to the Payment Assistance team where a history of non-payment is identified.
- Field staff (e.g. meter readers or civil maintenance teams) look out for signs that may indicate financial hardship
- Sydney Water is implementing a new (pilot) Home Visit program that targets pensioners with an increasing level of debt. Positive feedback has been received in response to this initiative.
- Assistance options are promoted at all opportunities, including (for example) at Community Outreach programs, "Bring Your Bill Days" (promoted by the Energy and Water Ombudsman NSW) and pensioner forums.

The overall objective of Sydney Water's approach to payment assistance is the provision of support services that will help customers who are genuinely experiencing financial hardship to meet their payment obligations. Background assessments are undertaken to ensure that the costs associated with implementing the program are outweighed by the benefits gained (principally the payment of bills that may not otherwise occur).

Notwithstanding the various financial support programs available to customers experiencing financial hardship, Sydney Water may ultimately disconnect or restrict the supply of water for the non-payment of bills. Sydney Water has a documented policy that outlines the circumstances under which it may disconnect or restrict supply; actions that must be taken in respect of debt recovery before doing so are clearly specified.

It is noted that Sydney Water will not restrict a Customer's water supply or take legal action if the Customer:

- has asked for a payment plan and is making payments;
- has set up Centrepay payments through Centrelink and is making payments;
- is being assisted through the Payment Assistance Scheme or BillAssist programs; or
- has lodged a complaint with Sydney Water or the Energy and Water Ombudsman NSW and Sydney Water is addressing the complaint.

The actions, one of which must be taken by the Customer before a restricted service can be reinstated, are clearly identified.

#### Recommendations

There are no recommendations in respect of this obligation.

#### **Opportunities for improvement**

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

# 2.2.20. Customer Council and Customer Council Charter (5.5.1)

Sub-Clause	Requirement		<b>Compliance Grade</b>
5.5.1	Sydney Water must maintain and regularly consult with organisations representing a broad cross section of its Customers and Consumers through the Customer Council.		Compliant
Risk		Target for full compliance	ce
Failure to consult with its customer and consumers poses a moderate risk. In the absence of customer input, Sydney Water may not be aware of customer perceptions of issues relevant to its performance.		Evidence to demonstrate that Sydney Water has regularly consulted with organisations representing a broad cross-section of its Customers and Consumers through the Customer Council.	

### Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Agendas for Customer Council meetings held on 6 September 2017 (reference: SWIM 777961), 5 December 2017 (reference: SWIM 777963), 14 March 2017 (reference: SWIM 777964) and 6 June 2018 (reference: SWIM 802706).

Minutes of Customer Council meetings held on 6 September 2017 (reference: SWIM 777960), 5 December 2017 (reference: SWIM 777962) and 14 March 2017 (reference: SWIM 777968).

Sydney Water website "Customer forums" page:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm.

#### Summary of reasons for grade

Sydney Water demonstrated that, during the audit period, it had regularly consulted with its Customer Council, which represents a broad cross-section of its customers and consumers. Meetings were held quarterly, consistent with the requirements under the Customer Council Charter. Sydney Water also engaged with Customer Council members through their involvement in workshops, forums and other out of session meetings.

Accordingly, it is assessed that Sydney Water has demonstrated full compliance with this obligation.

### Discussion and notes

As evidence that it had maintained and regularly consulted with organisations representing a broad cross section of its Customers and Consumers through the Customer Council, Sydney Water provided copies of:



- agendas for Customer Council meetings; and
- minutes of Customer Council meetings held 6 September 2017, 5 December 2017 and 14 March 2017.

Minutes of meetings are available on the Sydney Water website at: <u>http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm</u>. It was noted that the minutes of the meeting held on 6 June 2018 will not be released until endorsed at the subsequent meeting.

Customer Council meetings were held four times during the audit period, which was consistent the requirement documented in the Customer Council Charter which indicates that meetings are to be held quarterly, usually in March, June, September and December (refer Section 2.2.23 for further discussion in respect of the Customer Council Charter).

Sydney Water consulted the Customer Council in respect of a range of issues, as reported in Section 2.2.21. Sydney Water also advised that it had invited Customer Council members to attend various workshops, forums and meetings out of session, and that some members had attended in some cases (refer Section 2.2.21 for further discussion).

### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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

# 2.2.21. Customer Council and Customer Council Charter (5.5.2)

Sub-Clause	Requirement		Compliance Grade
5.5.2	Sydney Water must utilise the Customer Council to, among other things, obtain advice on the interests of Sydney Water's Customers and Consumers, the Customer Contract and such other key issues related to Sydney Water's planning and operations as Sydney Water may determine, consistent with the Customer Council Charter (referred to in clause 5.5.4).		Compliant
Risk		Target for full compliance	ce
Failure to make effective use of the Customer Council poses a		Evidence that Sydney Water has used the Customer Council to	
moderate risk to Sydney Water's operations. In the absence of customer and consumer input, Sydney Water may not be aware of customer and consumer perceptions of issues relevant to its performance.		obtain advice on the interests of Sydney Water's customers and consumers, the Customer Contract and such other key issues related to Sydney Water's planning and operations as Sydney Water may determine.	

### Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Customer Council Charter, available at the Sydney Water website "Customer forums: page:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm.

Agendas for Customer Council meetings held on 6 September 2017 (reference: SWIM 777961), 5 December 2017 (reference: SWIM 777963), 14 March 2017 (reference: SWIM 777964) and 6 June 2018 (reference: SWIM 802706).

Minutes of Customer Council meetings held on 6 September 2017 (reference: SWIM 777960), 5 December 2017 (reference: SWIM 777962) and 14 March 2017 (reference: SWIM 777968).

Email dated 5 October 2017 from Sydney Water to Customer Council members (re: *Reminder Invitation - Ryde Water Pumping Station heritage marker ceremony*).

Email dated 8 September 2017 from Sydney Water to Customer Council members (re: *Invitation - GWS Future Forum Series - Liveable & Dynamic Cities - 26 September 2017*).

Emails dated 12 October 2017 and 13 October 2017 from Sydney Water to Customer Council members (re: *WSLD Future Forum Series: Liveable & Dynamic Cities (26 Sept) - Post-Event Wrap Up)*.

Email dated 14 June 2018 from Sydney Water to Customer Council members (re: 2019 Customer Contract Review).

### Summary of reasons for grade

Sydney Water demonstrated that, during the audit period, it had consulted with the Customer Council in respect of a range of issues including (for example) Sydney Water's long-term strategy, the Customer Engagement Program, the *Operating Licence* review and a review of the *Customer Contract*. Accordingly, it is assessed that Sydney Water has demonstrated full compliance with this obligation.

### **Discussion and notes**

The Customer Council Charter (refer Section 2.2.23) states that the objectives of the Customer Council are:

- "to provide a forum for effective input and examination by consumer and community groups into policy, planning and service decision-making processes relevant to Sydney Water's customers.
- to promote a just, equitable and effective delivery of Sydney Water's services.
- to assist the development of a climate of trust between Sydney Water and its customers by fostering an open and honest approach to Sydney Water's services.
- to provide a forum for facilitating two-way communication between Council members and Sydney Water.
- to provide opportunities for Council members to raise matters on behalf of the representative groups and receive a considered response



# from Sydney Water."

Matters in respect of which Sydney Water has consulted with the Customer Council and/or its members during the audit period, as advised by Sydney Water, included:

- September 2017:
  - Sydney Water's Long-Term Strategy;
  - Hawkesbury Nepean Catchment Nutrient Regulation and Offset/Trading Program; and
  - Reconciliation Action Plan.
- December 2017:
  - Overview of the Operating Licence and Pricing Review process;
  - Sydney Water's brand; and
  - Customer Care Home Visits Program.
- March 2018:
  - Update on Customer Engagement Program;
  - Customer Hub Pilot; and
  - Environment Strategy.
- June 2018:
  - Update on Customer Engagement Program;
  - Operating Licence Review;
  - Strategic Thinking and Scenario Planning; and
  - Brand Strategy.

These topics are consistent with those identified for discussion on the respective meeting Agendas. Review of Minutes for the September 2017, December 2017 and March 2018 meetings confirmed that the nominated topics were indeed discussed. More specifically, the minutes recorded details of the topic overviews/information provided by Sydney Water and the feedback provided by the Customer Council.

Sydney Water advised that Customer Council members had been invited to attend the following events out of session:

- Ryde Water Pumping Station Heritage Marker Ceremony an invitation was sent to all Customer Council members; and
- Western Sydney Leadership Dialogue Future Forum Series an invitation was sent to all Customer Council members and summary information from the forum subsequently provided.

Sydney Water also demonstrated that, subsequent to discussion at the 6 June 2018 meeting of the Customer Council, comment in respect of the draft Customer Contract had been sought from Customer Council members.

It is considered that the topics in respect of which the Customer Council was consulted were consistent with both the objectives identified in the Customer Council Charter and the requirements of this obligation.

### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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

# 2.2.22. Customer Council and Customer Council Charter (5.5.3)

Sub-Clause	Requirement	Compliance Grade
5.5.3	Sydney Water must:	
	a) ensure that, at all times, the membership of the Customer Council is appointed and determined by Sydney Water in accordance with the Customer Council Charter, and	
	b) use its best endeavours to include, as members of the Customer Council, at least one person representing each of the following categories:	
	i. business groups, including small, medium and large business and non- residential customers;	
	ii. consumer groups;	
	iii. organisations representing low income households;	
	iv. people living in rural and urban fringe areas;	Compliant
	v. residential consumers;	
	vi. environmental groups;	
	vii. local government;	
	viii. older people;	
	ix. people with disabilities;	
	x. indigenous Australians; and	
	xi. people from non-English speaking backgrounds.	



Risk	Target for full compliance
Failure to include representatives of the nominated interests as	Evidence that membership of the Customer Council is
members of the Customer Council poses a moderate risk.	appointed in accordance with the Customer Council Charter,
Sydney Water needs to consult across a cross-section of its	and that Sydney Water has used its best endeavours to include
customer and consumer base to ensure that issues relevant to	representatives of the nominated categories.
its performance are fully captured.	

### Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Email dated 24 September 2018 from Cobbitty Consulting to Sydney Water and Sydney Water internal correspondence dated 25 September 2018 (re: Folio of Progress – 2018 Sydney Water Audits - Follow-up Request).

Agendas for Customer Council meetings held on 6 September 2017 (reference: SWIM 777961), 5 December 2017 (reference: SWIM 777963), 14 March 2017 (reference: SWIM 777964) and 6 June 2018 (reference: SWIM 802706).

Minutes of Customer Council meetings held on 6 September 2017 (reference: SWIM 777960), 5 December 2017 (reference: SWIM 777962) and 14 March 2017 (reference: SWIM 777968).

Sydney Water website "Customer forums" page:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm.

Email correspondence between NCOSS and Sydney Water with entries dated 20 April 2018 and 23 April 2018 (re: Departure and Thanks!).

#### Summary of reasons for grade

Sydney Water demonstrated that all nominated interest groups continued to be represented on the Customer Council throughout the audit period, notwithstanding that there were some changes in the individual representatives of some member organisations. Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

#### **Discussion and notes**

Sydney Water advised that the current membership of the Customer Council is consistent with the specified requirements; representatives of the nominated categories are as follows:

- i) business groups, including small, medium and large business and non- residential customers Sydney Business Chamber; Urban Development Institute of Australia;
- ii) consumer groups Public Interest Advocacy Centre (PIAC);
- iii) organisations representing low income households NSW Council of Social Services (NCOSS);
- iv) people living in rural and urban fringe areas Community Industry Group (formerly known as Illawarra Forum Inc);
- v) residential consumers Public Interest Advocacy Centre (PIAC);
- vi) environmental groups Total Environment Centre (TEC); Nature Conservation Council NSW;
- vii) local government Local Government Association NSW;
- viii) older people Council on the Aging (COTA);
- ix) people with disabilities People with Disability Australia;
- x) indigenous Australians Illawarra Local Aboriginal Land Council; and
- xi) people from non-English speaking backgrounds Multicultural NSW; Ethic Community Council NSW.
- This is consistent with Customer Council membership shown on (for example) the Agenda for the meeting held on

6 September 2017 and the Minutes for the meeting held on 14 March 2018. It is also consistent with the membership list published on the "Customer forums" page on Sydney Water's website.

Sydney Water advised that:

# "Details on membership invitations, acceptances and declines were provided during the last audit in 2016. No additional invites were required to be sent in 2017-18."

Review of the 2015/16 Operational Audit Report confirms that Sydney Water was assessed to have demonstrated full compliance with this obligation. In the absence of any changes to the membership of the Customer Council, compliance has been maintained. Sydney Water further advised that new representatives of the Local Government Association of NSW and Multicultural NSW had been welcomed to the Customer Council at the meeting held on 14 March 2018. This change of representatives is recorded in the minutes of that meeting.

A copy of correspondence regarding a change of the NSW Council of Social Services (NCOSS) representative, which was to become effective at the June 2018 meeting. The Agenda for the meeting to be held on 6 June 2018 reflected that change.

Recommendations

There are no recommendations in respect of this obligation.

# **Opportunities for improvement**

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



Sub-Clause	se Requirement		Compliance Grade
5.5.4	Sydney Water and members of the Customer Council must, for the term of this Licence, maintain a charter (the Customer Council Charter) that addresses all of the following issues:		
	a) the role of the Customer Council;		
	<ul> <li>selection criteria on how members of the Customer Council will be drawn from the community and information on how vacancies for membership will be advertised;</li> </ul>		
	c) the processes for appointment of new r	c) the processes for appointment of new members;	
	d) the term for which members are appoir	) the term for which members are appointed;	
	e) information on how the Customer Cour	ncil will operate;	
	f) a description of the type of matters that Customer Council and how those matter	ription of the type of matters that will be referred to the mer Council and how those matters will be referred;	
	<li>g) procedures for the conduct of Custome including the appointment of a chairper to invite, on an annual basis, a co-chair from Customer representatives;</li>	rocedures for the conduct of Customer Council meetings, ncluding the appointment of a chairperson and the requirement o invite, on an annual basis, a co-chair of the Customer Council rom Customer representatives;	
	h) procedures for communicating the outcome council's work to the public;	omes of the Customer	
	<ul> <li>procedures for monitoring issues raised Customer Council and ensuring approprissues; and</li> </ul>	at meetings of the riate follow-up of those	
	<ul> <li>funding and resourcing of the Custome Sydney Water.</li> </ul>	r Council by	
RiskTarget for full complianceFailure to maintain a charter that addresses the requirements of this obligation poses a moderate risk that the Customer Council may not be effective in enabling Sydney Water to consult with its customers and consumers.Target for full compliance			
<b>Evidence sighted</b> Customer Council Charter, available at the Sydney Water website "Customer forums: page: http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm.			
Summary of reasons for grade			
Sydney Water advised that the <i>Customer Council Charter</i> was last revised in 2015, and that it had been maintained throughout the audit period. Detailed review of the <i>Charter</i> confirmed that it addresses the requisite matters.			
Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.			
Discussion and notes			
The <i>Customer Council Charter</i> is available on the Sydney Water website at: <u>http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm</u> .			
Sydney Water advised that its <i>Customer Council Charter</i> was revised in 2015, and that it had been maintained throughout the audit period. New members of the Customer Council are provided with the Charter as part of their induction pack.			
Compliance of the <i>Customer Council Charter</i> with the requirements of this obligation was reviewed as part of the 2015/16 Operational Audit; comparison of the <i>Charter</i> as available at the time of the 2015/16 audit and as currently available confirms that there has been no change.			
As detailed in the 2015/16 Operational Audit Report, review of the Charter reveals that it addresses the required issues as follows:			
a) the role of the Customer Council – under the heading "Role of the Council" (section 3);			
b) selection criteria on how members of the Customer Council will be drawn from the community and information on how vacancies for membership will be advertised – under the heading "Selection criteria for member agencies and appointment			

# 2.2.23. Customer Council and Customer Council Charter (5.5.4)

of their representatives" (section 7);
the processes for appointment of new members – under the heading "Membership vacancies" (section 9);

- d) the term for which members are appointed under the heading "*Term of membership*" (section 8);
- e) information on how the Customer Council will operate under the headings "Member responsibilities" (section 4), "Sydney Water's responsibilities" (section 5) and "Administration of meetings" (section 10);
- f) a description of the type of matters that will be referred to the Customer Council and how those matters will be referred under the headings "*Role of the Council*" (section 3) and "*Administration of meetings*" (section 10);
- g) procedures for the conduct of Customer Council meetings, including the appointment of a chairperson and the requirement to invite, on an annual basis, a co-chair of the Customer Council from Customer representatives under the heading *"Administration of meetings"* (section 10);


- h) procedures for communicating the outcomes of the Customer Council's work to the public under the heading "Communicating meeting outcomes" (section 11). It is noted that outcomes of the Customer Council's work are communicated to the public by publishing minutes of the Customer Council meeting minutes on the Sydney Water website;
- i) procedures for monitoring issues raised at meetings of the Customer Council and ensuring appropriate follow-up of those issues under the heading "*Administration of meetings*" (section 10). It is noted that monitoring of issues raised at meetings of the Customer Council and ensuring appropriate follow-up of those issues is managed via the meeting minutes which include a summary listing of "New actions arising"; these are addressed as a standard agenda item "Updates and minutes from last meeting" at the subsequent meeting; and
- j) funding and resourcing of the Customer Council by Sydney Water under the heading "Funding and resourcing of the Council" (section 12).

## Recommendations

There are no recommendations in respect of this obligation.

## **Opportunities for improvement**

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

## 2.2.24. Customer Council and Customer Council Charter (5.5.5)

Sub-Clause	Requirement		Compliance Grade
5.5.5	Sydney Water must provide the Customer Co Sydney Water's possession or under its contr Customer Council to discharge the tasks assi information or documents that are confidenti that are subject to client legal privilege).	ouncil with information in rol necessary to enable the gned to it, other than al (including documents	Compliant
Risk		Target for full compliance	ce
Failure to provide	information poses a moderate risk. In the	Evidence that Sydney Wat	er has provided information in its

Failure to provide information poses a moderate risk. In the absence of suitable information, the Customer Council would be unable to provide effective input in respect of the issues discussed.

Evidence that Sydney Water has provided information in its possession or under its control necessary to enable the Customer Council to discharge the tasks assigned to it.

## Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Customer Council Charter, available at the Sydney Water website "Customer forums: page:

http://www.sydneywater.com.au/SW/about-us/our-people/who-we-are/customer-forums/index.htm.

Agendas for Customer Council meetings held on 6 September 2017 (reference: SWIM 777961), 5 December 2017 (reference: SWIM 777963), 14 March 2017 (reference: SWIM 777964) and 6 June 2018 (reference: SWIM 802706).

Minutes of Customer Council meetings held on 6 September 2017 (reference: SWIM 777960), 5 December 2017 (reference: SWIM 777962) and 14 March 2017 (reference: SWIM 777968).

Email dated 21 November 2017 from Sydney Water to Customer Council members (re: Sydney Water Customer Council Meeting - 5th December 2017).

Email dated 30 May 2018 from Sydney Water to Customer Council members (re: Agenda and Minutes of the meeting- Customer Council).

Email dated 14 June 2018 from Sydney Water to Customer Council members (re: 2019 Customer Contract Review).

Emails dated 12 October 2017 and 13 October 2017 from Sydney Water to Customer Council members (re: WSLD Future Forum Series: Liveable & Dynamic Cities (26 Sept) - Post-Event Wrap Up).

Email dated 14 September 2017 from Sydney Water to Customer Council Local Government NSW representative (re: Update on permanent water refill partnerships with Local Councils).

### Summary of reasons for grade

Sydney Water demonstrated that it had provided the Customer Council with information necessary to enable the Customer Council to discharge the tasks assigned to it. Information was provided principally in presentations to Customer Council meetings; however, there were also examples of information provided via separate email correspondence. Sydney Water is guided by the provisions of the *Government Information (Public Access) Act* in relation to the disclosure of information that may be deemed confidential.

Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

### **Discussion and notes**

Matters in respect of which Sydney Water has consulted with the Customer Council and/or its members are listed in Section 2.2.21. Where appropriate, Sydney Water has provided information to Customer Council members in relation to these matters.

The Customer Council Charter indicates that:

"Sydney Water will provide members with a copy of the agenda and papers for each at least three days prior to the meeting."

Sydney Water advised that:



"During the audit period, the only materials distributed to members prior to each meeting were the agenda and the minutes of the previous meeting, which are confirmed at the start of the next meeting."

This was confirmed by reference to (for example) emails sent out to the Council members prior to the December 2017 and June 2018 meetings.

Notwithstanding, reference to Minutes of Customer Council meetings revealed that information provided at meetings included (for example):

- September 2017:
  - Sydney Water briefed the Customer Council on the Hurstville break, a recent event that had impacted customers and attracted media attention.
  - Sydney Water provided an overview of its water future project and related documentation.
  - Sydney Water gave a briefing on the Hawkesbury Nepean Catchment Nutrient Regulation and Offset trading program, including an overview of the key drivers.
  - Sydney Water gave a presentation on why is developing a Reconciliation Action Plan (RAP) and what it is.
- December 2017:
  - Sydney Water gave an overview of the complex regulatory environment in which it operates, and discussed how the Customer Council can participate in IPART's public submission process for the upcoming Operating Licence review and Pricing Determination.
  - Sydney Water gave an outline of the review of its brand strategy that it was undertaking.
  - Sydney Water gave an overview of the help it provides to Customers who are experiencing financial difficulties and the team who are delivering the programs. A pilot program, "Home Visits", was highlighted as a unique program that helps identify individuals in need and connects people to wider community services.
- March 2018:
  - Sydney Water provided an update on progress relating to its Operating Licence renewal, including a recap of the process, a timeline of milestones and an overview of key topics in the process.
  - Sydney Water gave an overview of the Customer Hub pilot program that was currently being run in western Sydney, including the principal features of the program.
  - Sydney Water provided an overview of the Environment Strategy, and requested input from the council on communication, as well as opportunities for collaboration with their organisations.

As reported in Section 2.2.22, Sydney Water demonstrated that following discussion at the 6 June 2018 meeting of the Customer Council, it had provided the draft *Customer Contract* to Customer Council members for review/comment, and that it had provided summary information arising from the Western Sydney Leadership Dialogue Future Forum Series event held in September 2017.

Sydney Water also demonstrated that it had provided information (an update) in respect of permanent water refill partnerships with local councils to the Local Government NSW representative on the Customer Council. This initiative, under which tap water is available to the public at council sponsored refilling stations, was of specific interest to the Local Government representative.

In response to queries regarding procedures in place to determine the status of information with respect to confidentiality, Sydney Water confirmed that the issue of all information is subject to the approval of the Chief Executive Officer or other senior executive, cognisant of the principals of the *Government Information (Public Access) Act* in relation to the disclosure of information. Details are provided on the "How we provide information" page on the Sydney Water website.

### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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

## 2.2.25. Code of Conduct (5.8)

Sub-Clause	Requirement	<b>Compliance Grade</b>
5.8	Sydney Water must use its best endeavours to co-operate with each Licensed Network Operator and Licensed Retail Supplier within the Area of Operations that seeks to establish with Sydney Water a code of conduct of the kind referred to in clause 25 of the WIC Regulation.	Compliant
D' 1		

Risk

# Failure to comply with the requirements of this obligationEpresents a high risk that services may not be provided toccproperties that require them where serviced by a LicensedSoNetwork Operator or Licensed Retail Supplier. Ultimately, thisccmay present a risk to public health or the environment.So

### Target for full compliance

Evidence that Sydney Water has used its best endeavours to cooperate with Licensed Network Operators and Retail Suppliers that have sought to establish a code of conduct consistent with clause 25 of the WIC Regulation with Sydney Water.

## Evidence sighted

Sydney Water response to 2017/18 Operational Audit Questionnaire.

Wilton Recycled Water Scheme at Bingara Gorge; Code of Conduct for Infrastructure Connection between Veolia Water



Solutions & Technologies Pty Ltd, Lend Lease Communities (Wilton) Pty Limited and Sydney Water Corporation, dated October 2013.

Sydney Water, *Minutes and Actions; Wilton Village [Bingara Gorge] Wastewater Services Agreement, 26765* (meeting held on 12 July 2016).

Email correspondence between Sydney Water and Flow Systems with entries dated 23 March 2018, 18 April 2018 and 19 April 2018 (re: *Coordination Protocol for Box Hill North*).

## Summary of reasons for grade

Sydney Water demonstrated that it has used its best endeavours to cooperate with WIC Act Licensees that have sought to establish a code of conduct of the kind referred to in clause 25 of the WIC Regulation. Accordingly, Sydney Water is assessed to have demonstrated full compliance with this obligation.

Notwithstanding, based on previous audits of schemes licensed under the WIC Act undertaken by the auditor, there appears to be a difference in understanding as to what instruments (agreements or protocols) may fulfil the requirements of a code of conduct for the purposes of clause 25 of the WIC Regulation. An opportunity for improvement has been identified in respect of this matter.

## **Discussion and notes**

Sydney Water provided a list of sixteen (16) licensed schemes within its Area of Operations. It indicated that:

- there is a Code of Conduct in place of one scheme (Bingara Gorge);
- negotiations (initiated by Sydney Water) are currently in progress in respect of one scheme (Box Hill North); and
- there had been no request to enter into a code of conduct in respect of any of the remaining schemes.

Of the remaining fourteen (14) schemes:

- there are commercial agreements, including operating protocols, in place in respect of two schemes (Sydney Desalination Plant and the Rosehill Camelia Recycled Water Scheme);
- there are Utility Services Agreements, which included coordination protocols, in place in respect of four schemes (Central Park, Discovery Point, Barangaroo and Shepherds Bay);
- no coordination protocol was required in respect of four schemes (Workplace 6, 1 Bligh Street, Darling Walk and 8 Chifley Square) as there are/were sewer mining agreements in place with the property owners (8 Chifley Place now disconnected);
- no coordination protocol required in respect of two schemes (Pitt Town and Green Square) as potable water for recycled water top-up is/will be managed through the property owner;
- no coordination protocol required in respect of one scheme (Botany) as there is no direct connection to Sydney Water's infrastructure; and
- one scheme (Kurrajong) is not yet operational.

As evidence of cooperation with WICA (Water Industry Competitions Act) Licensees as required under this obligation, Sydney Water provided the following:

- Bingara Gorge Scheme:
  - a copy of the Code of Conduct between Veolia, Lend Lease and Sydney Water; and
  - minutes of a coordination meeting (No 28) between Sydney Water and Lend Lease in relation to the Wilton Village [Bingara Gorge] Wastewater Services Agreement.
- Box Hill North Scheme a copy of email correspondence between Sydney Water and Flow Systems regarding Sydney Water's request for a coordination protocol.

The auditor notes that, when auditing WICA schemes, where there is a Utility Services Agreement (USA) in place between Sydney Water and a WIC Act Licensee, the USA has been deemed to address the requirements of clause 25 of the WIC Regulation, which indicates that:

- "... the water industry code of conduct may make provision in respect of the following matters:
- (a) responsibility for water quality,
- (b) liability in the event of the unavailability of water,
- (c) liability in the event of infrastructure failure,
- (d) fees and charges payable in respect of the use of infrastructure,
- (e) responsibility for handling customer complaints."

The requirements of clause 25 of the WIC Regulation are typically reflected in the relevant Network Operator's Licence; Sydney Water USAs previously reviewed by the auditor have been found to fully address those requirements.

Whilst it is apparent the Sydney Water has used its best endeavours to cooperate with Licensed Network Operators and Licensed Retail Suppliers as required under this obligation, it appears that there may be scope to more broadly interpret the manner in which compliance with this obligation can be/is achieved. Given that Sydney Water considers there has been no request to enter into a code of conduct notwithstanding there is a USA or other agreement in place, it appears that there may be a difference in understanding as to what instruments (agreements or protocols) may fulfil the requirements of a code of conduct for the purposes of clause 25 of the WIC Regulation.

Provided an agreement or protocol in relation to the provision of Services, or otherwise in respect of infrastructure interfaces, between Sydney Water and a WIC Act Licensee addresses the identified matters (to the extent applicable), it can be deemed to constitute "... a code of conduct of the kind referred to in clause 25 of the WIC Regulation"; it does not specifically need to be entitled a "Code of Conduct".

As an opportunity for improvement (**OFI-SWC-2017/18-23**), it is suggested that when negotiating the provision of Services or other arrangements in respect of infrastructure interfaces between itself and a WIC Act Licensee, Sydney Water could more



clearly determine and define whether the agreement or protocol between the parties is deemed to constitute a code of conduct for the purposes of clause 25 of the WIC Regulation.

#### 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-2017/18-23: When negotiating the provision of Services or other arrangements in respect of infrastructure interfaces between itself and a WIC Act Licensee, Sydney Water should clarify whether the agreement or protocol between the parties is required (by the WIC Act Licensee) to constitute a code of conduct for the purposes of clause 25 of the WIC Regulation.

## 2.2.26. Quality Management System (7.1.2)

Sub- Clause	Requirement		<b>Compliance Grade</b>	
7.1.2	<ul> <li>Sydney Water must ensure that:</li> <li>a) by 30 June 2018, the Quality Managem an appropriately qualified person to be Australian Standard AS/NZS ISO 9001 Management Systems – Requirements;</li> <li>b) once the Quality Management System 7.1.2(a), the certification is maintained of this Licence.</li> </ul>	<ul> <li>Sydney Water must ensure that:</li> <li>by 30 June 2018, the Quality Management System is certified by an appropriately qualified person to be consistent with the Australian Standard AS/NZS ISO 9001:2008: Quality Management Systems – Requirements; and</li> <li>once the Quality Management System is certified under clause 7.1.2(a), the certification is maintained during the remaining term</li> </ul>		
<b>Risk</b> Certification to AS of quality manager reduces the veracit confidence. Inadec failures in governa	5/NZS ISO 9001 provides a third-part review nent systems. Failure to gain certification y of the system and reduces customer quate quality management will lead to nce and an increase in corporate risk.	Target for full compliance Third-party certification of management to AS/NZS IS organisation. Certification management system imple	re f Sydney Water's quality SO 9001 by a JAS ANZ certified is maintained and the quality emented for the audit period.	
Evidence sighted: 801201 - ISO9001 Certificate 801202 - 2018 BSI Pty Ltd Certification Audit Report 801332 - BSI Audit Plan for Certification Audit March 2018. BMIS audits BDBE Benest April 2018				
<b>Summary of reas</b>	ons for grade	ined for the remaining perio	d	
Discussion and no	ntes	filed for the remaining period		
It should be noted Sydney Water gain Certification was u	that the current version of the standard is ISO ned certification of its Enterprise quality mana undertaken by BSI Group ANZ, who are JAS	9001:2015. All systems mus gement system on 10 May 2 ANZ certified.	st be certified to the new version. 018 and it expires on 9 May 2021.	
The scope of the c	ertification is as follows:			
To plan, deliver, o and storm water fo	perate, manage, maintain and improve the system of the sys	tems, service and products for s of operation. Certification	or water, wastewater, recycled water covers multiple sites.	
At the interview it organisation. Addi are noted in 2018	was noted that the Enterprise level certification tional Corporate processes will be progressive QMS Certification Scope:	on covers overarching corpor ly included in surveillance a	ate processes that impact the whole udits. Processes currently included	
<ul> <li>Managing our S</li> <li>Risk Managem</li> <li>People Capabil</li> <li>Audit and Assu</li> <li>Strategic Planni</li> <li>Strategic Custo</li> <li>Business Perfor</li> <li>Business Proce</li> <li>Business Proce</li> </ul>	Supply Chain ent ity rance ing mer Business Process mance and Improvement sses (Finance) sses (Asset Product Service Planning and Delive	TV)		

Business Processes (Operational Control)

The IMS that covers the products and services streams is currently certified to ISO 9001:2015, AS/NZS 4801:2001 and ISO 14000:2015.

#### Recommendations



There are no recommendations in respect of this obligation.

## **Opportunities for improvement**

There are no opportunities for improvement in respect of this obligation.

## 2.2.27. Quality Management System (7.1.3)

Sub- Clause	Requirement		Compliance Grade
7.1.3	By 30 June 2018, Sydney Water must ensure Management System is fully implemented an activities are carried out in accordance with t System.	that the Quality nd that all relevant he Quality Management	Compliant
Risk		Target for full compliance	ce
Certification to AS/NZS ISO 9001 provides a third-party review of quality management systems. Failure to gain certification reduces the veracity of the system and reduces customer confidence. Inadequate quality management will lead to failures in governance and an increase in corporate risk. Third-party certification of Sydney Water's quality management to AS/NZS ISO 9001 by a JAS ANZ ce organisation. Certification is maintained and the qual management system implemented for the audit period			f Sydney Water's quality SO 9001 by a JAS ANZ certified is maintained and the quality emented for the audit period.
Evidence sighted:			
763033 - Managen	nent Systems Policy		
769929 - 2018 QM	IS Certification Scope		
802619 - 201806 -	BPRF - Risk Assurance - QMS (Final)		
802784 - 201806 -	BPRF (Full version)		
802781 - QARC -	QMS - June 2018		
768417 - QARC S	teering Group Charter		
768416 - QARC A	nnual Program		
iConnect - Risk.			
iConnect - Risk M	anagement Framework		
iConnect – Quality	Management System (QMS)		
P00022 - QMS Ga	p Assessments		
A0000194 - Gap A	ssessments of In-Scope QMS processes - CSF	R - Corporate Strategy - Bus	iness Planning
iConnect - BMIS A	Action Request Database		
iConnect – QMS A	Action Request Tool		
762913 - QMS Ma	nagement Review Report January 2018		
801441 - QMS Imp	provement Plan 2018-2019		
801202 - 2018 BS	Pty Ltd Certification Audit Report Action		
Summary of rease It is evident that the based on the certif	ons for grade e quality management system is being implem ication achieved in May 2018.	ent based on the evidence a	nd interviews. This is confirmed
Discussion and no	ites		
The evidence prov by BSI Group AN	ided demonstrates that the quality managemen Z confirms this.	t system is being implement	ted and the recent certification audit
During the audit qu Executive on quali	uality management system activities were obse ty management activities.	rved, including internal aud	lits in BMIS, reporting to the
Recommendation	s		
There are no recon	nmendations in respect of this obligation.		
<b>Opportunities for</b>	improvement		
There are no oppor	tunities for improvement in respect of this obl	igation.	

Sub-Clause	Requirement		Compliance Grade
8.4.1	Sydney Water must maintain record systems t IPART's satisfaction) to enable Sydney Wate its performance against the performance indic Performance Standards specified in the Report	that are sufficient (to r to measure accurately ators and System ting Manual.	Compliant (minor shortcomings)
<b>Risk</b> Non-compliance of in respect of Sydr ability to accurate indicators, and to tool in assessing t	with this clause poses a moderate level of risk ney Water's operational performance. The ly measure performance against specified otherwise report on performance, is a key he effectiveness of a utility's operations.	<b>Target for full compliane</b> Evidence that Sydney Wa systems to enable it to me performance against the p Performance Standards sp	ce ter maintains sufficient record asure accurately and report on its erformance indicators and System ecified in the <i>Reporting Manual</i> .
Evidence sighted			
Sydney Water res Sydney Water, Pr Sydney Water, Pr Sydney Water, W 15 February 2018 Sydney Water, Pe experience an unp Sydney Water, Pe experience 3 or m Sydney Water, Pe public properties) (b) – Number of p (Version 1), 8 Ma	ponse to 2017/18 Operational Audit Questional ocedure; Document and records management (' rdney Water – Operating Licence Annual Report ork Instruction; Systems Performance Standard	aire. Version 3), 29 June 2017. rting (Version 3), 15 June 2 ls Report; IPART Annual R tinuity Standard OL 4.2.2a Version 1), 8 May 2018. tinuity Standard OL 4.2.2a hour (Version 1), 8 May 20 erflow Standard OL 4.2.3 (a ow in dry weather; SPS 5 - S berience 3 or more uncontro	<ul> <li>018.</li> <li>eporting (Version 1),</li> <li>(i) – Number of properties that</li> <li>(ii) – Number of properties that</li> <li>18.</li> <li>a) – Number of properties (other than Sewage Overflow Standard OL 4.2.3 lled sewage overflow in dry weather</li> </ul>
<ul> <li>Sydney Water, SDIMS Work Instruction for Investigating and Reporting Water Pressure Failure – Networks W&amp;RWP Team (Version 2), 10 April 2017.</li> <li>Sydney Water, Work Instruction; Performance Indictors Report (PIR); IPART Annual Reporting (Version), 23 March 2018.</li> <li>Sydney Water, Annual Reporting to EPA and IPART by MD&amp;R (Version 4), 1 December 2017.</li> <li>Sydney Water, Work Instruction; Datamart for Annual Reporting (Version 4), 12 December 2017.</li> <li>Sydney Water, Corporate Compliance Management System; 2018 Plan and Manual (Version 3), 21 March 2018.</li> <li>Sydney Water, Integrated Management System; Field Reporting Guide; Service Delivery Integrated Management System (Version 1), undated.</li> <li>Sydney Water, For approval: Approval for Submission of Customer Delivery Data in the Performance Indicators Report and Systems Performance Report for Sydney Water's Operating Licence Reporting, 31 July 2018.</li> </ul>			
Summary of rea	sons for grade	× •	
Whilst it is assess Performance Stan shortcomings in th the impact was m Accordingly, Syd These minor shor they do not affect	ed that the record systems and procedures for re dards are, in general, sufficiently robust to ensu- he data extracted for reporting against the Wast inor; however, it is important to ensure that acc ney Water is assessed to be compliant with the tcomings did not materially impact Sydney Wat water quality, public health and safety, or the e	eporting against the perform re accurate reporting, there ewater Overflow Standard. urate reporting is not compr requirements of this obligat ter's reporting against the Wenvironment.	nance indicators and System appear to be some minor Based on review of the 2017/18 data, comised. ion, albeit with minor shortcomings. Vastewater Overflow Standard, and
Discussion and n	otes		
Sydney Water is t the Reporting Ma Sydney Water adv "The BMIS Sydney Wat Audits and overarching Documents and re QMAF0008). The information withi	required to report annually against the performa nual. This requires the capture and recording of vised that: (Business Management Information System) is er's ISO-based management system documents Action Request related documents). The Sydney grecords management system employed by Sydney ecords are managed in accordance with Sydney to Document and Records management procedu.	nce indicators and System I f data through Sydney Wate the principal document man (Procedures, Policies, Wor w Water Information Manag ney Water for all other organ water's Document and Re re provides a standardised of	Performance Standards specified in r's business systems. magement system for controlling k Instructions, Templates, Forms mement System (SWIM) remains the unisational records. cords Management procedure (see approach to managing documented

## 2.2.28. Performance indicators and system performance standards (8.4.1)

Sydney Water has in place a number of procedures that guide the compilation of the performance indicators and System





Performance Standards, including (for example):

- Sydney Water Operating Licence Annual Reporting which outlines the processes for managing annual Operating Licence reporting. Reporting tasks, responsibility and completion dates are detailed.
- Systems Performance Standards Report; IPART Annual Reporting details the work flow process and process steps for preparing the annual System Performance Standards Report.
- SPS 2 Water Continuity Standard OL 4.2.2a (i) documents the procedure for determining the number of properties that experience an Unplanned Water Interruption exceeding 5 hours.
- SPS 3 Water Continuity Standard OL 4.2.2a (ii) documents the procedure for determining the number of properties that experience 3 or more Unplanned Water Interruptions exceeding 1 hour.
- SPS 4 & 5 Sewage Overflow Standard documents the procedure for determining the number of Uncontrolled Wastewater Overflows that occur in dry weather.
- Work Instruction for Investigating and Reporting Water Pressure Failure, which describes the method followed for investigating and reporting the number of properties that have received inadequate water pressure at the point of connection.
- Performance Indictors Report (PIR); IPART Annual Reporting (Work Instruction) details the compilation of the annual Performance Indicators Report (PIR) for Sydney Water's reporting on its Operating Licence.
- Annual Reporting to EPA and IPART by MD&R (Monitoring, Design and Reporting) details requirements for reporting including performance indicators and System Performance Standards.
- Datamart for Annual Reporting (Work Instruction) outlines usage and access to Datamart, Sydney Water's repository spreadsheet for indicator data collated from the relevant business areas.
- Corporate Compliance Management System; 2018 Plan and Manual provides an overview of compliance requirements, including performance reporting.

Review of the procedural documentation and explanation provided by Sydney Water reveals that data used for performance indicator and System Performance Standard reporting is extracted from various business information systems, including:

- MAXIMO computerised maintenance management system through which maintenance activities are programmed and recorded;
- IICATS the Sydney Water SCADA system;
- ACCESS the customer database; and
- SWIRL the Sydney Water Incident Reporting and Learning record system.

Data is extracted from the relevant system using Business Intelligence (BI) queries, the coding for which is (in the case of the System Performance Standards) documented in the relevant procedures.

It is noted that some supporting data is captured on the basis of maintenance reports (completed Work Orders). The *Field Reporting Guide* provides extensive guidance on the completion of Work Orders, which if correctly and fully implemented should ensure the veracity of the reported data.

Sydney Water advised that it implements assurance processes at all levels of the reporting process, including (for example):

- Twice yearly updates of the Folios of Progress;
- Annual review of PI (Performance Indicator) sheets, which cover indicator definitions, interpretations and the data collection processes; and
- Checks (including internal audits) and approvals at various levels of the organisation.

By way of example, Sydney Water provided:

- Submission for Approval of 2017/18 Performance Indicators Report and Systems Performance Report submission to Managing Director and Chairman of the Board for approval to submit the reports.
- Sewage Overflow DCR Process Audit Report 2018-06-20 report on an internal audit of the data capture for and the calculation and reporting against the wastewater overflow standard. The audit found the process to be generally well controlled. One improvement opportunity related to training and competency was identified and three observations were made.

In order to assess whether Sydney Water maintains sufficient record systems that enable it to accurately report against the performance indicators and System Performance Standards specified in the *Reporting Manual*, the compilation of the System Performance Standards has been reviewed and assessed in more detail. Compilation and reporting against the Water Pressure Standard (SPS 1), Water Continuity Standard (SPS 2 & 3) and Wastewater Overflow Standard (SPS 4 & 5) are discussed in Sections 2.2.14, 2.2.15 and 2.2.16 respectively.

It was assessed that processes used to determine the reported values in respect of the System Performance Standards was generally robust and consistent with the definitions and exclusions set out in the *Operating Licence*. A concern was, however, identified in respect of the Wastewater Overflow Standard. Based on the reported maintenance task code (as shown in the extracted data), it appeared that some reported events may not reflect actual overflows; however, Sydney Water clarified that the reported number of *Uncontrolled Wastewater Overflows* is actually based on a remedy task code rather than the initially assigned task code shown in the data provided (refer Section 2.2.16 for further details). Notwithstanding, in the process of compiling information in respect a number of selected events (Work Orders) to demonstrate the application of remedy task codes instead of initially assigned task codes, Sydney Water identified that it had incorrectly accounted for a number of multiple occupancy properties.

Whilst it is assessed that the record systems and procedures for reporting against the performance indicators and System Performance Standards are, in general, sufficiently robust to ensure accurate reporting, there appear to be some minor shortcomings in the data extracted for reporting against the Wastewater Overflow Standard. Accordingly, it is recommended (**REC-SWC-2017/18-06**) that Sydney Water reviews its data extraction processes for reporting against the Wastewater Overflow Standard to ensure that actual number of events is accurately reported.

Based on review of the 2017/18 data, the impact was minor; however, it is important to ensure that the accurate reporting is not compromised.



## **Recommendation:**

The following recommendation is made in respect of this obligation:

• **REC-SWC-2017/18-06**: Sydney Water should review its data extraction processes for reporting against the Wastewater Overflow Standard to ensure that actual number of events is accurately reported.

## **Opportunities for improvement**

There are no opportunities for improvement in respect of this obligation.

## 2.2.29. Memorandum of Understanding – Fire and Rescue NSW (9.4.2)

Sub-Clause	Requirement	Compliance Grade			
9.4.2	Once the memorandum of understanding referred to in clause 9.4.1 is developed and entered into, Sydney Water must use its best endeavours to comply with the memorandum of understanding.				
Risk		Target for full compliance			
Failure to comply risk. Fire and Res Sydney Water's s protection.	with this obligation presents a moderate operational cue NSW is key consumer in respect of ervices, with obligations in respect of the community	Evidence that Sydney Water has used its best endeavours to comply with the Memorandum of Understanding with Fire and Rescue NSW.			
Evidence sighted	l i i i i i i i i i i i i i i i i i i i				
Sydney Water/FR October 2015 (sig	NSW, Memorandum of Understanding between Sydneg gned 1 December 2015).	y Water Corporation and Fire and Rescue NSW,			
Sydney Water res	ponse to 2017/18 Operational Audit Questionnaire.				
Sydney Water, M	inutes and actions; Fire Fighting; Strategic Liaison Grou	up Meeting 3 (meeting held on 22 May 2018).			
Sydney Water/FR October 2015 (sig	NSW, Memorandum of Understanding between Sydneg gned 1 December 2015).	y Water Corporation and Fire and Rescue NSW,			
Sydney Water, M	inutes and actions; Fire Fighting; Strategic Liaison Grou	up Meeting 3 (meeting held on 22 May 2018).			
Sydney Water, M	inutes and actions; Fire Fighting; Working Group Meet	ing (meeting held 2 November 2017.			
Sydney Water, Ag	genda; Fire Fighting Working Group (for meeting to be	held 10 April 2018).			
MS Word docum	ent: Firefighting Working Group key issues for priority	action April 2018, undated.			
11 April 2017 (re	: Watermain renewal Stafford St North Wollongong), in	icluding attachments.			
FRNSW, Minutes	s of Meeting; Hydrant Issues – SWC and FRNSW (meet	ting held 8 August 2018).			
Sydney Water int flow results and r	ernal email correspondence with entries dated 23 April 2 nodel comparison results).	2018, 30 April 2018 and 1 May 2018 (re: WSpro fire			
Summary of rea	sons for grade				
Sydney Water demonstrated that it had complied with the requirements of the Memorandum of Understanding with Fire and Rescue NSW (FRNSW) by participating as members of the Strategic Liaison Group, participating as members of the Fire Fighting Working Group, undertaking studies/investigations in respect of system fire flow capacity, sharing information and otherwise engaging with FRNSW. Accordingly, it is assessed that Sydney Water has demonstrated full compliance with this obligation.					
Discussion and n	lotes				
The MoU with Fi of FRNSW in De	re and Rescue NSW (FRNSW) was signed by the Mana cember 2015. Sydney Water advised that the MoU rem	aging Director of Sydney Water and the Commissioner ained in place and unchanged during the audit period.			
Review of the Mo	oU reveals that it addresses matters including Principles	and objectives of the MoU; Structures and Processes			
(including Strateg Dispute Resolution	cic Liaison Group, Fire Fighting Working Group, Excha on); Term and Amendments; and Representatives (of the	nge of Information and Data, Confidentiality and e parties).			

Review of the MoU reveals that it requires:

- the establishment of a SLG, which must meet at least annually, and identifies the purpose of the SLG;
- the establishment and operation of a Fire Fighting Working Group (FFWG), which must meet quarterly unless otherwise agreed, and identifies the role of the FFWG;
- the FFWG to consider the need for formal binding arrangements in respect of a number of matters (including the sharing of information; design and new, replacement or upgraded water network assets; efficient means of accessing water from the network; and planning of water network maintenance) and if considered necessary to implement such formal arrangements;
- the FFWG to format and timing for Sydney Water to provide a report detailing its water network performance regarding water availability for firefighting;
- the parties to exchange information and data.

As evidence that it has complied with the requirements of the MoU, Sydney Water provided:

• Strategic Liaison Group:



- Minutes of the SLG meeting held on 22 May 2018 (note minutes dated 2016).
- A summary of the past 12 months' achievements and the plan for the next 12 months as per action 18/1 from the meeting (attached to minutes).
- Working Group:
  - Minutes for meeting held 2 November 2017.
  - Agenda for meeting held 10 April 2018.
  - Firefighting Working Group key issues for priority action April 2018 key issues that we want to concentrate on (issued with agenda for discussion in meeting).
- Information sharing/input sought:
  - Consultation with FRNSW in relation to proposed water main renewal in Stafford Street, North Wollongong (although outside the audit period).
  - Minutes of Meeting No 2 to discuss fire hydrant issues held on 8 August 2018 (although outside the audit period). It is noted that the minutes refer to Meeting No 1 held on 26 October 2017, i.e. within the audit period.
  - Sydney Water internal email correspondence regarding determination of fire flow capacities in the Waverley and Beacon Hill supply systems. The correspondence includes a comment: "I will share small extracts with FRNSW so they can start their consideration of the best *way for them to receive the information*".

Review of the above referenced documents reveals that Sydney Water, in conjunction with FRNSW, has addressed matters consistent with the intent of the MoU. This has included (for example) Information sharing; Network capacity; Network design criteria; Hydrants (including CBD hydrant repairs); Input to renewal projects; and Determination of fire flow capacity.

#### Recommendations

There are no recommendations in respect of this obligation.

### **Opportunities for improvement**

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





# 3. Previous Recommendations

Number	Recommendation	Evidence	Progress	Discussion	Anticipated
			1.08.000		completion date
2015-16-2	Sydney Water should review recycled water monitoring requirements in consultation with NSW Health to confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place (by 30 March 2018).	Recycled Water Compliance & Performance Monitoring Plan 2017-18 UV performance assessment report – Rouse Hill WRP UV performance assessment report – Castle Hill WRP UV performance assessment report – Wollongong WRP UV performance assessment report – Gerringong Gerroa Change Management – UVT in SCADA – Rouse Hill Change Management – UVT in SCADA – Castle Hill Change Management – UVT in SCADA – Castle Hill Change Management – UVT in SCADA – Wollongong SCADA screen shot – Online UVT interlock - Rouse Hill SCADA screen shot – Online UVT interlock - Castle Hill SCADA screen shot – Online UVT interlock - Castle Hill SCADA screen shot – Online UVT interlock - Wollongong Recycled Water Qual Update – JOG August 2018 Online UVT analysers _ Report on trial of 6 instruments	Completed	Sydney Water started weekly UV1 monitoring at NATA accredited SW's West Ryde Lab from grab samples for WRPs which has UV process as part of the treatment – Rouse Hill, Castle Hill, Wollongong and Gerringong Geroa. Weekly UVT monitoring for WRPs are now part of the SW's Recycled Water Annual Monitoring Plan. In 2017, Sydney Water initiated a detailed trial of six online UVT analysers at Rouse Hill WRP. The online UVT instruments were tested and assessed for accuracy, reliability and response time to process change, by running the trial in "controlled environment" and "process condition" for approximately 6 months. Following the initial trial, Sydney Water purchased the preferred online UVT instrument and carried out detailed longer term trial (> 6 months) at Rouse Hill. Following the trial of online UVT analyser and successful selection of best performing UVT instrument, in 2018 Sydney Water installed and commissioned online UVT analysers at Rouse Hill, Castle Hill and Wollongong. Online UVT analysers are now connected in SCADA at these WRPs for continuous online monitoring of UVT. Sydney Water also implemented SCADA interlock of recycled water supply for online UVT reading at the UVT critical limit, Gerringong Geroa's UV performance verification demonstrated consistent achievement of a UVT well above the design minimum UVT. Online monitoring was therefore not installed, but grab samples continue to be taken. NSW Health was consulted and regularly updated through quarterly JOG meetings. Final presentation of this recommendation and SW's implementation of SCADA interlock for UVT were presented to NSW Health in August 2018 JOG meeting.	n/a



Number	Recommendation	Evidence	Progress	Discussion	Anticipated completion date
2016-17-1	<ul> <li>By 30 June 2018:</li> <li>ensure that substance charges for commercial customers are charged to three decimal places in accordance with the IPART, Sydney Water Corporation maximum, prices for water, sewerage, stormwater drainage and other services from 1 July 2016, and</li> <li>develop and implement an auditable quality assurance process to confirm the accuracy of data entry of set fees.</li> </ul>	Refer to Section 2.2.3 (Clause 1.9.1).	Completed	Sydney Water demonstrated that it has adjusted the unit rates for substance charges for commercial customers to three decimal places, consistent with the IPART Determination. Sydney Water also demonstrated that it has updated and developed its procedures to ensure that appropriate quality control processes are implemented and recorded. These procedures include a requirement to conduct random audits of calculated prices to ensure consistency with the IPART Determination. Refer to Section 2.2.3 (Clause 1.9.1) for detailed discussion.	n/a
2016-17-2	Invite NSW Health to all risk assessments (eg, catchment to tap or system risk assessments) undertaken in relation to Sydney Water's systems (whether or not the system is operated by Sydney Water) that will consider public health risks	801951- Operational Risk Assessment Report - Cascade WFP 791708 - Final 2018 Report Catchment to Tap Mid-term review 2017 _ V1.2 801982 Operational Risk Assessment Report - Nepean WFP 801984 Operational Risk Assessment Report - North Richmond WFP 2017 801985 Operational Risk Assessment Report - Orchard Hills WFP 2017 802019 Operational Risk Assessment Report - Warragamba WFP 2017 Invitation - Macarthur Risk Assessment Workshop - 15-05-2018 (email) Invitation - Prospect Risk Assessment Workshop - 04-05-2018 (email) BMIS0249 - Catchment to customer water quality risk review procedure D0000799 - Operational risk assessment workshop SOP Interviews	Completed	<ul> <li>Sydney Water invited NSW Health to all risk assessment workshops convened under the DWQMS during the audit period. The mid-term C2C risk review workshop and annual operational WFP risk workshops included NSW Health invitations/attendance. The workshop reports were sighted as evidence. BOO contractors workshop reports were also sighted as evidence. In addition, email invitations sent to NSW Health for BOO supply workshops were provided as evidence (Macarthur and Prospect).</li> <li>To formalise this process, a requirement to invite NSW Health to the two major risk assessment workshops has been added in relevant procedures:</li> <li>BMIS0249 Catchment to customer water quality risk review procedure</li> <li>D0000799 Operational Risk Assessment Workshop SOP.</li> <li>Procedures were seen and includes that NSW Health will be invited.</li> <li>The BOO contractors use Sydney Water's procedure for guiding water quality risk assessment workshops.</li> </ul>	n/a
2016-17-3	<ul> <li>By 30 June 2018</li> <li>in consultation with NSW Health, update and implement the risk assessment process to ensure adequacy</li> </ul>	BMIS0249 - Catchment to customer water quality risk review procedure D0000799 - Operational risk assessment workshop SOP	Completed	<ul> <li>The following risk assessment procedures were updated to ensure adequacy of inputs and outputs related to the risk assessment process:</li> <li>BMIS0249 Catchment to customer water quality</li> </ul>	n/a

Number	Recommendation	Evidence	Progress	Discussion	Anticipated completion date
	<ul> <li>of inputs to, and outputs from, the risk assessment and ensure inputs include a generalised process flow diagram and the attendance of relevant stakeholders</li> <li>in consultation with NSW Health, develop or update all system process flow diagrams against the requirements of Element 2, Component 1, Action 2 (A generalised flow diagram should be constructed describing the water supply system from catchment to consumer) of the Australian Drinking Water Guidelines, and</li> <li>use the process flow diagram currently being developed for the Nepean water filtration plant, to review the risk assessment for that plant.</li> </ul>	D0000685-Work instruction for Creation of Process Flow Diagrams D0000890 Process Flow Diagram – Cascade WFP D0000866 Process Flow Diagram - Nepean WFP D0000893 Process Flow Diagram - North Richmond WFP D0000896 Process Flow Diagram - Orchard Hills WFP D0000898 Process Flow Diagram - Warragamba WFP 801982 Operational Risk Assessment Report - Nepean WFP Interviews		risk review procedure • D0000799 Operational Risk Assessment Workshop SOP. The procedures describe what preparations are to be done for risk workshops, including process flow diagram verification and invitation to stakeholders e.g. NSW Health, and also outputs (workshop report). A work instruction (D0000685) for the creation of process flow diagrams has been developed to meet the requirements of Element 2 of the ADWG. The work instruction is a step-by-step guide to create a process flow diagram and was developed in consultation with NSW Health. Sydney Water completed the development of all process flow diagrams by applying the work instruction, and these diagrams were used to review the risk assessment for each WFP. A risk assessment for the Nepean WFP was carried out on 13 April 2018 using the updated process flow diagram. The risk assessment workshop included stakeholders including a representative from NSW Health. The final report from the risk assessment was provided to NSW Health. The auditors sighted this report as evidence.	
2016-17-4	By 31 March 2018, complete a desktop review of the most recent compliance inspections for all end user sites to identify any outstanding high risk non-compliances and initiate appropriate action to address non- compliances, including interruption of supply where appropriate.	PDF copy of desktop review outcomes, titled "MR4 - desktop review RW high risk non-compliances 290318". PDF copy of Operational audit 2016- 2017 water quality recommendations – proposed approach for discussion".	Completed	Sydney Water completed the desktop review of the most recent compliance inspection reports for all end user sites in accordance with the 31 March 2018 due date. In carrying out this review, Sydney Water considered that 'high risk' non-compliance areas are limited to backflow prevention and cross-connections, based on the ability of non-compliances in those areas to threaten the drinking water supply. This approach was shared with NSW Health within the document titled "Operational Audit 2016-2017 water quality recommendations – proposed approach for discussion". The desktop review of the compliance inspection reports highlighted three backflow non-compliances (one end user with a backflow prevention device overdue for installation – this was discussed during the 2016-2017 IPART audit; and two end users with backflow prevention devices overdue for annual	n/a



Number	Recommendation	Evidence	Progress	Discussion	Anticipated completion date
2016-17-5	By 30 June 2018: a) in consultation with NSW Health, develop an interruption to supply process where end users are not meeting their obligations under their end user agreement or the Recycled	PDF copy of Operational audit 2016- 2017 water quality recommendations – proposed approach for discussion. PDF copy of email from Sydney Water to NSW Health dated 25 May 2018	a) & c) Completed b) Ongoing	testing). The end users actioned these items and the non-compliances were resolved. The desktop review highlighted that two end users needed to carry out cross-connection tests. These end users carried out the tests and the non-compliances were resolved. The review did not trigger any interruptions of supply. Sydney Water developed a proposed approach to the water quality and recycled water recommendations from the 2016-2017 audit, <i>Operational audit 2016- 2017 water quality recommendations – proposed approach for discussion</i> . This document was shared with NSW Health and amended in accordance with	completion date 30 June 2019
	<ul> <li>Water Quality Management Plan</li> <li>b) in consultation with NSW Health, review the preventive measures for end user sites (on-site preventive measures) as documented in the recycled water management system and supporting material, including the content of the Annual Declaration and compliance inspection checklist, to ensure they are appropriate to the level of risk, and</li> <li>c) review the role and associated competencies for Sydney Water staff and contractors who are responsible for verifying the on-site preventive measures.</li> </ul>	<ul> <li>with attachments, including draft copy of the procedure. Email is titled "Draft Interruption and restoration of recycled water supply procedure 250518".</li> <li>PDF copy of email from Sydney Water showing that NSW Health did not have further comments on the procedure. Email subject line is "Revised Interruption and restoration of RW supply procedure", dated 19 Sept 2018.</li> <li>Version 3, 19/09/18 Interruption and restoration of recycled water Supply procedure.</li> <li>PDF copy of email chain between Sydney Water and NSW Health, with latest revised materials, titled "Sydney Water and NSW Health follow up revised customer materials and attachments 170818".</li> <li>PDF copy of Business Customer Representative position description (reference to Diploma in Water Industry Operations on last page).</li> <li>Qualification – TAFE Water</li> </ul>		<ul> <li>their comments.</li> <li>a) An interruption to supply process was drafted and provided to NSW Health on 25 May 2018. NSW Health subsequently provided feedback, and through email on 19/07/18 confirmed that it had no further comments on the revised procedure. The revised final procedure (version 3) was provided to the auditor. This recommendation is thus complete.</li> <li>b) Sydney Water has reviewed the preventive measures on end user sites. Supporting revised end user controls, statutory declarations and inspection checklists were provided to NSW Health on 18 June 2018. NSW Health subsequently provided formal feedback on 31 July 2018, and Sydney Water responded with revised materials on 17 August 2018. As the revised materials are not yet finalised, this recommendation is not completed. However, progress as discussed has been noted. The revised materials should be able to be finalised in discussions with NSW Health within 12 months, giving sufficient time for iterations, and status reviewed at the 2019 Operational Audit.</li> <li>c) Sydney Water have reviewed the role and associated skills of staff verifying on-site controls in relation to recycled water management.</li> <li>BCRs are responsible for interacting directly with recycled water business customers. The extent of verification of the customer controls performed by Sydney Water is limited to BCR's examining the annual customer statutory declarations.</li> </ul>	



Number	Recommendation	Evidence	Progress	Discussion	Anticipated completion date
		Operations Certificate – Business Customer Representative Qualification – TAFE Water Operations Certificate – Business Customer Representative 2		BCR Position Descriptions require the incumbent to obtain a Certificate IV or Diploma in Water Industry Operations. This qualification (or equivalent) was considered to comprises appropriate units of competency for the role.	
2016-17-6	<ul> <li>By 30 June 2019:</li> <li>a) ensure Sydney Water staff and contractors who are responsible for verifying the on-site preventive measures are trained and assessed as competent to implement their responsibilities</li> <li>b) establish and implement a process for on- going competency assessment, and</li> <li>c) review all end user sites to confirm end users are meeting their obligations under their end user agreement or the Recycled Water Quality Management Plan and implement the interruption to supply process where appropriate.</li> </ul>	<ul> <li>PDF copy of Operational audit 2016-2017 water quality recommendations – proposed approach for discussion".</li> <li>PDF copy of email from Sydney Water to NSW Health dated 25 May 2018 with attachments, including draft copy of the procedure. Emailed is titled "Draft Interruption and restoration of recycled water supply procedure 250518"</li> <li>PDF copy of email chain between Sydney Water and NSW Health, with latest revised materials, titled "Sydney Water and NSW Health follow up revised customer materials and attachments 170818".</li> <li>PDF copy of Business Customer Representative position description (reference to Diploma in Water Industry Operations on last page).</li> <li>Qualification – TAFE Water Operations Certificate – Business Customer Representative Qualification – TAFE Water Operations Certificate – Business Customer Representative Z</li> </ul>	Ongoing	<ul> <li>Update from Sydney Water: As all BCR currently managing interactions with our recycled water business customers hold a Diploma in Water Industry Operations, we judge that staff have the appropriate competencies to effectively manage the role as outlined above. However, we are implementing additional learning opportunities for our employees and contractors whose duties involve recycled water management. These include:</li> <li>Ensuring that future BCR's managing business recycled water customers hold a Certificate IV or Diploma in Water Industry Operations or are enrolled to achieve this qualification</li> <li>Commencing enquiries regarding engaging IWES presenting a 'recycled water management' or equivalent training course to staff. We will also provide NSW Health an invitation to this.</li> <li>Completing the roll out of scheme specific RWQMP online training courses in our Compass system this year, which includes communication of the Recycled Water Policy</li> <li>Finalising our online training course on RWQEMP in our Compass system.</li> <li>We will make amendments to end user agreements in line with the changes we have made under MR5 and confirm that end users are meeting their obligations prior to 30 June 2019.</li> </ul>	30 June 2019



Number	Recommendation	Evidence	Progress	Discussion	Anticipated completion date
2016-17-7	<ul> <li>By 30 June 2018, ensure all Sydney Water fluoridation systems are designed, installed, and operated in accordance with the NSW Code of practice for fluoridation of public water supplies 2011 (unless an exemption has been received from NSW Health), with particular reference to:</li> <li>a) ensuring the dosing capacity of the fluoride dosing equipment does not exceed 110% of the target dose rate</li> <li>b) ensuring water traps remain filled</li> <li>c) providing appropriate colour coding and</li> <li>d) marking of dosing pipes</li> <li>e) replacing dust mask filters every 13 weeks</li> <li>f) maintaining a minimum of three months storage of fluoridating agent or apply for an exemption from this minimum standard 8.2.1.1 from NSW Health</li> </ul>	As outlined in clause 2.3.1.	Completed	Sydney Water has addressed all areas of this recommendation. Detailed discussions have been undertaken under clause 2.3.1, where Sydney Water demonstrated compliance with the <i>NSW Code of practice for</i> <i>fluoridation of public water supplies 2011</i> during the audit period. A new revision of the fluoridation code was issued during the audit period (April 2018). For the auditing purpose, this new revision is not materially different from the previous version.	n/a
	g) ensuring emergency response plans are consistent with Appendix C of the NSW Code of practice for fluoridation of public water supplies 2011				
	h) submitting written notifications to cover all periods of repair/maintenance, and				
	<ul> <li>ensure internal audits assess compliance with all relevant requirements of Chapter 5 of the NSW Code of practice for fluoridation of public water supplies 2011.</li> </ul>				



# Glossary

Notation	Description
ADWG	Australian Drinking Water Guidelines
AGWR	Australian Guidelines for Water Recycling
AMF	Asset Management Forum
АМО	Asset Management Objectives
AMS	Asset Management System
Audit Guideline	IPART Audit Guidelines – Public Water Utilities – June 2018
AWQS	Area Water Quality Scientist
BCR	Business Customer Representative
BI	Business Intelligence (System)
BMIS	Business Management Information System
BOO	Build Own Operate
C2C	Catchment to Customer
CAG	Condition Asset Grade
CAR	Customer Accountability Register
ССР	Critical Control Point
CD	Customer Delivery Group
CER	Customer Experience Representative
СНО	NSW Health Chief Health Officer
CIR	Compliance Inspection Report
CMS	Customer Management System
COF	Consequence of Failure
СОТА	Council on the Ageing
СРІ	Consumer Price Index
DALYs	Disability Adjusted Life Years
DPE	Department of Planning and Environment
DWMM	Drinking Water Management Manual
DWMP	Drinking Water Management Policy
DWQ	Drinking Water Quality
DWQEMP	Drinking Water Quality Emergency Management Procedure
DWQMP	Drinking Water Quality Management Plan
DWQMS	Drinking Water Quality Management System
EIS	Environmental Impact Studies
EKAMS	Effluent Knowledge and Management System
EPA	Environment Protection Authority
FFWG	Fire Fighter Working Group
FRNSW	Fire and Rescue NSW
НАССР	Hazard Analysis and Critical Control Points
IAM	Institute of Asset Management
IICATS	Integrated Instrumentation, Control, Automation and Telemetry System
IMS	Integrated Management System
JOG	Joint Operations Group
KPI	Key Performance Indicator



Notation	Description
LCS	Liveable City Solutions
LIMS	Laboratory Information Management System
LRV	Log Reduction Value
LTV	Long Term Value
MoU	Memorandum of Understanding
MPM	Major Periodic Maintenance
NATA	National Association of Testing Authorities
NCOSS	NSW Council of Social Services
NDMA	N-Nitroso-dimethylamine
ОСР	Operational Control Point
OFI	Opportunity for Improvement
PALG	Product and Asset Leadership Group
PIAC	Public Interest Advocacy Centre
PIC	Planning and Infrastructure Committee
PLG	Product Leadership Group
QDWQR	Quarterly Drinking Water Quality Report
QMS	Quality Management System
RAP	Reconciliation Action Plan
ROM	Reliability, Operability and Maintenance
RWMM	Recycled Water Management Manual
RWP	Recycled Water Plant
RWQEMP	Recycled Water Quality Event Management Plan
RWQMP	Recycled Water Quality Management Plan
RWQMS	Recycled Water Quality Management System
SAMF	Strategic Asset Management Framework
SAMP	Strategic Asset Management Plan
SAR	Sodium Adsorption Ratio
SC	Statement of Compliance
SCADA	Supervisory Control and Data Acquisition
SLG	Strategic Liaison Group
SME	Subject Matter Expert
SOC	Systems Operations Centre
SOP	Standard Operating Procedures
STP	Sewage Treatment Plant
STV	Short Term Value
SWIM	Sydney Water Information Management (System)
SWIRL	Sydney Water Incident Recording and Learnings (System)
TAG	Technology Approval Group
Tap in	Sydney Water's online service for applications, approvals and diagrams.
TDS	Total Dissolved Solids
TEC	Total Environment Centre
UKWIR	United Kingdom Water Industry Research
UPG	Unit Process Guideline
USA	Utility Services Agreement
UV	Ultra Violet
UVT	Ultra Violet Transmittance



Notation	Description
WFP	Water Filtration Plant
WI	Work Instruction
WIC	Water Industry Competitions
WQ	Water Quality
WRP	Water Recycling Plant
WSAA	Water Services Association Australia
WWTP	Waste Water Treatment Plant





www.viridis.net.au

# D Sydney Water's Statement of Compliance



Statement of Compliance 2018 For 2017-18 Submitted by Sydney Water Corporation ABN: 49 776 225 038

To: The Chief Executive Officer Independent Pricing and Regulatory Tribunal of NSW Level 15, 2-24 Rawson Place SYDNEY NSW 2000

Sydney Water reports as follows:

- 1. This statement documents compliance during 2017-18 with all obligations to which Sydney Water is subject by virtue of its Operating Licence.
- 2. This report has been prepared by Sydney Water with all due care and skill to the best of our knowledge of conditions to which it is subject under the Sydney Water's Operating Licence and Reporting Manual.
- 3. Schedule A provides information on all obligations with which Sydney Water did not comply during 2017-18.
- Other than the information provided in Schedule A, Sydney Water has complied with all 4. conditions to which it is subject.
- The compliance reports have been approved by the Managing Director and the Chairman 5. of the Board of Directors of Sydney Water.

DATE: Signed:

Name:



DATE:

Signed:

Bruce Morgan

Designation: Chairman

Name:

## Schedule A Non Compliances 2017-18

## List obligations breached, including a brief description of each obligation

## 1.9 Pricing

Sydney Water must set the level of fees, charges, and other amounts payable for its Services subject to the terms of the Operating Licence, the *Sydney Water Act 1994* (the SW Act) and the maximum prices and methodologies for fixing maximum prices determined from time to time by IPART under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).

Under section 18 of the IPART Act, Sydney Water is only able to levy a charge that is lower than a determined price with approval from the Treasurer.

*i* Date or period of non-compliance (including whether and how many customers have been affected)

## 1.9 Pricing – Substance charges for commercial customers

From 1 July 2012 until 31 October 2017, Sydney Water's commercial trade waste customers have been charged an incorrect (lower) price for substance charges than the determined price.

No customers were adversely affected as the nature of the non-compliance meant that prices were effectively rounded down. This resulted in an under-recovery of revenue for Sydney Water of \$224,810 from 2012-13 to quarter 2 of 2017-18. The amount per year varied, in accordance with the total amount of substance charges for commercial customers levied.

This non-compliance was reported in our 2016-17 statement of compliance and carried over into the first quarter of 2017-18.

*ii Nature and extent of non-compliance* 

IPART released the Determination No. 5, 2016 *Maximum prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services* (the 2016 Determination) in June 2016. The 2016 Determination sets the unit price for substance charges for commercial customers (trade waste customers) to three decimal places.

From 1 July 2012 until 31 October 2017, Sydney Water truncated the unit price for substance charges for commercial customers to two decimal places (effectively rounding down the price). This was in line with business practice since 2012, when substance charges for commercial customers were first introduced to three decimal places. Prior to 2012, these charges were set to two decimal places only.

As a result, Sydney Water levied charges to these customers at a rate that was lower than the maximum price without approval from the Treasurer. This is a non-compliance against section 18 of the IPART Act, and, therefore, clause 1.9 of the Operating Licence.

The non-compliance was limited to substance charges for commercial customers only. Substance charges for industrial customers have always been charged to three decimal places and Sydney Water's billing system includes three decimal places in the relevant data field for industrial charges.

iii Results of any monitoring (where applicable) N/A

## *iv Reasons for non-compliance*

The unit prices were truncated from three decimal places as Sydney Water's billing system was configured with only two decimal places in the relevant data field for commercial charges.

The error was identified by Sydney Water staff during the process of updating our system with prices for 2016-17. Staff were alerted to the error while investigating how to apply IPART's new rule regarding rounding (Schedule 9, clause 2.4 of the determination).

## v Remedial action taken

Sydney Water updated its billing system in 2017-18 to apply substance charges for commercial customers to three decimal places. This occurred for all bills issued from 1 November 2017.

Sydney Water reported this non-compliance in our 2016-17 Annual Report and will report the non-compliance again in our 2017-18 Annual Report, as we were non-compliant for part of the 2017-18 period.

## vi Actual/anticipated date of full compliance

Sydney Water made the required billing system changes in the second quarter of 2017-18. All bills issued from 1 November 2017 were compliant with IPART's price determination.