

Independent Pricing and Regulatory Tribunal

Sydney Water Corporation Operational Audit 2014-15

Report to the Minister

Water — Compliance Report March 2016



Independent Pricing and Regulatory Tribunal

Sydney Water Corporation Operational Audit 2014-15

Report to the Minister

Water — Compliance Report March 2016 © Independent Pricing and Regulatory Tribunal of New South Wales 2016

This work is copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism and review. Selected passages, tables or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

ISBN 978-1-925340-52-5 CP90

The Tribunal members for this review are:

Dr Peter J Boxall AO, Chairman

Ms Catherine Jones

Mr Ed Willett

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

Erin Cini	(02) 9113 7778
Jamie Luke	(02) 9290 8460
Jessica Hanna	(02) 9113 7715

Independent Pricing and Regulatory Tribunal of New South Wales PO Box K35, Haymarket Post Shop NSW 1240 Level 15, 2-24 Rawson Place, Sydney NSW 2000 T (02) 9290 8400 F (02) 9290 2061 www.ipart.nsw.gov.au

Contents

Exe	cutiv	re summary	1
	Over	view of audit findings	1
	Annu	al statement of compliance	2
	Our ı	recommendations	3
	Prog	ress with previous recommendations	4
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	6
2	Sum	mary of audit findings and recommendations	10
	2.1	Water quality	10
	2.2	Infrastructure Performance	15
	2.3	Complaint and dispute handling	18
	2.4	Reporting and Maintaining Records	19
	2.5	Pricing	20
3	Prog	ress on previous audit recommendations	22
Ар	oendi	Ces	27
	А	Compliance grades	29
	В	2014-15 Audit Scope	31
	С	Operational audit report 2014-15 – Sydney Water Corporation	61
	D	Sydney Water Corporation's statement of compliance	163

Executive summary

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has completed the final audit of Sydney Water Corporation's (Sydney Water) compliance with the requirements of its 2010-2015 operating licence (the licence). This audit covers the period from 1 July 2014 to 30 June 2015 (2014-15). We have engaged a specialist auditing firm (Risk Edge) to assist with the 2014-15 operational audit. We have prepared this report to summarise the audit findings for the Minister for Lands and Water (the Minister).

Although the 2014-15 audit findings demonstrate that Sydney Water has a high level of compliance with its operating licence we have also identified areas in which Sydney Water can continue to improve its level of compliance with the Operating Licence.

Overview of audit findings

The 2014-15 audit found that Sydney Water is operating effectively and demonstrated a high level of compliance with its licence. This is the fifth audit in the 5-year term of the licence.

The compliance grades that we applied to the audit are explained in Appendix A. We have awarded Full Compliance to six of the nine clauses audited, High Compliance to two clauses and Adequate Compliance for the remaining clause. In summary, the audit found that Sydney Water achieved:

- Full Compliance with all the audited requirements relating to:
 - water quality (drinking water),
 - infrastructure performance (system performance standards clauses, 3.3.1, 3.3.2 and 3.3.3),
 - complaint and dispute handling, and
 - reporting and maintaining records.
- High Compliance with requirements relating to the asset management obligation under infrastructure performance (clauses 3.1.1 and 3.1.2).
- Adequate Compliance with requirements relating to recycled water under water quality (clause 2.2).

Overall, the audit findings and compliance grades assigned this year indicate that Sydney Water continues to manage its operations and its compliance with its licence obligations well. However, as for the previous audit year, this year's audit findings have also identified two areas that require further effort and attention by Sydney Water: the Recycled Water Quality Management System and the asset management obligations.

Sydney Water's compliance is summarised in Table 1.

Liconco port		Number of	Compliance grade assigned				
	cence part	clauses	Full	High	Adeq.	NC	NR
1.	Licence and licence authorisation	0	-	-	-	1a	-
2.	Water quality	2	1	-	1	-	-
3.	Infrastructure performance	5	3	2	-	-	-
4.	Customer and consumer rights	0	-	-	-	-	-
5.	Complaint and dispute handling	1	1	-	-	-	-
6.	Environment	0	-	-	-	-	-
7.	Water conservation	0	-	-	-	-	-
8.	Compliance audits of the licence	0	-	-	-	-	-
9.	Reporting and maintaining records	1	1	-	-	-	-
10	Request for information and access	0	-	-	-	-	-
11	.Memoranda of understanding	0	-	-	-	-	-
То	tal	9	6	2	1	1	0

Table 1Sydney Water's compliance in 2014-15, the final year of its
2010-2015 operating licence

a Sydney Water self-identified an area of non-compliance in its annual Statement of Compliance, 1 September 2015 in accordance with its licence obligations.

Note: Full = Full compliance; High = High Compliance; Adeq. = Adequate Compliance; NC = Non-Compliant. **Sources:** Sydney Water Statement of Compliance 1 September 2015, Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ15 703) for IPART, 19 February 2016.

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 certified by the Managing Director of Sydney Water and the Chairman of the Sydney Water Board. It lists any licence breaches that occurred during the year. Further, any remedial action taken, or in the process of being taken, is reported.

This year Sydney Water reported one non-compliance with clause 1.9 pricing of the Operating Licence. Sydney Water identified that the levying of recycled water developer charges was not consistent with the methodology set out in the IPART Determination.¹

¹ IPART, Recycled Water Developer Charges - Determination No 8, 2006, September 2006.

Our recommendations

The auditor prepared a final audit report detailing its findings and recommendations (Appendix C). We endorse all of the recommended actions and have assigned specific timeframes for completion of the actions. There were three clauses for which the auditor did not award Full Compliance. We also make an additional recommendation to address the non-compliance that Sydney Water identified in its Annual Statement of Compliance. In total, we make seven recommendations which are outlined below.

Recommendations

Licence and licence authorisation - Pricing

1 Sydney Water should complete, register and apply the Developer Service Plan for Hoxton Park. Sydney Water should ensure that it publically reports on its compliance with its Price determinations each year in its annual report (by 30 June 2016) (clause 1.9).

Water Quality - Recycled water

- 2 Sydney Water should develop organisation wide controls for use in recycled water quality management (including linkages between controls and personnel responsibilities). Organisation wide controls should be implemented within individual Scheme Recycled Water Quality Management Plans (by 30 June 2017) (clause 2.2).
- 3 Sydney Water should review recycled water management risk assessment procedures to ensure consistent application of HIDRA risk matrix and consequence key across the organisation (by 30 June 2017) (clause 2.2).
- 4 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 June 2017) (clause 2.2).
- 5 Sydney Water should establish and implement review frequencies for each action within the Australian Guidelines for Water Recycling Framework for both the Recycled Water Management Manual and Scheme Recycled Water Quality Management Plans (by 30 September 2016) (clause 2.2).

Infrastructure performance – Asset management obligation

6 Sydney Water should review and implement measures relating to obtaining asset information to ensure that mechanical and electrical asset data quality and coverage for works completed by contractors provide sufficient detail to maintain robust asset inventories and support asset planning, replacement and other business needs (by 30 September 2016) (clauses 3.1.1 and 3.1.2).

- 7 Sydney Water should review technical asset registers to identify:
 - whether existing asset hierarchy across all asset classes meets business needs
 - the extent to which asset data conforms to the hierarchy (structure, coverage and quality)

and commence programs of work to improve asset registers to achieve business needs identified, which may include regulatory requirements) (30 September 2016) (clauses 3.1.1 and 3.1.2).

Subject to the Minister's endorsement, we will request Sydney Water to provide a progress report to us by 16 May 2016.

Progress with previous recommendations

The audit also assessed Sydney Water's progress with respect to the outstanding recommendations. The auditor identified that progress had been made with respect to all seven of the outstanding recommendations and five of these had been progressed to completion. In relation to the remaining two recommendations, progress has been made but ongoing work is required to close out all aspects of the recommendations.

We are satisfied with Sydney Water's progress to date and expect that these will be closed out within the term of the current Operating Licence (2015-2020).

The ongoing recommendations relate to large programs of work which will require ongoing review of Recycled Water Management Plans (currently on a '4-year rolling review' for each plan), and document control of all key documents relating to licence services and activities.

Both of these recommendations should remain 'on-going' until they have been completely closed out. We recommend a revised completion date of 30 June 2017 for both recommendations. We note the current licence (2015-2020) requires Sydney Water to develop a Quality Management System 30 June 2017, which should assist with the completion of these recommendations.

We will continue to monitor and report on progress against each of these recommendations during each future audit.

1 | Introduction and scope

Sydney Water Corporation (Sydney Water) is a State Owned Corporation (SOC) owned by the NSW State Government. Sydney Water's principal function is to provide, construct, operate, manage and maintain efficient, coordinated and commercially viable systems for providing water, sewerage and stormwater services within its area of operations in Sydney Illawarra and the Blue Mountains.² These roles and responsibilities, as well as Sydney Water's objectives, are prescribed by the *Sydney Water Act 1994* (the Act) and the licence issued to Sydney Water under part 5, section 12 of the Act and the *State Owned Corporations Act 1989* (NSW).

We have completed the 2014-15 annual operational audit of Sydney Water's compliance with the obligations outlined in its licence. We do this by receiving and reviewing reports, attending audit interviews with utility staff, and undertaking field verification to investigate how effectively requirements of the Operating Licence are met in practice. At the completion of the audit, we publish the audit report and report our findings to the Minister for Lands and Water (the Minister).³

We applied a risk-based approach to the Sydney Water audit. Further, we assessed compliance by reviewing an annual statement of compliance prepared by Sydney Water (Appendix D). This is an exception based report listing any licence breaches that occurred during the year and what remedial action has been taken, or is being taken, to resolve the matter.

1.1 Purpose and structure of this report

The purpose of this report is to inform the Minister of Sydney Water's performance against its audited licence obligations for the audit period and to set 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 a summary of the audit findings and recommendations.

² s 5 & 12, Sydney Water Act 1994.

³ In accordance with the requirement of s 32 of the *Sydney Water Act* 1994.

1 Introduction and scope

- Chapter 3 summarises the progress by Sydney Water to address and implement recommendations from previous audits.
- Appendix A contains the table of compliance grades used for this audit.
- Appendix B contains the audit scope.
- Appendix C provides the auditor's detailed audit report.
- Appendix D provides Sydney Water's annual statement of compliance.

1.2 Audit scope

This audit covers the period from 1 July 2014 to 30 June 2015.

The audit scope for this year included obligations relating to:

- Water quality (Part 2) requirements relating to drinking water and recycled water.
- Infrastructure performance (Part 3) requirements relating to asset management and system performance standards.
- Complaint and dispute handling (Part 5) requirements relating to the *internal* dispute handling process.
- Reporting and Maintaining Records (Part 9) requirements relating to reporting and the provision of performance indicators.

No clauses from Parts 1, 4, 6, 7, 8, 10 and 11 were audited this year, following the risk-based approach used in the auditing program.

Further, in determining the scope of the audit we consulted with the NSW Ministry of Health (NSW Health) and sought public submissions. This year, NSW Health noted a number of incidents and areas of cooperation with Sydney Water but did not identify any areas of concern.

We sought submissions from the public on any matter related to the Operating Licence prior to the commencement of the audit interviews. We advertised for public submissions in the Sydney Morning Herald and The Daily Telegraph on 26 August 2015, and The Land on 27 August 2015. We received no public submissions

1.3 The audit process

The audit is the main regulatory instrument that we use to assess compliance with the licence. We apply a risk based approach to the audit. Under this approach, we assess the risk of non-compliance with a licence obligation to determine an appropriate audit frequency for that requirement. We audit clauses that we consider to be 'high risk' more frequently, while low risk clauses are audited less frequently. We audit all requirements of the operating licence at least once during the 5-year term of the Licence.

Adopting a risk based approach has improved the effectiveness and efficiency of the auditing process, without increasing risks to the community. The approach allows audit resources to be targeted to areas of higher risk. It also reduces the overall burden of compliance for the utility.

Prior to the audit, Sydney Water provided a statement of compliance certified by the Managing Director and the Chairman of the Sydney Water Board (Appendix D of this report). This statement reports that Sydney Water has complied with its licence in 2014-15 (including the conditions subsequently audited this year) with the exception of one breach of its pricing condition 1.9 of the Operating Licence. Sydney Water identified that the levying of recycled water developer charges was not consistent with the methodology set out in the IPART Determination.

We engaged a specialist audit firm Risk Edge Pty Ltd (Risk Edge) to assist with the 2014-15 audit of Sydney Water. The auditor was required to undertake the following tasks:

- 1. Consider stakeholder submissions and comments for inclusion in the audit scope.
- 2. Prepare an information request (questionnaire), setting out all information and evidence requirements, 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 face-to-face interviews with Sydney Water staff at its offices.
- 5. Conduct field verification to view a physical asset or facility and assess the implementation of Sydney Water's systems and procedures.
- 6. Assess the level of compliance achieved by Sydney Water against each of the obligations of the licence set out in our risk-based audit scope, providing supporting evidence for this assessment and reporting compliance according to our compliance grades (Appendix A).
- 7. Assess and report on progress by Sydney Water in addressing any comments made by the relevant Minister and/or recommendations endorsed by us following previous audits, providing supporting evidence for these assessments.
- 8. Verify the calculation of performance indicators associated with requirements of the relevant operating licence and undertake an assessment of any underlying trends in performance arising from these indicators.
- 9. Provide drafts of the audit report to us and address comments from Sydney Water and us regarding draft audit findings.
- 10. Prepare a final report outlining audit findings.

The auditor adopted an audit methodology that was consistent with the following standard:

ISO 19011:2011 Guidelines for auditing management systems.

While regard was also given to:

- ▼ ASAE3100 (2008) Compliance Engagements issued by the Auditing and Assurance Standards Board, and
- Hutchins, G. (2014) Value Added Auditing The Standard Manual of Risk-Based Process-Auditing.

The guidelines contained in the above standards set out a systematic approach to defining the requirements of an audit, ensuring that it is conducted in accordance with an established and recognised audit protocol.

The auditor also carried out the audit according to our *Audit Guideline for Public Water Utilities June 2015.*⁴ Under this guideline, auditors can either make recommendations or suggest opportunities for improvement opportunities for improvement.⁵ Where we support an auditor's recommendation, we follow up the matter to ensure that it is addressed.

Where the auditor has suggested opportunities for improvement, we take a different approach. Sydney Water can decide whether to implement an opportunity, based on its own assessment of whether the improvement is a prudent and efficient way to achieve its outcomes. We take this approach to balance improved performance with the investment required to achieve it. That is, we want the utility to consider the pricing implications of continued improvement and value for money, before the utility implements further improvements. As a consequence, we do not follow up these matters.

We held a project start up meeting with the auditor on 28 September 2015, to agree on the project milestones and timing of the audit, and outline our audit expectations. We also held an audit inception meeting with Sydney Water and the auditor on the first day of the audit interviews, 11 November 2015. At this meeting mutual understanding and expectations of the audits were established and protocols for the conduct of the audits were agreed. All parties adhered to the agreed protocols throughout the audit.

⁴ IPART, *Audit Guideline – Public Water Utilities*, June 2015. This Audit Guideline is available on our website (www.ipart.nsw.gov.au).

⁵ p 29

The Operating Licence audit interviews were conducted from 11 to 13 November 2015 at Sydney Water's office in Parramatta. On 13 November 2015, the auditor also undertook a site visit to:

- Parklea drinking water reservoir and chlorine dosing site
- Parklea recycled water reservoir and chlorine dosing site
- Box Hill Drinking Water pumping station, chlorine dosing station, flowmeter and outlet sampling point
- North Richmond drinking water filtration plant, SCADA control room, laboratory, reservoir and chemical storages, and
- Rouse Hill water recycling plant

Sydney Water's compliance with the relevant requirements of the Operating Licence was assessed according to the compliance grades outlined in Appendix A.

2 Summary of audit findings and recommendations

This chapter provides a summary of the auditor's findings and recommendations for each of the audited clauses of the licence. The 2014-15 audit is the fifth and last audit of the 2010-2015 licence.

Each section includes a table providing a comparison of Sydney Water's audit performance during its licence period. Compliance grades are abbreviated according to the following convention:

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

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

2.1 Water quality

Sydney Water achieved Adequate to Full Compliance for the audited clauses.

Part 2 of the licence outlines obligations relating to management of drinking and recycled water quality. Under the risk based auditing framework, we consider that this part of the licence poses a high risk with respect to both the likelihood and consequence of non-compliance.

Water quality obligations of the licence are based on the major water quality management frameworks the Australian Drinking Water Guidelines and the Australian Guidelines for Water Recycling. These guidelines represent current best practice for the supply, use and regulation of water and recycled water schemes. The guidelines contain 12 elements, or groups of activities, which a water supplier should undertake to ensure that water quality is effectively managing its operations, including:

- commitment to responsible use and management of recycled water
- system analysis and management
- supporting requirements, and
- review.

Importantly, the Operating Licence does not directly regulate water quality limits or incidents. It should be recognised that a less than Full Compliance grade assigned within this area is not reflective of poor water quality or water quality failures or incidents, but rather, reflective of weaknesses in the management system, such as records, reports and documentation.

Table 2.1 Summa	y of compliance	with Part 2 of the	licence – Water of	quality
-----------------	-----------------	--------------------	--------------------	---------

Clause	Requirement	rement Compliance grading				
2	Water Quality	2010-11	2011-12	2012-13	2013-14	2014-15
2.1	Drinking Water	High-Full	Full	Full	Full	Full
2.2	Recycled Water (including stormwater)	Full	Full	High	High	Adeq

Source: IPART, Sydney Water Corporation Operational Audit 2013/14 - Report to the Minister, December 2014; Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART, February 2016.

Drinking water quality

The auditor found that Sydney Water achieved Full Compliance with the audited clauses related to drinking water quality.

The audit scope required clauses 2.1 (a), (d), (e) and (f) to be audited this year.

Clause 2.1 (a) requires Sydney Water to manage drinking water quality to the satisfaction of NSW Health in accordance with the Australian Drinking Water Guidelines.

Clause 2.1 (d) requires Sydney Water to *implement* procedures and process for appropriate management of the drinking water supply system under its control in light of its knowledge of the entire drinking water (from source to consumer), and have adequate systems and processes in place to manage drinking water quality planning and risk management implemented across the entire drinking water system.

Clause 2.1 (e) requires compliance with the fluoridation plant operating targets set out in the Fluoridation Code.

Clause 2.1 (f) requires reporting on drinking water quality monitoring in accordance with the Reporting Manual.

The auditor reviewed evidence relating to Sydney Water's management of drinking water quality including evidence and processes relating to:

- capturing its legal requirements through compliance and accountability registers
- understanding its stakeholders, including agreements and protocols with key stakeholders
- system diagrams
- understanding its system risks, including workshops and capture of risks and the 'Catchment to Consumer' risk review
- operational procedures
- monitoring of drinking water quality
- incident management and response processes
- training records
- research programs
- reporting and review
- internal and external audit schedules and reports and drinking water improvement plans, and
- site visits were conducted, inspecting infrastructure, computer automated control records and hand records and calculations particularly in relation to fluoride monitoring.

The evidence sighted by the auditor was determined to align well with the 12 Elements of the Australian Drinking Water Guidelines. In addition, the Auditor noted the correspondence from NSW Health which did not indicate any concerns with Sydney Water's management of drinking water quality.

In relation to drinking water quality, the auditor identified 14 opportunities for improvement in total. Of these, 13 were made in relation to elements of Australian Drinking Water Guidelines framework used in Sydney Water's management of drinking water quality. One opportunity for improvement was made in relation to fluoride reporting.

Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

Recycled water quality

Sydney Water achieved Adequate to Full Compliance with the audited clauses related to recycled water quality.

The audit scope required clauses 2.2 (a), (b) and (c) to be audited this year.

Clause 2.2 (a) requires Sydney Water to manage recycled water quality in accordance with the Australian Guidelines for Water Recycling (unless NSW Health specifies otherwise) to the satisfaction of NSW Health.

Clause 2.2 (b) requires Sydney Water to manage recycled water quality in accordance with any other guidelines specified by NSW Health to the satisfaction of IPART.

Clause 2.2 (c) requires Sydney Water to report on recycled water quality monitoring in the manner and form outlined in the Reporting Manual.

Sydney Water has demonstrated effective management systems and supporting processes in place for Management of Recycled Water Quality and use in areas such as:

- commitment to responsible use and management of recycled water quality and use (Element 1)
- operational procedures and process control (Element 4)
- verification of recycled water quality and environmental performance (Element 5)
- management of incident and emergencies (Element 6)
- awareness and training (Element 7), and
- community involvement and awareness (Element 8).

However, weaknesses were identified in relation to some components of Elements 2, 3, 9, 10, 11 and 12 of the Australian Guidelines for Water Recycling. The auditor's findings in relation to these weaknesses are summarised below. The auditor identified:

- Inconsistencies in assessment of risk and long review cycles of management plans as the reasons for assigning Adequate Compliance against Sydney Water's achievements in relation to assessment of the Recycled Water System (Element 2) of the Australian Guidelines for Water Recycling.
- A lack evidence to assure that chosen barriers either could or did meet the claimed log reductions. This observation was made only in relation to Ultraviolet (UV) disinfection units. This lack of supporting information, not any failure of barriers, is the reason that Adequate Compliance was assigned to preventative measures for recycled water management (Element 3).

- Although the auditor noted that Sydney Water had developed a validation hierarchy and good general documentation of the validation for the two schemes reviewed, the finding in relation to monitoring of UV disinfection units indicated that UV validation had not been carried over into operational monitoring for one scheme. Thus, the auditor assigned Adequate Compliance to validation research and development (Element 9).
- Inconsistencies with version and document control, identification of draft documents, relating to Recycled Water Quality Management and how preventative risk management of recycled water was reported to CEO and Board during the audit period. These observations were the reason for the High Compliance grade assigned to documentation and reporting (Element 10).
- Internal audit checklists, completed for Quality-Environment-Safety audits within the audit period were provided as evidence of internal audits of the Recycled Water Quality Management Systems, did not provide strong evidence of meeting the evaluation and audit requirements (Element 11). While the auditor assigned an Adequate Compliance grade to Element 11, for procedures in place during the audit period, the auditor also noted evidence of a recycled water process audit that had been conducted subsequent to the audit period which would indicate that Sydney Water now has practices in place that meet the requirements of evaluation and audit (Element 11).
- Improvement plans were not maintained during the audit period, even though individual scheme recycled water management plans contained improvement plans within them. The auditor noted that Sydney Water was making progress in this area as part of its work on the Recycled Water Management Manual. Review and continual improvement (Element 12) was assigned a grade of Adequate Compliance.

Accordingly, the auditor assigned Sydney Water Adequate Compliance for clause 2.2 (a) in relation to its overall management of recycled water quality in accordance with the Australian Guidelines for Water Recycling to the satisfaction of NSW Health.

As no other guidelines had been specified by NSW Health in relation to clause 2.2 (b), a No Requirement grade was assigned.

Recycled water reporting was audited and found to be in accordance with the Reporting Manual. Clause 2.2 (c) and was awarded Full Compliance.

We make four recommendations in relation to clause 2.2 (a), based on the auditor's recommendations.

Recommendations

- 2 Sydney Water should develop organisation wide controls for use in recycled water quality management (including linkages between controls and personnel responsibilities). Organisation wide controls should be implemented within individual Scheme Recycled Water Quality Management Plans (by 30 June 2017) (clause 2.2a).
- 3 Sydney Water should review recycled water management risk assessment procedures to ensure consistent application of HIDRA risk matrix and consequence key across the organisation (by 30 June 2017) (clause 2.2a).
- 4 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 June 2017) (clause 2.2a).
- 5 Sydney Water should establish and implement review frequencies for each action within the Australian Guidelines for Water Recycling Framework for both the Recycled Water Management Manual and Scheme Recycled Water Quality Management Plans (by 30 September 2016) (clause 2.2a).

The auditor also provided three opportunities for improvement for clause 2.2 (a) related to elements of the Australian Guidelines for Water Recycling used in Sydney Water's management of recycled water quality. Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

2.2 Infrastructure Performance

Sydney Water achieved High to Full Compliance for the audited clauses in relation to Infrastructure Performance.

Part 3 of the licence outlines obligations relating to infrastructure performance. In particular, it prescribes asset management obligations (clause 3.1) of Sydney Water through an asset management framework, as well as System Performance Standards (clause 3.3) which prescribe the operation of those assets by placing limits on system failures.

	•					
Clause	Requirement		Cor	npliance gr	ading	
3	Infrastructure Performance	2010-11	2011-12	2012-13	2013-14	2014-15
3.1.1	Managing assets	Full	Full	Full	Full	High
3.1.2	Asset management framework	Full	-	-	High	High
3.3.1	Water pressure standard	Full	-	-	Full	Full
3.3.2	Water continuity standard	Full	-	-	Full	Full
3.3.3	Sewage overflow standard	Full	-	-	Full	Full

Table 2.2	Summary of compliance with Part 3 of the licence – Infrastructure
	performance

Source: IPART, Sydney Water Corporation Operational Audit 2013/14 - Report to the Minister, December 2014; Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART, February 2016.

Asset Management Framework

Clause 3.1.1 requires Sydney Water to demonstrate that it manages assets consistently with the asset management framework.

Clause 3.1.2 requires Sydney Water to demonstrate that its asset management framework has a number of components as described in the licence that support it to:

- identify regulatory requirements and service levels
- manage risk to ensure sustainable delivery of regulatory requirements and service levels
- make capital and operating investment decisions that balance risk and cost
- achieve lowest cost of service delivery through lifecycle management of the asset base, and
- review and continuously improve in asset management.

The auditor sampled information relating to critical water mains and water pump stations to test the asset management framework and its implementation. After reviewing information such as:

- asset databases
- decision frameworks
- compliance registers
- servicing strategies
- condition assessments, and
- asset management plans.

The auditor concluded that while Sydney Water had appropriate processes in place for managing the lifecycle of assets, examples of missing asset data, documents control inconsistencies and confusion in asset hierarchy had been observed.

These findings resulted in the auditor assigning High Compliance to both the asset management framework and Sydney Water's implementation of it (clauses 3.1.1 and 3.1.2).

We make two recommendations in relation to clauses 3.1.1 and 3.1.2, based on the auditor's recommendations.

Recommendations

- 6 Sydney Water should review and implement measures relating to obtaining asset information to ensure that mechanical and electrical asset data quality and coverage for works completed by contractors provide sufficient detail to maintain robust asset inventories and support asset planning, replacement and other business needs (by 30 September 2016) (clauses 3.1.1 and 3.1.2).
- 7 Sydney Water should review technical asset registers to identify:
 - whether existing asset hierarchy across all asset classes meets business needs
 - the extent to which asset data conforms to the hierarchy (structure, coverage and quality)

and commence programs of work to improve asset registers to achieve business needs identified, which may include regulatory requirements) (30 September 2016) (clauses 3.1.1 and 3.1.2).

The auditor also provided one opportunity for improvement for clause 3.1 in relation to its continuous improvement of Sydney Water's document control. Further details of opportunities for improvement are available in the auditor's report in Appendix C.

System Performance Standards

Clause 3.3.1 requires Sydney Water to ensure that it meets the specified water pressure standard.

Clause 3.3.2 requires Sydney Water to ensure that it meets the specified water continuity standard.

Clause 3.3.3 requires Sydney Water to ensure that it meets the specified sewage overflow standard.

2 Summary of audit findings and recommendations

The auditor viewed samples of processes and procedures for calculating performance, reviewed, monitoring databases, reporting queries and spreadsheets, geospatial property data and work order information to verify the calculations and definitions used by Sydney water to calculate its performance.

Sydney Water achieved Full Compliance to each of the System Performance Standards, verifying that the calculations complied with the Operating Licence Definitions and that performance was at the required level.

No recommendations were identified by the auditor.

2.3 Complaint and dispute handling

Sydney Water achieved Full Compliance for the audited clauses in relation to its Internal Dispute Resolution process (clause 5.1).

Part 5 of the Operating Licence requires Sydney Water to establish and maintain an internal and external dispute resolution processes.

Clause	Requirement		Com	pliance gr	ading	
5	Complaint and dispute handling	2010-11	2011-12	2012-13	2013-14	2014-15
5.1(a)	Establish internal complaint handling procedures	Full	-	-	-	Full
5.1(b)	Procedures consistent with AS/ISO10002:2004 MOD	Full	-	-	-	Full
5.1(c)	Make information available to customers and consumers	Full	-	-	-	Full
5.1(d)	Provide information to customers with bills at least annually	Full	-	-	-	Full

 Table 2.3
 Summary of compliance with Part 5 of the licence – Complaint and dispute handling

Source: IPART, Sydney Water Corporation Operational Audit 2010/11 - Report to the Minister, November 2011; Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART, February 2016.

Clause 5.1 requires Sydney Water to establish and maintain an internal dispute resolution process based on the Australian Standard Customer Satisfaction Guidelines for Complaint Handling. Sydney Water must make information available to its customers annually with bills and at other times about how to make a complaint and how the complaints handling procedure works. The auditor reviewed the internal complaints handling procedure and information provided to customers with bills and on the Sydney Water website in relation to the requirements of the Operating Licence and the Australian Standard. The internal dispute handling procedure and related activities were assigned Full Compliance by the auditor.

The auditor provided three opportunities for improvement for Clause 5.1. Further details of opportunities for improvement are available in the auditor's report in Appendix C.

2.4 Reporting and Maintaining Records

Sydney Water achieved Full Compliance for the audited clauses in relation to its Reporting and Maintaining Records (clause 9).

Part 9 of the Operating Licence requires Sydney Water to comply with its reporting obligations as set out in the Reporting Manual, to provide reports to NSW Health and IPART and to maintain records that enable Sydney Water to accurately report in accordance with its reporting obligations.

This clause was re-audited this year to follow up on the reporting errors⁶ identified in the previous audit.

Table 2.4 Summary of compliance with Part 9 of the licence – Reporting and maintaining records

Clause	Requirement		Com	pliance gra	ading	
9	Reporting and Maintaining Records	2010-11	2011-12	2012-13	2013-14	2014-15
9(a)-(c)	Reporting and maintaining	Full	-	-	High	Full

Source: IPART, Sydney Water Corporation Operational Audit 2013/14 - Report to the Minister, December 2014; Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART, February 2016.

The auditor reviewed process maps, reporting processes and procedures, indicator spreadsheets, error reports, quality assurance processes, compliance and other reports provided under the Reporting Manual to determine compliance for this clause.

The audit findings included that Sydney Water had maintained record systems, which enabled it to accurately report its Operating Licence obligations to IPART and NSW Health in a timely manner.

⁶ IPART, Sydney Water Corporation Operational Audit 2013/14 - Report to the Minister, December 2014, p 23.

These systems include data collection databases such as business intelligence, performance indicator spreadsheets which are subject to regular review, compliance networks and multiple checks and signoffs of data through Quality Assurance procedures and risk based internal audits.

No recommendations or opportunities for improvement were identified by the auditor.

2.5 Pricing

In addition to the scope of the audit, every item of the Operating Licence is subject to an exception based Statement of Compliance which signed by the Managing Director and the Chairman of the Sydney Water Board (see full Statement of Compliance in Appendix D).

The Statement of Compliance is a report which affirms compliance with all areas of the Operating Licence. Areas of non-compliance are listed in the schedule and details are provided regarding the:

- date or period of non-compliance
- nature and extent of non-compliance
- results of any monitoring
- reasons for non-compliance
- remedial action taken, and
- actual / anticipated date of full compliance.

The 2014-15 Sydney Water statement of compliance self-identified one area of non-compliance in relation to clause 1.9 of the Operating Licence.

This clause requires Sydney Water to set the level of fees, charges and other amounts in accordance with the terms of the licence, the Act and the maximum prices and methodologies determined by IPART.

In its statement of compliance Sydney Water self-identified that it has not complied with a methodology of IPART's Determination No.8, 2006, for fixing the maximum prices for Recycled Water Developer Charges. IPART was already aware of the non-compliance having raised the issue with Sydney Water in March 2015.

Sydney Water identified in its statement of compliance identified that for Hoxton Park, Oran Park/Turner Road and Colebee Development schemes Sydney Water had incorrectly levied capital contributions for recycled water schemes without preparing or registering Developer Servicing Plans.

Further, Sydney Water stated that it is likely that the prices charged were below the price determined by the 2006 methodology and Sydney Water had not sought the Treasurer's approval before fixing the price which is in breach of the IPART Act.

According to Sydney Water, the period of non-compliance for the Oran Park/Turner Road and Colebee schemes were limited to 2009 and 2010. However, the non-compliance in relation to the Hoxton Park Scheme commenced in 2007 and will continue until at least 2016.

Sydney Water is working with IPART to rectify the non-compliance and has committed to registering a Development Service Plan in early 2016.

We have made one recommendation in relation to this recommendation and will follow up throughout the year in addition to follow up at the 2015-16 audit.

Recommendations

1 Sydney Water should complete, register and apply the Development Service Plan for Hoxton Park. Sydney Water should ensure that it publically reports on its compliance with its Price determinations each year in its annual report (by 30 June 2016) (clause 1.9).

3 Progress on previous audit recommendations

Previous audits in 2012-13 and 2013-14 identified areas where Sydney Water's performance with its licence obligations did not receive Full Compliance. We previously made recommendations to the Minister to address these issues.⁷ The following table outlines Sydney Water's progress in implementing these recommended actions.

Sydney Water has made progress in relation to all seven recommendations. Five of the outstanding recommendations from previous audits have been progressed to completion. The remaining two recommendations are ongoing and relate to larger packages of work to continue over more than one audit period. We will continue to assess progress against on-going recommendations in future audits.

	Recommendation	Progress
2012- 13-1	Sydney Water's internal processes for ensuring compliance of customers' operating recycled water schemes (classified municipal use - restricted access and application, or municipal use – enhanced restrictions on access and application) with their contract should be strengthened. At the moment, Sydney Water relies on the Annual Declarations from customers to manage the potential exposure risks or inappropriate uses of recycled water. As a minimum, Annual Declarations forms need to be strengthened and all customers advised on how to properly complete their Annual Declarations. Where appropriate, customers are to re-submit declarations for 2012/13 that have not been completed properly. Additional procedures, such as site inspections for signage and usage controls, should be considered.	Complete Sydney Water has provided sufficient evidence to demonstrate strengthened internal processes to ensure compliance with customer's operating schemes.

Table 3.1Sydney Water's progress in 2014-15 to address our
recommendations from the previous audits

⁷ IPART, Sydney Water Operational Audit 2013-14 Report to the Minister, December 2014, pp 3-4

	Recommendation	Progress
2013- 14-1	Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health.	Ongoing Sydney Water's rolling review of the Scheme Recycled Water Quality Management Plans has been delayed from that advised in previous annual reports. Given the slippage in progress, IPART considers that this part of the recommendation remain open until the conclusion of one cycle of reviews for each of the schemes, in consultation with NSW Health. We are recommending a revised date for completion of 30 June 2017.
	Further, Sydney Water should be able to demonstrate progress with its program in both documentation development and scheme specific implementation by 30 June 2015. Formal endorsement of the Liverpool plan by NSW Health should also be achieved by 30 June 2015. (Clause 2.2 – Recycled water).	Complete NSW Health considered the Liverpool scheme satisfactory. IPART considers that this part of the recommendation can be considered complete.
2013- 14-2	Sydney Water should update site inspection checklists for water recycling schemes to include the names and contact details of the inspector and 'inspectee', and note the date and conditions during the inspection. Sydney Water should demonstrate that a number of schemes have been audited and field verified during 2014-15. (Clause 2.2 – Recycled Water).	Complete The compliance inspection checklist has been revised to include the names and contact details of the inspector and the 'inspectee', and the date and conditions prevailing during inspection. Business Customer Representatives are responsible for following up on any actions identified in the reviews or any identified issues. Issues associated with backflow prevention devices are logged in the appropriate system and follow-up notices are issued. Sydney Water advised for the period 01/07/2014 to 30/06/2015 inspections have been completed and checklists recorded for all 21 recycled water customers. While considered closed, the auditor recommended some opportunities for improvement in relation to Sydney Water's activities in this area. Further details can be found in the auditor's report in

	Recommendation	Progress
2013- 14-3	Sydney Water should undertake a site verification audit of the Recycled Water Quality Management Plan for the Stonecutters Ridge scheme during 2014-15. (Clause 2.2 – Recycled Water)	Complete An audit of the Recycled Water Management Plan for the Stonecutters Ridge scheme was conducted in June with a site verification carried out on 16 June 2015.
2013- 14-4	Sydney Water should ensure that document control is implemented across the organisation for all key documents relating to its services and activities covered by the operating licence. Key knowledge processes and practices should be documented, controlled and endorsed with appropriate signoff.	Ongoing Sydney Water has established a spreadsheet for tracking key documents relating to its Operating Licence Folio. The tracking spreadsheet has a separate tab for each licence area and each area of the business is responsible for providing details of key documents and the review cycle. The level of information provided and completeness varies between business areas. As a large number of documents are planned for review, this recommendation will remain open to be assessed in future audits until progress has been demonstrated that documents have been reviewed within planned review cycles or otherwise reviewed as for example part of quality management systems. We are recommending a revised date of 30 June 2017.
	Sydney Water should demonstrate that information in controlled documents retains currency by implementing regular reviews in accordance with its risk based document control review schedules. By 30 June 2015, Sydney Water should establish a review schedule to ensure that all controlled documents are brought up to date according to the risk level of the document. (Clause 3.1.2(e) – Asset management framework)	Complete Sydney Water has prepared a review schedule for all controlled documents to be brought up to dated based on a risk assessment to determine review frequency and triggers for audit of documentation if errors are identified. This part of the recommendation is complete.
2013- 14-5	By 30 June 2015, Sydney Water should review its incident and scenario close out procedures and documentation relating to services and activities covered by the operating licence, to ensure appropriate and timely close out of actions are implemented. (Clause 3.1.2(e) – Asset management framework)	Complete Sydney Water engaged with internal stakeholders and users of incident and scenario close out information to identify expectations for close out of identified actions, as well as issues that they were aware of. The root causes of issues identified were identified. The recommendations cover areas including improving the close out process, implementing risk based criteria for incident investigation and building capacity in staff to identify and report on incidents. The recommendations were presented to Sydney Water Service Delivery executive in February2015.

	Recommendation	Progress
2013- 14-6	By 30 June 2015, Sydney Water should review its QA processes to ensure that data reported to regulatory bodies is accurate and meets the assigned definitions. (Clause 9(a) – Reporting and maintaining records)	Complete Sydney Water has reviewed its QA process for data generated for regulatory reports (including procedures or performance indicator (PI) sheets to validate/trace data). These PI sheets cover the definition and reporting requirements (definition, interpretation, data source, data provider, due date) as well as the data collection process and associated procedures. In conjunction with this, an audit schedule was being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual. Sydney Water provided annual audit report on System Performance Standards, SPS reporting process, individual PI sheets as evidence of QA review.

Source: Risk Edge, Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART, February 2016.

Appendices

A Compliance grades

Compliance grades for public utilities

Grades of compliance	Description	
Full Compliance	Sufficient evidence to confirm that the requirements have been fully met.	
High Compliance	Sufficient evidence to confirm that the requirements have generally been met apart from very few minor shortcomings which do not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.	
Adequate Compliance	Sufficient evidence to confirm that the requirements have generally been met apart from a number of minor shortcomings which do not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes	
Non compliant	Sufficient evidence has not been provided to confirm that all major requirements are being met and the deficiency adversely impacts the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.	
No Requirement	The requirement to comply with the licence condition does not occur within the audit period or there is no requirement for the utility to meet this assessment criterion.	

Source: IPART, Audit Guideline – Public Water Utilities, June 2015.

A Compliance grades
B 2014-15 Audit Scope

B 2014-15 Audit Scope

Sydney Water Corporation 2014-15 audit scope

Requirement	Meaning
Audit/Review	Condition to be audited/reviewed for 2014-15
SC	Condition where IPART will rely on the utility's statement of compliance. As below, all conditions require a Statement of Compliance unless there is a "No requirement" designation.
NR	No requirement (for audit or statement of compliance).

This package includes the following tables:

Table 1: Audit scope 2014-15 Sydney Water Corporation

Table 2: Recommendations / Outstanding items from previous audits

Table 3: IPART Indicators to be audited in 2014-15

Table 4: Past field verification site visits for Sydney Water

Audit scope 2014-15

Auditors should note any directions shown in the comments column of Table 1.

This scope is based on the audit program determined for the Sydney Water Corporation Operating Licence 2010 - 2015 (IPART reference D15/1687).

Recommendations from previous years

Outstanding audit recommendations from previous years are shown in Table 2. These recommendations are reviewed to determine progress and are reported on separately within the audit report.

Statement of Compliance

By 1 September each year, the utility is required to provide a Statement of Compliance (SC) signed by the Managing Director and a Board Member. The Statement of Compliance is an exception report that lists any non-compliance of licence conditions during the financial year. It also outlines what remedial action has or is being taken in respect to these non-compliances. The SC covers all licence conditions (regardless of whether they are scheduled to be audited or not in that year). Where non compliances are reported this may lead to a late variation to the audit scope to enable a matter to be reviewed if considered warranted.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
1	Licence and licence authorisation		
1.1	Objectives of this licence		·
1.1	 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: (a) meet the objectives and other requirements imposed on it in the Act and other relevant legislation (b) comply with the quality and performance standards in the licence (c) recognise the rights given to customers and consumers (d) be subject to audits of compliance with the licence. 	NR	Clarification condition does not require audit
1.2	Licence authorisation		
1.2	 (a) 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. (b) Sydney Water must ensure that its systems and services comply with the quality and performance standards required in the licence and the <i>Reporting manual</i> or required to be developed under the licence and the <i>Reporting manual</i>. 	NR	Clarification condition does not require audit
1.3	Maintenance of stormwater drainage system		
1.3	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 <i>Local Government Act 1993</i> (NSW)).	NR	Clarification condition does not require audit
1.4	Duration of licence		
1.4	The term of the licence is five years from the commencement date. [Note: Section 17 of the Act allows the Governor to renew the licence for a maximum of five years at a time.]	NR	Clarification condition does not require audit

Table 1 Audit scope 2014-2015 Sydney Water Corporation

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
1.5	Licence amendment		
1.5	 (a) Subject to the Act and clause 1.5(b), the licence may be amended by the Governor by notice in the NSW Government Gazette. (b) Before notice of the proposed amendment to the licence is tabled in Parliament under section 16 of the Act, the Minister must give Sydney Water reasonable notice of the proposed amendment to enable it to comply with the amendment if it takes effect. [Note: Section 16 of the Act requires that, in addition to the above procedure, in order for an amendment to the licence to take effect, written notice of the proposed amendment must be laid before Parliament and either 15 sitting days of each House of Parliament must have passed after the proposed amendment vas tabled without a notice of motion being given to disallow the proposed amendment or, if such a notice has been given, it has lapsed, been withdrawn or defeated.] 	NR	Clarification condition does not require audit
1.6	Connection of services		
1.6	 (a) Subject to Sydney Water continuing to comply with any applicable law, 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. (b) Connection to Sydney Water's drinking water and wastewater services is subject to any conditions Sydney Water may lawfully determine to ensure safe, reliable and financially viable supply to properties in the area of operations in accordance with the licence. 	NR	Clarification condition does not require audit
1.7	Non-exclusive licence		
1.7	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	Clarification condition does not require audit
1.8	Compliance with applicable laws		
1.8	Sydney Water must comply with its obligations under all applicable laws that are relevant to the services it provides or to the performance of its obligations under the licence. [Note: Sydney Water has obligations under a number of laws including: <i>The Act</i>	NR	Clarification condition does not require audit

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	The IPART Act Protection of the Environment Operations Act 1997 Public Health Act 1991 Fluoridation of Public Water Supplies Act 1957 Water Act 1912 Water Management Act 2000 Environmental Planning and Assessment Act 1979 Energy and Utilities Administration Act 1987]		
1.9	Pricing		
1.9	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 <i>IPART</i> Act.	NR	Clarification condition does not require audit
2	Water quality	·	
2.1	Drinking water		
2.1	 (c) Sydney Water must manage Drinking Water quality to the satisfaction of NSW Health in accordance with the Australian Drinking Water Guidelines (unless NSW Health specifies otherwise). (d) Sydney Water must prepare, to the satisfaction of NSW Health, a Five Year Drinking Water Quality Management Plan covering the entire five year term of the Licence. The Five Year Drinking Water Quality Management Plan must be in operation by 31 December 2010 and include strategies for the comprehensive management of the quality of Drinking Water in Sydney Water's water supply system in accordance with the Australian Drinking Water Guidelines (unless NSW Health specifies otherwise). (e) The Five Year Drinking Water Quality Management Plan is to be revised for the period 1 July 2015 to 30 June 2020. Sydney Water must provide a draft revised Five Year Drinking Water Quality Management Plan to NSW Health by 31 December 2014. (f) Sydney Water is to implement procedures and processes for the appropriate management of the Drinking Water supply system under its control in light of its knowledge of the entire Drinking Water supply system (from the source to the consumer). Sydney Water must have adequate systems and processes in place to manage Drinking Water quality taking into account planning and risk management and their implementation across the entire 	Audit sub- conditions (a), (d), (e) and (f) only	This condition was last audited in 2013-14 and was awarded full compliance in that audit. Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the ADWG will be the main focus of the audit. This will be done prior to sending out of questionnaire. The scheme/sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health. Past field verification sites are listed in Table 4. IPART will write to NSW Health regarding its satisfaction with Sydney

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 Drinking Water supply system. (g) Sydney Water must comply with the fluoridation plant operating targets set out in the Fluoridation Code. (h) Sydney Water must report on Drinking Water quality monitoring in the manner and form outlined in the Reporting Manual. 		Water's management of Drinking Water Quality prior to audit.
2.2	Recycled water (including stormwater)		
	 Sydney Water must manage Recycled Water quality in accordance with: (a) the Australian Guidelines for Water Recycling (unless NSW Health specifies otherwise) to the satisfaction of NSW Health; and/or (b) any other guidelines specified by NSW Health to the satisfaction of IPART. (c) Sydney Water must report on Recycled Water quality monitoring in the manner and form outlined in the Reporting Manual. 	Audit	This condition was last audited in 2013-14 and was awarded a high compliance grade in that audit. The 2013-14 audit identified deficiencies in documentation and reporting, evaluation and audit and review and continual improvement plans. Elements 10, 11 and 12 of AGWR were not met. See comments in Table 2 below. Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the AGWR will be the main focus of the audit. This will be done prior to sending out of questionnaire. The scheme/sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health. Past field verification sites are listed in Table 4. IPART will write to NSW Health regarding its satisfaction with Sydney Water's management of Recycled Water Quality prior to the audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
2.3	Changes to management of water quality		
2.3	 (a) Sydney Water must notify NSW Health of any proposed changes to its processes for: (1) managing; or (2) reporting to NSW Health in relation to; Drinking Water quality under condition 2.1 or Recycled Water quality under condition 2.2 where such changes may have a material impact on public health. (b) Sydney Water must obtain NSW Health's approval for any changes notified under condition 2.3(a) before implementing them. 	SC	Audit following any notice of change. IPART will write to NSW Health to determine whether audit is required.
3	Infrastructure performance		
3.1	Asset management obligation		
3.1.1	Managing assets Sydney Water must ensure that its Assets are management framework described in condition 3.1.2.	Audit	This condition was last audited in 2013-14 and was awarded full compliance in that audit. The primary focus of the audit is to be on implementation of the framework. The auditor in consultation with the IPART will select one or two classes of asset/facilities to check implementation of the framework. Past field verification sites are listed in Table 4 below. Note: the adequacy of some components of the framework may be assessed if issue arises or is required for checking implementation.
3.1.2	Asset management framework Sydney Water's asset management framework must demonstrate: (a) robust and transparent methodologies for determining and prioritising licensing and other regulatory requirements and current and future service levels as well as identifying the infrastructure needed to achieve those service levels and requirements;	Audit	This condition was last audited in 2013-14 and was awarded a high compliance grade in that audit. See Table 2. The primary focus of the audit is to be on implementation of the framework.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 (b) robust, transparent and consistent processes, practices and programs to ensure sustainable delivery of service levels and regulatory requirements, based on sound risk management, including: asset inventory; asset planning incorporating both business and technical risk assessments; maintenance of adequate records and robust and reliable data; asset replacement, rehabilitation, augmentation, creation/acquisition and/or substitution (asset and non asset substitutions); management of service provision, including contracts; monitoring and condition assessment; proactive and reactive maintenance; operations; training and resourcing; contingency planning covering both emergency management and business continuity; and asset rationalisation and disposal; cost and service provision to achieve prudent, efficient and effective operating and capital investment; an approach that achieves the lowest cost of service delivery through the effective life cycle management of the asset base; and 		The auditor in consultation with IPART, will select one or two classes of asset/facilities to check implementation of the framework. A list of assets/facilities visited in the past is included in Table 4 below. Note: the adequacy of some components of the framework may be assessed if issue arises or is required for checking implementation.
3.2	Notification of significant changes to asset management framework		
3.2	Sydney Water must advise IPART of any significant changes to processes and methodologies established in accordance with condition 3.1.2 which may have a material impact on the asset management framework.	SC	Audit following any notice of change. Sydney Water is looking at developing an asset management system that is consistent with ISO 55001. This will be a requirement of its next operating licence. There is no need to audit this condition in 2014-15.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
3.3	System performance standards		
3.3	 (a) For the purposes of this condition 3.3 (except in relation to Uncontrolled Sewerage Overflows under condition 3.3.3), each separately billed or separately occupied part of multiple occupancy Property is considered to be a separate Property. (b) For the purposes of Uncontrolled Sewerage Overflows under condition 3.3.3, each multiple occupancy Property is counted as a single Property. (c) In the case of any ambiguity in the definition or application of any system performance standards, IPART's interpretation or assessment of the system performance standards will prevail. 	Audit	This condition was last audited in 2013-14 and was awarded full compliance in that audit.
3.3.1	 Water pressure standard (a) Water pressure standard Sydney Water must ensure that no more than 6,000 Properties experience a Water Pressure Failure in a financial year in its Drinking Water supply system. (b) Water Pressure Failure (1) A Property is taken to have experienced a Water Pressure Failure at each of the following times: (A) when a person notifies Sydney Water that the Property has experienced a Water Pressure Failure and that Water Pressure Failure is confirmed by Sydney Water; or (B) when Sydney Water's systems identify that the Property has experienced a Water Pressure Failure. (2) A Property will not be taken to have experienced a Water Pressure Failure only because of a short term operational problem (such as a main break) which is remedied within 4 days of its occurrence or from abnormal demand (such as demand during fire fighting). (3) Condition 3.3.1(b)(1) does not limit the circumstances in which a Property will have experienced a Water Pressure Failure. 	Audit	Audit to also check calculation methods. Refer to Table 3. This condition was last audited in 2013-14 and was awarded full compliance in that audit.
3.3.2	 Water continuity standard (a) Water continuity standard Sydney Water must ensure that: (1) no more than 40,000 Properties experience an Unplanned Water Interruption exceeding 5 hours in a 	Audit	Audit to also check calculation methods. Refer to Table 3. This condition was last audited in 2013-14 and was awarded full

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
condition	 financial year; and (2) no more than 14,000 Properties experience 3 or more Unplanned Water Interruptions of more than 1 hour duration in a financial year, in its Drinking Water supply system. (b) Unplanned Water Interruption (1) In determining whether a Property experiences an Unplanned Water Interruption a best estimate is to be applied from the best available data, taking account of water pressure data where that data is available. (2) A Property is taken to have experienced a separate Unplanned Water Interruption for each period of 5 hours or more that the Unplanned Water Interruption exists. (3) Condition 3.3.2(b)(2) does not limit the 	2014-15	compliance in that audit. In November 2014, Sydney Water contacted IPART to identify a miscalculation and that it had been under- reporting against water continuity standards. Audit of the calculation of these standards is required in addition to the data collection systems. Step by step through the calculation is expected until the reported numbers are verified.
	circumstances in which a Property will have experienced an Unplanned Water Interruption under condition 3.3.2(b)(1).		
3.3.3	 Sewage overflow standard Sydney Water must ensure that: (a) no more than 14,000 Properties (other than Public Properties) experience an Uncontrolled Sewage Overflow in dry weather in a financial year; and (b) no more than 175 Properties (other than Public Properties) experience 3 or more Uncontrolled Sewage Overflows in dry weather in a financial year. 	Audit	Audit to also check calculation methods. Refer to Table 3.
3.4	Service quality and system performance indicators		
3.4	 (a) Sydney Water must maintain record systems that are sufficient to enable it to measure accurately its performance against the Service Quality and System Performance Indicators. (b) In the case of any ambiguity in the definition or application of any indicators, IPART's interpretation or assessment of the indicators will prevail. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.
3.5	Response time for water main breaks		
	 (a) Sydney Water's response to water main breaks and leaks (in the trunk and reticulation components of Sydney Water's Drinking Water supply system between water treatment plants and a Property), as measured from the time Sydney Water receives notification of a break or leak to the time Sydney Water stops the loss of water, will be as follows: 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 Priority 6 breaks/leaks 90% of jobs within 3 hours Priority 5 breaks/leaks 90% of jobs within 6 hours Priority 4 breaks/leaks 90% of jobs within 5 days Categorisation of Priorities 4, 5 and 6 is set out in Schedule 3. 		
3.6	Priority Sewage Program		
	 (a) Sydney Water must continue with the planning and delivery of the Priority Sewerage Program such that wastewater services are provided to the requisite number of lots in the following areas by the dates specified below: (1) Agnes Banks and Londonderry by 31 December 2012 (2) Glossodia, Freeman's Reach and Wilberforce by 31 December 2012 (3) Yellow Rock and Hawkesbury Heights by 31 December 2012 (4) Appin by 30 June 2015 (5) Wilton and Douglas Park by 30 June 2014 (6) West Hoxton by 30 June 2014 (7) Bargo and Buxton by 30 June 2014 (8) Cowan by 30 June 2014 (9) Galston and Glenorie by 30 June 2015. (b) Sydney Water will commence planning for Yanderra by 30 June 2015. (c) If either Sydney Water or a licensee under the <i>Water Industry Competition Act 2006</i> provides wastewater services to a significant development (as determined by the Minister) in an adjoining area to one of the following areas in the Priority Sewerage Program: (1) Austral (2) Menangle and Menangle Park, then Sydney Water must deliver the Priority Sewerage Program in that area such that wastewater services are made available to customers within 24 months of wastewater services being available to service the significant development. (d) Condition 3.6(b) does not apply where a licensee under the <i>Water Industry Competition Act 2006</i> provides wastewater services to the relevant area of the Priority Sewerage Program. (e) Should delays caused by consent authorities impair Sydney Water's ability to meet the timeframes set out in this condition 3.6, Sydney Water must write to the Minister to advise of the reasons for the delay. (f) Sydney Water must provide an annual report on its progress in implementing the Priority 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	with the Reporting manual.		
4	Customer and consumer rights		
4.1	Customer Contract		
4.1	 (a) Section 54 of the Act requires that the terms and conditions of a customer contract are set out in Sydney Water's operating licence. Sydney Water's customer contract is set out in Schedule 2 (Customer Contract). (b) The Customer Contract sets out the rights and obligations of Customers and Sydney Water in relation to the Services provided through systems required under the Licence. These rights and obligations are in addition to the rights and obligations conferred by the Act and any other law. (c) A copy of the Customer Contract, and any variations to it must be posted on Sydney Water's website for downloading by any person free of charge upon request. 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit.
4.2	Pamphlet		
4.2.1	 Explaining the <i>Customer Contract</i> Sydney Water must prepare a pamphlet that: (a) provides a brief explanation of the Customer Contract; (b) summarises the key rights and obligations of Customers under the Customer Contract; (c) refers to the types of account relief available for Customers experiencing financial hardship; and (d) contains a list of Sydney Water's contact numbers in its Area of Operations. 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit.
4.2.2	 Explaining variation to <i>Customer Contract</i> The pamphlet prepared under condition 4.2.1 must be updated when changes are made to the Customer Contract and must be disseminated by Sydney Water free of charge to: (a) Customers, at least once annually with their quarterly or other bills; and (b) any other person on request. 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit.
4.3	Consumers		
4.3	Sydney Water's obligations under the Customer Contract relating to complaint handling and complaint resolution procedures are extended to Consumers as if the Consumers were a party to the relevant Customer Contract.	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
4.4	Practices and procedures relating to customer and disconnection for non-payment	hardship, deb	t, water flow restriction
4.4	 (a) Sydney Water must have in place and comply with procedures relating to customer hardship, debt, water flow restriction and disconnection. These procedures must include: a customer hardship policy for residential Customers, that helps residential Customers in financial difficulty better manage their current and future bills; a payment plan for residential Customers who are responsible for paying their bill and who are, in Sydney Water's opinion, experiencing financial difficulty; conditions for disconnection of supply or water flow restriction in accordance with the disconnection procedure set out in the Customer Contract; and provisions for self-identification, identification by community welfare organisations and identification by Sydney Water or residential Customers experiencing financial difficulty. (b) Sydney Water must set out the procedures relating to customer hardship, debt, water flow restriction and disconnection referred to in condition 4.4(a) in the Customer Contract. (c) Sydney Water must provide information on its procedures relating to customers, at least once annually with their quarterly or other bills; (2) residential Customers, at least once annually with their quarterly or other bills; (2) residential Customers who are identified as experiencing financial difficulty; and (3) any other person who requests it. (d) Sydney Water must publish its procedures relating to customer hardship, debt, water flow restriction and disconnection on its website. (e) Sydney Water must advise residential Customers who are identified as experiencing financial difficulty; and (3) any other person who requests it. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.
4.5	Ombudsman NSW for resolution. Customer councils and Customer Council Cha	irter	
4.5.1	Customer councils	SC	This condition was last
	 (a) In accordance with the Act, Sydney Water must have in place and regularly consult with a Customer Council to enable 		audited in 2013-14 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 community involvement in issues relevant to the performance of Sydney Water's obligations under the Licence. Sydney Water may have one or more Customer Councils. (b) Sydney Water must consult with the Customer Council, in accordance with the terms of the relevant Customer Council Charter, on: (1) the interests of Customers and Consumers of Sydney Water; (2) the Customer Contract; and (3) such other key issues related to Sydney Water's planning and operations as Sydney Water may determine. 		
	(c) Sydney Water must appoint the members of a Customer Council, consistent with the		
	 (d) At all times, the membership of a Customer Council must include a representative for the interests of at least each of the following: business and consumer groups; low income households; people living in rural and urban fringe areas; residential consumers; environmental groups; local government; and people from culturally and linguistically diverse backgrounds. (e) Sydney Water must provide a Customer Council with information within its possession or under its control (other than information or documents over which Sydney Water or another person claims confidentiality or privilege) necessary to enable that Customer Council to discharge the tasks assigned to it. 		
4.5.2	 Customer Council Charter (a) In consultation with members of each Customer Council, Sydney Water must maintain a customer council charter (Customer Council Charter) that addresses: (1) the role of the Customer Council; (2) selection criteria on how members will be drawn from the community; (3) how the Customer Council will operate; (4) induction processes for new members; (5) a description of the type of matters that will be referred to the Customer Council; (6) 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 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	nt Comments	
	 Council from Customer representatives; (7) communicating the outcome of the Customer Council's work to the public, including the publication of meeting agenda and minutes on Sydney Water's website; (8) procedures for tracking issues raised and ensuring appropriate follow-up of those issues; and (9) funding and resourcing of the Customer Council by Sydney Water including sitting fees and expenses for members. (b) Either Sydney Water or the Customer Council may propose any amendments to the Customer Council Charter. However, such amendments will not be effective until they have been approved by both Sydney Water and the Customer Council. 			
5	Complaint and dispute handling	-	·	
5.1	Internal dispute resolution process	-		
5.1	 (a) Sydney Water must establish and maintain internal complaint handling procedures for receiving, responding to and resolving Complaints by Customers and Consumers against Sydney Water. (b) The internal complaints handling procedures of Sydney Water must be based on the Australian Standard AS/ISO 10002: 2004 MOD Customer Satisfaction – Guidelines for Complaint Handling, as amended or replaced from time to time. (c) Sydney Water must make available to Customers and Consumers information concerning its internal complaints handling procedures which explains how to make a Complaint and how the complaint handling procedure works. (d) Sydney Water must provide information of the nature described in condition 5.1(c) to Customers through their quarterly, or other, bills at least once annually. 	Audit		
5.2	External Dispute Resolution Scheme			
5.2	 (a) Sydney Water must establish or be a member of an industry based dispute resolution scheme for the resolution by a dispute resolution body of disputes between Sydney Water and its Customers and between Sydney Water and Consumers. (b) Any industry based dispute resolution scheme so established by Sydney Water is subject to the Minister's approval. (c) Sydney Water must: (1) prepare a pamphlet that explains how the dispute resolution scheme operates 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit. Number of complaints to EWON remains low. 2013-14 EWON annual report indicates number of complaints 749 for 2013-14 and to 682 for	

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 and how it can be accessed; and (2) provide that pamphlet to Customers through their quarterly or other bills, at least once annually. 		2012-13 year.
6	Environment – indicators and management		
6.1	Environment management		
6.1	 (a) Sydney Water must maintain an environmental management system certified to AS/NZS ISO 14001:2004 (as updated from time to time) to manage environmental risk of its business and service delivery. (b) Sydney Water must prepare a Five Year Environment Plan in accordance with the environmental management system in condition 6.1(a) by 30 September 2010. The Five Year Environment Plan must: (1) include Sydney Water's environmental objectives; (2) contain details of Sydney Water's program to meet the environmental objectives including targets and timetables; (3) endorse the principles of ecologically sustainable development; (4) be integrated into Sydney Water's website for downloading by any person free of charge. A copy of the plan must be provided to any member of the public free of charge upon request. (c) Sydney Water s progress with the environmental objectives, targets and timetable. (d) Each year Sydney Water must review the Five Year Environment Plan by consulting with DECCW and peak environmental non-governmental organisations to determine whether any changes to the Five Year Environment Plan are required in the subsequent year and the nature of those amendments. 	SC	This condition (conditions (a), (c) and (d)) was last audited in 2013-14 and was awarded full compliance in that audit.
6.2	Environment indicators		
6.2	 Sydney Water must: (a) monitor, record and compile data on the Environmental Performance Indicators; and (b) report on the Environmental Performance Indicators, in accordance with its obligations under the Reporting Manual. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments		
7	Water conservation				
7.1	Water usage level				
7.1	 (a) Sydney Water must reduce the quantity of Drinking Water it draws from all sources to a level of water usage equal to, or less than, 329 litres per person per day (the Water Usage Level) by 30 June 2011. (b) Thereafter, Sydney Water must continue to maintain the Water Usage Level for the remainder of the term of the Licence, to be measured at 30 June each year. (c) In calculating water usage for the purposes of the Water Usage Level, Sydney Water may make reasonable adjustments to account for the effects of weather on water usage using a methodology approved by IPART. (d) If Sydney Water fails to meet the Water Usage Level in a particular year, Sydney Water must demonstrate, to the satisfaction of IPART, that it would not have been reasonable to meet the Water Usage Level in that year. (e) Sydney Water must undertake a review of the water usage level as part of the end of term review of this Licence. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.		
7.2	Water leakage				
7.2	 (a) Sydney Water must ensure that the level of water leakage from its Drinking Water supply system (the Water Leakage Level) does not exceed 105 megalitres per day. (b) When calculating the Water Leakage Level each year, Sydney Water must use the assumptions and methodology approved by IPART. (c) Sydney Water must complete a review by 31 December 2011 to determine the economic Water Leakage Level and submit a report on this review to IPART. The review must be conducted in a manner acceptable to IPART. (d) Following submission of the report from Sydney Water under condition 7.2(c), IPART must provide a recommendation to the Minister as to the economic Water Leakage Level. (e) Following review of the report submitted to IPART under condition 7.2(c) and consideration of IPART's recommendation under condition 7.2(d), the Minister may adjust the Water Leakage Level. 	SC	This condition was last audited in 2013-14 (conditions (a) and (b) only) and was awarded full compliance in that audit. The condition was also audited in 2010-11 and 2012-13 and was awarded full compliance.		

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments			
7.3	Water efficiency programs					
7.3	 (a) Sydney Water must undertake and promote water efficiency programs. (b) Sydney Water must give due consideration to water efficiency and other water conservation measures as part of planning the future provision of its Services, including addressing water leakage. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.			
7.4	Water recycling program (including stormwater)					
	 (a) Sydney Water must promote, foster and encourage the production and use of Recycled Water in the Area of Operations. (b) Sydney Water must: (1) meet any target relating to the production and/or use of Recycled Water set by the Minister from time to time consistent with the objectives of the Metropolitan Water Plan; and (2) implement any particular Recycled Water schemes indicated by the Minister so as to meet any target in condition 7.4(b)(1) above. (c) Sydney Water is not required to undertake any Recycled Water scheme where it is not financially viable to do so. 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.			
7.5	Water Conservation Strategy Document and annual report					
	 (a) Sydney Water must prepare and submit to IPART and the Minister by 31 December 2010 a Five Year Water Conservation Strategy Document covering the term of the Licence. The Five Year Water Conservation Strategy Document must include details of: (1) strategies relating to water leakage; (2) strategies relating to Recycled Water; (3) strategies relating to water efficiency; (4) how the water conservation strategies outlined in paragraphs (a)(1) – (a)(3) above contribute to the objectives and targets outlined in the Metropolitan Water Plan. (b) The Five Year Water Conservation Strategy Document must provide an analysis of current and future programs and projects being undertaken, and expected to be undertaken, by Sydney Water. In particular, the Five Year Water Conservation Strategy Document must outline Sydney Water's water conservation objectives, targets and timetable for the entire term of the Licence. (c) Sydney Water must provide an annual report on its progress in implementing its water conservation strategies in accordance with the Reporting Manual. The annual 	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit.			

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments			
	 report must include an explanation of how work done for the purpose of implementing the water conservation strategies undertaken during the year contribute to the objectives and targets outlined in the Metropolitan Water Plan. (d) The following documents must be placed on Sydney Water's website: (1) the annual report on Sydney Water's progress in implementing its water conservation strategies required under condition 7.2(c); and (2) the Five Year Water Conservation Strategy Document. 					
8	Compliance audits					
8.1	Compliance audits					
8.1	IPART may undertake an audit on the compliance of Sydney Water with: (a) the licence (b) the <i>Reporting manual</i> (c) any matters required by the Minister.	NR	Considered to be self- auditing			
8.2	Ad hoc audits					
8.2	IPART may undertake ad hoc audits at the direction of the Minister.	NR	Considered to be self- auditing			
8.3	Reporting in relation to compliance audit					
8.3	Where a compliance audit has identified non- compliance with the licence, in addition to any other action that is taken or required to be taken, the Minister may require Sydney Water to promptly advertise publicly, and notify customers and consumers of, the areas in which its performance has not complied with the licence, the reasons why and the measures that will be taken by it to address the non-compliance. Such advertisements and notices must be in a form reasonably acceptable to IPART.	NR	Considered to be self- auditing			
8.4	Costs of annual audit					
8.4	Sydney Water must pay to the Treasurer the cost (as certified by IPART) involved in and in connection with carrying out each annual audit. [Note: section 33A of the Act provides for Sydney Water to pay the cost of the audit.]	NR	Clarification condition does not require audit			
8.5	Provision of information					
8.5	 (a) Sydney Water must provide IPART, and any person appointed or approved by IPART to conduct a compliance audit, with all 	-	Considered to be self- auditing			

information within its possession or under its control necessary to the conduct of the compliance audit, including whatever information is reasonably requested by IPART or the person appointed or approved by IPART.

- (b) The information sought under clause 8.5(a) must be made available within a reasonable time of it being requested.
- (c) For the purposes of any compliance audit, Sydney Water must, within a reasonable time of being required by IPART, or a person appointed or approved by IPART to conduct the compliance audit, permit IPART or that person to:

(1) have access to any works, premises or offices occupied by Sydney Water
(2) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices

(3) take on to any such premises, works or offices any other persons or equipment as necessary for the purposes of performing the compliance audit or verifying any report on the compliance audit

(4) 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 the licence
(5) discuss matters relevant to the compliance audit or any report on the compliance audit with Sydney Water's employees.

- (d) If Sydney Water contracts out any of its activities to third parties (including a subsidiary) it must take all reasonable steps to ensure that, if required by IPART, any such third parties provide information and do the things specified in this clause 8 that extend to Sydney Water as if that third party were Sydney Water.
- (e) For the purpose of any compliance audit, information over which confidentiality or any form of privilege is claimed by Sydney Water or a subsidiary or third party must be provided to IPART or the person appointed or approved by IPART to conduct the compliance audit, subject to IPART or that person entering into reasonable arrangements to ensure that the confidential or privileged information remains confidential or privileged.

	Reporting and maintaining records				
9 (a) Syd	dney Water must comply with its reporting	Audit	This condition was last		

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments		
	 obligations set out in the Reporting Manual and must report to IPART in accordance with the Reporting Manual. (b) Sydney Water must provide to NSW Health a copy of any report referred to in the Reporting Manual relating to water quality monitoring. (c) Sydney Water must maintain record systems that are sufficient to enable it to accurately report in accordance with condition 9(a). 		audited in 2013-14 and was awarded a high compliance grade in that audit. See Table 2. IPART consider the errors relating to Sydney Water's water continuity standards reporting were significant, as the data has been misreported for four years.		
10	Request for information and access				
10.1	IPART				
10.1	 (a) Sydney Water must comply with any reasonable request by IPART for information relating to the performance by Sydney Water of its obligations under condition 9. (b) As part of its obligations under condition 10.1(a), Sydney Water must provide IPART with physical and electronic access to the records kept by Sydney Water that enable it to comply with condition 9. (c) Sydney Water must provide IPART with such information as IPART reasonably requires to enable it to conduct any reviews of the Licence or obligations under the Licence as may be required by the Minister. 	SC	This condition was last audited in 2010-11 and was awarded full compliance in that audit. Compliance with this condition can be confirmed by IPART.		
10.2	NSW Health				
10.2	Sydney Water must comply with any request by NSW Health for information relating to water quality. The information provided under this condition must be in the manner and form specified by NSW Health.	SC	This condition was last audited in 2013-14 and was awarded full compliance in that audit. IPART will write to NSW Health to determine whether any audit of this condition is required.		
11	Memoranda of Understanding				
11	 (a) In accordance with the Act, Sydney Water must maintain a memorandum of understanding with each of the following: 	SC	This condition was last audited in 2013-14 and was awarded full		

(1) the Water Administration Ministerial

Corporation (WAMC);

(2) NSW Health; and

for the term of the Licence.

(3) DECCW,

compliance in that audit.

Licence condition	Operating Licence Obligations	Requirement 2014-15	Comments
	 to the memorandum. In particular: (1) the memorandum of understanding wit NSW Health is to recognise the role of NSW Health in providing advice to the Government of NSW in relation to: (A) the management of the supply of Drinking Water to ensure it is safe to drink; and (B) the management of the supply of Recycled Water in respect of its fitness for purpose and effects on health; (2) the memorandum of understanding wit DECCW is to recognise DECCW as the environmental regulator of the State and to commit Sydney Water to environmental obligations; and (3) the memorandum of understanding wit the WAMC, is to recognise the role of WAMC in regulating water access, use and management and Sydney Water's right to use water vested in the WAMC (c) Condition 11(a) does not limit the persons o regulatory agencies with whom Sydney Water may have a memorandum of understanding. 		
12	End of term review of Licence		
12	 (a) On or about 1 January 2014 a review of the licence, which will entail public consultation, will be undertaken by the licence reviewer: (1) to determine whether the licence is fulfilling its objectives (2) in relation to any matter requiring to be reviewed by the licence (3) to determine the terms of any renewal of the licence. 	NR	
	(b) Sydney Water must, on the direction of the Minister, make available to the public on request and for downloading from its website, and free of charge, the report prepared by the Licence Reviewer at the conclusion of the review.		

Recommendation number	Operational issue (Licence reference where applicable)	IPART Recommendation to the Minister	Progress since 2013-14 Audit Reported in 31 March Report 2015	Guidance for 2014-15 Audit
2012-13 - 1	Recycled Water – condition 2.2	Sydney Water's internal processes for ensuring compliance of customer's operating recycled water schemes (classified municipal use - restricted access and application, or municipal use - enhanced restrictions on access and application) with their contract should be strengthened. At the moment Sydney Water relies on the Annual Declarations from customers to manage the potential exposure risks or inappropriate uses of recycled water. — As a minimum, Annual Declarations forms need to be strengthened and all customers advised on how to properly complete their Annual Declarations. Where appropriate, customers are to re-submit declarations for 2012-13 that have not been completed properly. — Additional procedures, such as site inspections for signage and usage controls, should be considered.	Partially Completed. An inspection checklist has been drawn up, but inspections have not been carried out. Business customer service officers have been allocated as liaison points for each scheme customer and to maintain contact as required. Annual declarations were received from all customers, incorrectly completed declarations were resubmitted.	Audit to confirm recommendations have been satisfactorily resolved. Check that the inspection has been completed and at the appropriate times (summer) when recycled water is in greater and more consistent use.
2013-14 - 1	Condition 2.2 – Recycled water	Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health. Further, Sydney Water should be able to demonstrate progress with its program in both documentation development and scheme specific implementation by 30 June 2015. Formal endorsement of the Liverpool plan by NSW Health should also be achieved by 30 June 2015.	Sydney Water is reviewing and updating Recycled Water Quality Management Plans in-line with the four year rolling program agreed with NSW Health. An overarching Recycled Water Management Manual to support the scheme plans is also in development with a draft due for completion by 30 June 2015. The Liverpool Scheme Plan has been submitted to NSW Health for endorsement. NSW Health has	Audit progress. Completion due – 30/6/2015

Table 2 - Recommendations / Outstanding items from previous audits

2014-15 audit scope IPART | 22

Recommendation number	Operational issue (Licence reference where applicable)	IPART Recommendation to the Minister	Progress since 2013-14 Audit Reported in 31 March Report 2015	Guidance for 2014-15 Audit
			advised that they do not intend to endorse the plan but will provide comments on the plans suitability. We will aim to have this by 30 June 2015. On receipt of these comments Sydney Water will incorporate them and finalise the plan.	
2013-14 - 2	Condition 2.2 – Recycled water	Sydney Water should update site inspection checklists for water recycling schemes to include the names and contact details of the inspector and 'inspectee', and note the date and conditions during the inspection. Sydney Water should demonstrate that a number of schemes have been audited and field verified during 2014-15.	The compliance inspection checklist has been revised to include the names and contact details of the inspector and 'inspectee', and the date and conditions prevailing during the inspection. For the period 01/07/2014 to 28/02/2015 inspections have been completed and checklists recorded for 20 of the 21 recycled water customers.	Audit – review checklist. Completion due - 30/06/2015.
2013-14 - 3	Condition 2.2 – Recycled water	Sydney Water should undertake a site verification audit of the Recycled Water Quality Management Plan for the Stonecutters Ridge scheme during 2014-15.	A site verification audit of the Recycled Water Management Plan for the Stonecutters Ridge scheme is scheduled for June 2015.	Audit Progress. Due for completion – 30/06/2015.
2013-14 - 4	Condition 3.1.2(e) – Asset management framework)	Sydney Water should ensure that document control is implemented across the organisation for all key documents relating to its services and activities covered by the operating licence. Key knowledge processes and practices should be documented, controlled and endorsed with appropriate signoff. Sydney Water should demonstrate that information in controlled documents retains currency by implementing regular reviews in accordance with its risk based document control review schedules. By 30 June 2015, Sydney Water should establish a review	 Sydney Water currently uses various document control methods across the organisation including: Business Management Information System (BMIS – system used for controlling management system documents); Sydney Water Information Management System (SWIM – corporate records management system); Local area network drives iConnect (intranet) hard copy registered files. With the implementation of an organisation wide QMS Sydney Water will transition to using BMIS 	Audit progress of this project. Review the list of out of date documents and the priority of updates are related to risk level. Review the new template for documents managed by Corporate Compliance. Due for completion –

Recommendation number	Operational issue (Licence reference where applicable)	IPART Recommendation to the Minister	Progress since 2013-14 Audit Reported in 31 March Report 2015	Guidance for 2014-15 Audit
		schedule to ensure that all controlled documents are brought up to date according to the risk level of the document.	 (or similar) for controlling all key documents. In the interim, Sydney Water will address this requirement via a two-pronged approach: In order to cover key documents related to compliance with the Operating Licence, staff with primary responsibility for ensuring compliance with the Licence conditions (primary contacts) will document the key documents that support or demonstrate compliance. To facilitate this, an Operating Licence document control template managed by Corporate Compliance has been created. The template will identify the key document name, document owner, document control method, last review date, review period and the next review date for each key document. A list of expired documents will be compiled and the primary contacts and document review schedule (based on the determined risk of the document) to ensure that key documents are brought up to date in a timely manner. 	30/06/2015
2013-14 - 5	Condition 3.1.2(e) – Asset management framework	By 30 June 2015, Sydney Water should review its incident and scenario close out procedures and documentation relating to services and activities covered by the operating licence, to ensure appropriate and timely close out of actions are implemented.	Sydney Water is reviewing its incident and scenario close-out procedures relating to services and activities covered by the Operating Licence. In addition, a review is being carried out of outstanding incident management actions to ensure these are prioritised for timely close out. Sydney Water has robust incident management processes. The process follows an 'All Hazards'	Audit Progress. Check the progress of closeout procedures projects. Select a number of incidents from the audit period and follow through to demonstrate closeout

Recommendation number	Operational issue (Licence reference where applicable)	IPART Recommendation to the Minister	Progress since 2013-14 Audit Reported in 31 March Report 2015	Guidance for 2014-15 Audit
			approach, that is universally accepted by all emergency services and utilities for managing incidents.	process is working. Due for completion – 30/06/2015.
2013-14 - 6	Condition 9(a) – Reporting and maintaining records)	By 30 June 2015, Sydney Water should review its QA processes to ensure that data reported to regulatory bodies is accurate and meets the assigned definitions.	Sydney water is currently reviewing data included in regulatory reports to ensure that it is documented in procedures or performance indicator (PI) sheets sufficient to trace and validate data logic and QA steps. In conjunction with this, an audit schedule is being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual.	Audit Progress. Review performance indicator sheets. See audit schedule for upcoming or completed audits. Audit schedule to be in place by 30/06/2015. Audits will be ongoing.

Table 3IPART Indicators to be audited in 2014-15

IPART Indicator No.	Indicator	Definitions
1	The number of properties affected by an unplanned water interruption duration of more than 1 hour and	Property means any real property to which either or both of the following conditions apply: Does this phrase make sense?
	less than or equal to 5 hours.	a. the real property is connected to the water utility's drinking water supply system, to the water utility's sewerage system or to the water utility's recycled water system and a charge for the services provided by one or more of those systems is levied on the owner of the real property
		b. the real property is within a declared stormwater drainage area for which the utility imposes a stormwater charge upon the owner of real property in that area.
2	Occurrence of water interruptions to affected properties (i.e. the number of properties experiencing 3 or more Planned and Unplanned water interruptions) of more than one hour duration)	Water Interruption means any event causing a total loss of water supply due to any cause. Water interruption excludes those caused by bursts or leaks in the service connection to internal plumbing or planned meter replacements. All interruptions not subject to notification caused by third parties or a power failure should be included. Exclude instances of reduced service levels due to, for example, low pressure. If a property experiences more than one interruption then it should be counted for each event. A water supply interruption, which causes loss of supply to 100 customers, is counted as 100 customer interruptions.
		Planned water interruption – water interruption initiated by the water utility for which at least 24 hours notice has been given to the customer.
		Unplanned water interruption means an interruption in which an occupier of a property has not received at
13	Events leading to planned or unplanned water interruption where 250 or more properties experience an interruption of over 5hrs duration.	least 24 hours notification of the interruption or an interruption that has occurred prior to the expiry of any notice provided to an occupier advising of an interruption. It also includes outages where the duration exceeds that originally notified. In this case the entire outage is classed as unplanned
I 4 (S)	The number of residential properties affected by	Property as per l 1.
	planned water supply interruptions in peak hours (5am-9am and 5pm-11pm)	Planned water interruption as per l 1
		Notes:
		1. For the purpose of this indicator, property refers to only residential properties.
		2. Interruptions spanning any part of the peak period are to be included.
15	The number of properties in the water utility's	Property as per l 1.
	drinking water supply network experiencing a water pressure failure which is occasional or recurrent, but not permanent	A property experiences a water pressure failure if a pressure of less than 15 metres head is experienced for a continuous period of 15 minutes or more measured at the point of connection of the Property and the water utility's water supply system, usually at the point of connection known as the "main tap". For the purpose of this indicator:
		(a) where connected properties are in multiple occupancy, each separately billed or occupied part shall be

IPART Indicator No	Indicator	Definitions		
indicator No.		counted as one connected property. Connected properties currently unoccupied shall be included		
		(b) a Property is taken to have experienced a water pressure failure at each of the following times:		
		 (i) when a person notifies the water utility that the Property has experienced a water pressure failure and that water pressure failure is confirmed by the water utility; or 		
		 (ii) when the water utility's systems identifies that the Property has experienced a water pressure failure; and 		
		(c) a Property will not be taken to have experienced a water pressure failure only because of a short term operational problem (such as a main break), which is remedied within four days of its occurrence or from abnormal demand (such as demand during fire fighting).		
16	Number of High Priority sewage overflows per 100 km	High Priority sewage overflow is an event assessed by the water utility as:		
	of sewer main responded to in a year	(a) a public health concern		
		(b) likely to amount to significant damage to property		
		(c) likely to have a significant environmental impact		
		(d) an interruption of the sewerage service.		
		Medium Priority sewage overflow is an event assessed by the water utility as likely to amount to:		
l7	Number of Medium Priority sewage overflows per 100 km of sewer main responded to in a year	(a) minor property damage		
		(b) minor environmental impact (including unpleasant odours) not posing a significant health risk.		
		The utility has defined problem codes of 'sewerage surcharge', 'plumber confirmed choke' or 'internal surcharge'. The number of events to be used is the number recorded under these codes determined to be priority High or Medium jobs.		
		Note: High Priority is equivalent to a Priority 6 for Sydney Water or Priority 1 for Hunter Water. Medium Priority is equivalent to a Priority 5 for Sydney Water or Priority 2 for Hunter Water.		
18	Number of residential customers' dwellings affected by sewer spills not contained within 1 hour of notification	Residential customer means a customer who: owns real property which is used as a principal place of residence.		
		Property as per l 1.		
		Sewer spills refers to a sewer spill caused by a fault in the water utility's sewerage system that discharges to a customer's dwelling. It does not include spills caused by faults in the service connection or house connection branch and the house service line.		
		Contained means the sewage spill has ceased or has been alleviated. It does not include sewer spills caused by faults or blockages in the customer's pipes.		

Audit year	Location	Facility
2013-14	West Camden	Water Recycling Plant
	Warragamba	Water Filtration Plant
	SW Growth Area	Networks Alliance Managed Upgrade
2012-13	Macarthur	Macarthur Water Filtration Plant
	Liverpool	Customer Service Centre
	Liverpool	Liverpool Recycling Plant
	West Hoxton	Priority Sewage Project
2011-12	Wollongong	Recycled Water Treatment Plant
	Woronora	Water Filtration Plant
	Heathcote	Reservoir
2010-11	Various	Three treated water reservoirs
	Orchard Hills	Water filtration plant
	Drummoyne	Mains flushing

C Operational audit report 2014-15 – Sydney Water Corporation

C Operational audit report 2014-15 – Sydney Water Corporation

Sydney Water Corporation 2014/15 Operational Licence Audit (RFQ 15 703) for IPART

Version: Final

19 February 2016Risk Edge™ Project # 167In conjunction with Atom Consulting and Cardno



ABN 43 143 242 399 m +61 411 049 544 e contact@riskedge.com.au www.riskedge.com.au



PO Box 268 Killara NSW 2071 AUSTRALIA +61 (0)411 049 544 contact@riskedge.com.au riskedge.com.au @Risk_Edge

Item	Description	
PROJECT DESCRIPTION:	Sydney Water Corporation: 2014/15 Operational Licence Audit (RFQ 15 703) Risk Edge™ Project # 167	
Document Name:	Risk Edge™ Pty Ltd (2016) Sydney Water Corporation: 2014/15 Operational Licence Audit (RFQ 15 703) for IPART. Risk Edge™ Pty Ltd (with Atom Consulting and Cardno) Project #167. Version: Final (RevA).	
CLIENT:	Independent Pricing and Regulatory Tribunal of New South Wales (IPART)	
Client Address:	PO Box K35, Haymarket Post Shop NSW 1240	
Intended Use:	This document has been prepared on behalf of and for the exclusive use of Risk Edge™ Pty Ltd's Client and is bound by the terms of the agreement with that Client. Risk Edge™ Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this document by any third party.	

Document History

ΤΥΡΕ	AUTHOR	Issued To/Date	Notes
First Draft RevA	Dr Annette Davison / Dr Annalisa Contos / Mr Stephen Walker	Dr Annette Davison / 3 December 2015	Draft for QA check.
First Draft RevB	Dr Annette Davison / Dr Annalisa Contos / Mr Stephen Walker	FTP site / 4 December 2015	For IPART and SWC review.
Revised Draft RevA	Dr Annette Davison / Dr Annalisa Contos / Mr Stephen Walker	For period 19 December 2015 – 25 January 2016	Specific section revisions and general editing conducted. QA undertaken.
Revised Draft RevB	Dr Annette Davison / Dr Annalisa Contos / Mr Stephen Walker	FTP site / 25 January 2016	For IPART and SWC review.
Final RevA	Dr Annette Davison / Dr Annalisa Contos / Mr Stephen Walker	FTP site / 19 February 2016	Final audit report.

Glossary

Item	DESCRIPTION
48HD	48 hour notice
Act	Generally refers to Sydney Water Act 1994 (NSW).
ADWG	NHMRC, NRMMC (2011) Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra. Version 2.0 Updated December 2013. ISBN Online: 1864965118).
AGWR	AGWR (2006) Australian Guidelines For Water Recycling: Managing Health and Environmental Risks (Phase I). Natural Resource Management Ministerial Council Environment Protection And Heritage Council Australian Health Ministers Conference. Web Copy: ISBN 1 921173 06 8
ANSTO	Australian Nuclear and Science Technology Organisation
AOMS	Assets and Operations Maintenance System
Aquality	WSAA's Framework for Management of Drinking Water Quality benchmarking tool.
AS	Australian Standard
AS ISO 10002-2006	Customer satisfaction - Guidelines for complaints handling in organizations (ISO 10002:2004, MOD)
AS/NZS 10002:2014	Guidelines for complaint management in organizations (supersedes AS ISO 10002 – 2006, Customer satisfaction – guidelines for complaints handling in organizations (ISO 10002:2004, MOD)).
ASAE	Australian Standard on Assurance Engagements
Audit Guideline	IPART (2015) ''Public Water Utility Audit Guideline'' (June 2015)
Audit Period	The dates of 1 July 2014 to 30 June 2015 over which Sydney Water's compliance is checked against certain clauses of its Operating Licence (as determined by IPART).
AWTP	Advanced Water Treatment Plant
BCS	Business Continuity System
BMIS	Business Management Information System
BOO	Build Own Operate
C2C	Catchment to Customer
C.t	C.t (concentration (C) and time (t)) values are related to the disinfectant dosage for the drinking water. A C.t value is the product of the concentration of a disinfectant (e.g. free chlorine) and the contact time with the water being disinfected. It is typically expressed in units of mg.min/L.
Capex	Capital Expenditure
CAR	Corrective Action Request
ССР	Critical control point (as defined in the Framework).
CCT	Chlorine Contact Tank
CCTV	Closed Circuit Television
CE/CEO	Chief Executive or Chief Executive Officer
CIS	Customer Information System
Citect	A software development company specialising in the automation and control industry.
CMMS	Computerised Maintenance Management System
CMS	Customer Management System
CPP	Contracting Partners Program
CRWMS	Customer Recycled Water Management System
DA	Development Application
DMF	Dual Media Filter
DR	Debt Recovery
DWIP	Drinking Water Improvement Plan
DWMM	Drinking Water Management Manual

Item	Description
E. coli	Escherichia coli
ekams	Effluent Knowledge and Management System
EPA	NSW Environment Protection Authority
ewon	Energy and Water Ombudsman NSW
Fluoride Code	New South Wales Code of Practice for Fluoridation of Public Water Supplies 2011 (Fluoride Code) (Fluoridation of Public Water Supplies Act 1957 (NSW)) NEW SOUTH WALES GOVERNMENT GAZETTE No. 35
Framework	This term refers to either the Framework for Management of Drinking Water Quality or the Framework for Management of Recycled Water Quality and Use. Its meaning in situ depends on the context of the clause being assessed.
FRC	Free Residual Chlorine
FSQM	Field Services Quality Manual
GAC	Granular Activated Carbon
GIPA	Government Information (Public Access) Act 2009 (NSW)
GIS	Geographical Information System
GL	Gigalitre
HACCP	Hazard Analysis and Critical Control Point
HBT	Health-based Targets (WSAA (2014) Drinking Water Source Assessment and Treatment Requirements Manual for the Application of Health-Based Treatment Targets Release No 1 August 2014)
HPC	Heterotrophic plate count bacteria
IEC	International Electrotechnical Organisation
licats	Integrated Instrumentation Control Automation and Telemetry System
IPART	Independent Pricing and Regulatory Tribunal of NSW
ISO	International Standards Organisation
ISO 14000	A family of international standards relating to environmental management.
ISO 31000	ISO 31000:2009 Risk Management – Principles and Guidelines. (adopted in Australia as AS/NZS ISO 31000:2009 (ISO 31000)
IT	Information Technology
JOG	Joint Operational Group
kL	Kilolitre (1 thousand litres)
km	Kilometre
KPI	Key Performance Indicator
Licence	Sydney Water Corporation Operating Licence 2010-2015
LIMNOS	A database for management of water quality laboratory results. The system automatically reviews water quality results on a daily basis. LIMNOS is used by Sydney Water as an operational tool for water quality exception reporting.
LRV	Log Reduction Value
LTV	Long term Trigger Value
M&R	Monitoring and Reporting
ML	Megalitre (1 million litres)
MOU	Memorandum of Understanding
MPMS	Monitoring Process Monitoring System
NATA	National Analytical Testing Authority
NCAT	NSW Civil and Administrative Tribunal
NDMA	N-Nitrosodimethylamine
NOM	Natural Organic Matter
NPR	National Performance Report (published by the National Water Commission and the parties to the National Water Initiative).
NSW Health	NSW Department of Health
ITEM	DESCRIPTION
---------------------	--
NWI	National Water Initiative
OCP	Operational control point
O&M	Operation and Maintenance
OEH	NSW Office of Environment and Heritage
ра	Per annum
PAC	Powdered Activated Carbon
PAS	Payment Assistance Scheme
PD	Position Description
PDP/CDP	Personal Development Plan/Contribution and Development Plan (CDP has replaced PDP)
рН	A measure of the acidity of a solution related to the concentration of hydrogen ions.
PLC	Programmable Logic Controller
QA	Quality Assurance
QMP-RWS	Quality Management Plan – Recycled Water Schemes
QMS	Quality Management System
Reporting Manual	Reporting Manual for Sydney Water Corporation Water — Reporting Manual June 2013 (IPART)
RFQ	Request for Quote
RWMS	Recycled Water Management System
RWQMP	Recycled Water Quality Management Plan
SAP	Systems, Applications and Products in Data Processing
SCA	Sydney Catchment Authority
SCADA	Supervisory Control and Data Acquisition
SDIMS	Service Delivery Integrated Management System
SDP	Sydney Desalination Plant Pty Ltd
SIP	Standard Incident Procedure
SLC	Strategic Liaison Committee
SLG	Strategic Liaison Group
SOP	Standing Operating Procedure
SPS	Sewage Pumping Station
STV	Short term Trigger Value
SWC	Sydney Water Corporation
SWGC	South West Growth Corridor
SWIRL	Sydney Water Incident Recording and Learning System
Sydney Water	Sydney Water Corporation
TC	Total Chlorine
TDS	Total Dissolved Solids
TOC	Total organic carbon
UV	Ultraviolet
UVT	Ultraviolet transmissivity
WFP	Water Filtration Plant
WPS	Water Pumping Station
WQ	Water Quality
WRP	Water Recycling Plant
WSAA	Water Services Association of Australia

Executive Summary

Audit Background

Through a competitive tender process, the Risk Edge[™] audit team was awarded the contract, by the Independent Pricing and Regulatory Tribunal of NSW (IPART), to conduct the 2014/2015 Operating Licence audit (**Operational Audit**) of Sydney Water Corporation (Sydney Water or SWC). As part of this contract, the Risk Edge[™] team was required to audit Sydney Water's compliance with certain clauses of the Licence, as determined by IPART, over the period I July 2014 to 30 June 2015 (the audit period).

The Risk Edge™ team was also required to:

- Audit any existing recommendations outstanding from previous audits and express an opinion on progress to meeting or closing-out these recommendations, as well as the audit compliance of the auditable Licence clauses.
- Audit Sydney Water's calculation of its performance against, and data collection methods adopted in relation to, specified NWI indicators for the period from 1 July 2014 to 30 June 2015 (NWI Indicators Audit) (the NWI outcomes are documented in a separate report).

Auditor Statement

The audit team declares the following:

- It has seen sufficient evidence on which to base its conclusions. The evidence base included (but was not limited to):
 - o Pre-audit review of documentation (Excel spreadsheets, Screen shots, Powerpoint presentations, PDF and Word documents, and other files; the Sydney Water website; and the completed audit questionnaire).
 - o Face-to-face interviews over two days in the office (11 and 12 November 2015).
 - o Formal letter (requested by IPART) from NSW Health on Sydney Water's performance over the audit period.
 - One day of field verification (13 November 2015) at Parklea Reservoirs, Box Hill Pumping Station, North Richmond Water Filtration Plant and Rouse Hill Water Recycling Plant.
 - o Post-audit review of follow up supporting evidence requested at both the interviews and field verification.
- The audit findings accurately reflect the professional opinion of the auditors.
- When conducting the audit, determining audit findings and preparing the report, the lead auditor and team members had regard to the current audit guideline, the audit deed and the requirements set out in the RFQ.
- The audit findings have not been unduly influenced by the utility and/or any of its associates.

While the Risk Edge[™] team has followed good auditing practice in requesting samples of information, following lines of questioning, and employing a range of audit techniques to arrive at its conclusions, the team notes that because of the inherent limitations of auditing, there may be areas where gaps, errors, fraud or other non-compliances may have occurred and may not have been detected by the auditing process. The team has accepted the evidence provided to it in good faith and together with information sought from external stakeholders (e.g. NSW Health), has formed its view of Sydney Water's compliance against the selected clauses and recommendations for this 2014/2015 audit.

Major Findings

Sydney Water has performed very well in the team's opinion. However, there are some areas, which did not receive full compliance. The summary findings for the Licence areas are shown below.

The auditors would like to note the professionalism and diligence of the Sydney Water staff members that were involved with the gathering of information, the interviews and site verification visit and postonsite visit generation of additional information. The auditors thank staff members for their courtesy and politeness throughout the audit.

Licence Section 2. Water Quality (Clause 2.1 Drinking Water)

IPART wrote to NSW Health to request their views on Sydney Water's operations against its 2010-2015 Operating Licence during the audit date scope. NSW Health noted that it had been involved with a number of initiatives during the year including taking part in a water quality incident training scenario and being able to provide feedback on the catchment to tap risk assessment review. NSW Health was satisfied that Sydney Water had met its obligations under the Operating Licence and MoU.

Sydney Water manages drinking water quality in accordance with the ADWG. It does this through having developed and implemented a number of systems relevant to the components of the water supply delivery chain. Examples of its approaches include having good processes in place for capturing legal and formal requirements (though a detailed compliance accountability register), understanding its stakeholders, understanding its system risks (though integrated risk workshops and risk capture), having sound, multiple party incident management plans and learning in place, having good corporate to coalface reporting and review of reports including capturing of improvements within an overarching Drinking Water Improvement Plan.

Sydney Water has sound agreements and protocols in place with key stakeholders such as WaterNSW (Sydney Catchment Authority for the audit scope period), Sydney Desalination Plant and NSW Health. All of these stakeholders were contacted either by the auditor or by IPART as part of the audit process. NSW Health noted that it was satisfied that SWC had met its obligations under the Operating Licence and MoU. Similarly, representatives from the Sydney Desalination Plant and WaterNSW noted the shared understanding of system supply risks and management between the parties – operationalized through their operating protocols and through good officer relationships. Sydney Desalination Plant noted that it would prefer greater future participation in the overall catchment to tap system understanding (noting that currently the plant is not in production).

The auditor did note some small areas for improvement such as checking of flow diagrams through site 'walkaround' and sign off for veracity, updating of site signage and more integration of product specification limits for CCPs vs those used in practice on SCADA. However, these areas are not considered to compromise Sydney Water's ability to meet its obligations.

Fluoridation management was tested by reviewing information from North Richmond and Prospect including testing fluoride reporting against the Fluoride Code, checking calculated values of grab samples against online monitoring and checking fluoride training records. For the Prospect WFP, the stock fluoride levels were not provided in the initial evidence as the bulk storage hoppers are not equipped with weight sensors. However, a SCADA screenshot was provided as additional evidence to show that levels are actually recorded. An opportunity for improvement was noted for fluoride reporting.

Sydney Water has met the drinking water quality reporting obligations in the Reporting Manual.

The auditors reached the conclusion that given the findings, drinking water Clauses 2.1(a), (d), (e) and (f) are in 'full compliance' with the licence obligations.

Licence Section 2. Water Quality (Clause 2.2 Recycled Water)

Sydney Water has an effective management system and supporting processes in place for Element I, Element 4, Element 5, Element 6, Element 7 and Element 8, of the AGWR Framework for Management of Recycled Water Quality and Use. Issues noted against the remaining elements are outlined below.

Element 2: Assessment of the Recycled Water System: Sydney Water has a four year rolling program to review the Scheme RWQMP however this will mean that some risk assessments (e.g. Rouse Hill) have not been updated for seven years. There are some inconsistencies in how public health risks have been assessed in more recent risk assessment (e.g. Stonecutters Ridge).

Element 3: Preventive Measures for Recycled Water Management: While Sydney Water has well established preventive measures and multiple barriers, the auditor noted a number of minor shortcomings including; that Sydney Water could not be assured that the Rouse Hill UV unit was operating within its validated UV envelope, claimed LRVs for UV not being reflective of adenovirus kill and verification data for secondary treatment at Rouse Hill only being available for the Stage I treatment train (BNR and secondary clarifier) and not Stage 2 (IDAL and equalisation basin).

Element 9: Validation, Research and Development: Sydney Water has developed a validation hierarchy and has good documentation of the validation for the two Scheme RWQMPs reviewed (Rouse Hill and Quakers Hill). However key aspects of UV validation had not been carried over into operational monitoring for Rouse Hill.

Element 10: Documentation and reporting: A number of issues with cross referencing and document control were noted.

Element 11: Evaluation and Audit: The integrated checklist provided as evidence for the Quality, Environment Safety audits do not provide strong evidence for auditing of the RW QMS in line with the AGWR. Sydney Water is now conducting audits on 'end to end' processes with a focus on process performance and risks covering a number of business areas. Evidence of a recycled water process audit outside the audit period was provided and this provides good evidence that Sydney Water now has practices that meet this element.

Element 12: Review and Continuous Improvement: Sydney Water did not have a formalised improvement plan during the audit date scope period.

Due to the shortcomings identified within Sydney Water's AGWR Framework approach to the management of recycled water – a grade of 'adequate compliance' has been awarded to Clause 2.2 (a).

There were no other guidelines required as part of Clause 2.2 (b) and therefore there was no requirement to audit this clause – a grade of 'no requirement' has been recorded.

Sydney Water has met its reporting obligations in respect of Clause 2.2 (c) and therefore a grade of 'full compliance' was awarded.

Licence Section 3. Infrastructure Performance (Clause 3.1 Asset Management Obligations)

The assets covered under this audit, critical water mains and water pumping stations, are an integrated part of Sydney Water's asset management framework and asset management planning process. The auditor found that Sydney Water has in place appropriate processes for managing the lifecycle of these assets.

Issues were noted with gaps in information between work that had been completed (e.g. a condition assessment for the Box Hill WPS) but not recorded in the Computerised Maintenance Management System. The auditor also noted that the asset register for this site has some inconsistencies and was missing some asset elements.

Sydney Water advised that its service contractor for mechanical and electrical (M&E) assets is not meeting its contractual KPIs for data collection. The auditor notes that Sydney Water has available to it contractual means to recover quality data and to minimise the cost to Sydney Water of recovering this data. However, if data of sufficient quality is unable to be recovered it may lead to some uncertainty over the condition and performance of affected assets and the status of planned maintenance. This may lead to sub-optimal asset management decisions being made while data quality is improved.

These observations are consistent with the 2015 State of the Assets report which states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning." The State of the Assets report also notes that Sydney Water is continuing its data integrity program which is "now verifying the assets in the network facilities and also assessing their condition".

Sydney Water has demonstrated improvements in its document control process across the organisation however, on some occasions, the auditor found that the versions of the document were not correct, and/or the document attributes were not consistent. The auditor also found that Sydney Water has finished reviewing its Incident Reporting process and is currently implementing identified improvements in this area.

Sydney Water has a robust asset management system in place and has demonstrated that it implements this system in the areas reviewed. However, we identified two minor shortcomings in the application of the asset management framework, being the quality of data being received by the M&E service contractor and the asset hierarchy for the one site reviewed. Sydney Water also notes in its State of the Assets Report that asset information is problematic. We consider that in the overall context of Sydney Water's asset management approach that these issues constitute a few minor shortcomings. We also consider that these shortcomings do not compromise the ability of Sydney Water to achieve its defined objectives or assure controlled processes, products or outcomes. On this basis, we have awarded a compliance grade of 'high compliance' to Clause 3.1.

Licence Section 3. Infrastructure Performance (Clause 3.3 System Performance Standards)

The auditor's review of System Performance Standards shows that Sydney Water has been able to meet its Operating Licence targets in all areas under this requirement. We have verified the available data and associated processes and procedures in various information management systems currently in use by Sydney Water. We consider that Sydney Water has met its licence obligations under this clause and we have therefore awarded a compliance grade of 'full compliance'.

Licence Section 5. Complaint and Dispute Handling (Clause 5.1 Internal Dispute Resolution Process)

During the audit period, the standard in place was AS ISO 10002-2006, which was then superseded by AS/NZS 10002:2014 (Guidelines for complaint management in organizations) published on 29 October 2014. The overarching components of AS ISO 10002-2006 are largely duplicated in AS/NZS 10002:2014.

Sydney Water has various documents and systems in place, to satisfy the intent of this clause, including a Customer Complaints Policy, a Customer Complaint Procedure and a Customer Management System which houses core customer information including customer complaints. Sydney Water has attained certification to AS ISO 10002-2006. Sydney Water is a member of EWON. Sydney Water publishes two brochures which satisfy Clause 5.1 (c) and (d), these being 'Waterwrap' and 'Our contract with you SW323 06/15'. Both documents were confirmed as being made available to customers annually with customers' quarterly accounts. In addition, Sydney Water's website contains information for customers through links such as the 'Contact Us' page which demonstrates how customers can lodge complaint information.

Some discrepancies with document control were noted and opportunities for improvement have been captured to address these issues. Further, while Sydney Water operationally includes social media as a mode of contact, this is not yet stated specifically in the Customer Complaints Procedure. An opportunity for improvement has therefore been included that at the next review of the Customer Complaints Procedure, social media should be specifically included as a mode of contact from customers. While document control was noted as an issue for this clause, it has been addressed under the infrastructure recommendation to avoid 'double counting' from a compliance perspective.

Overall, Sydney Water has met the obligations of this clause and therefore a grade of full compliance has been awarded.

Licence Section 9. Reporting and Maintaining Records

Sydney Water has developed, and maintains a folio of progress to meet its Operating Licence requirements in relation with its reporting requirements. The folio contains various clauses and debrief of reporting process, which gets updated every six months.

The auditor also reviewed Sydney Water's audit schedule and performance indicator sheets as per the previous audit recommendations. The auditor found the evidence provided by Sydney Water adequate in order to meet its Licence requirements and we have therefore awarded a compliance grade of 'full compliance'.

Current Audit Recommendations

Compliance Key:



2. Water Quality

Specific Clauses / Sub-clauses Audited		Comments
2.1	(a), (d), (e) and (f)	Drinking water has been assessed as 'fully compliant'. There are no recommendations.
2.2	(a)	Assessed as 'adequate compliance'. There are 4 recommendations for this clause (see table below).
2.2	(b)	There were no other guidelines required as part of Clause 2.2 (b) and therefore there was no requirement to audit this clause.
2.2	(c)	Recycled water reporting has been assessed as 'fully compliant'. There are no recommendations.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-1	Clause 2.2(a) Overarching	Even with Sydney Water's established processes and organisational controls in place, gaps were present in the information provided to support recycled water management during the audit period.	 Ensure that an overarching description of organisational controls used in recycled water management is developed, including linkages between controls and responsible persons. Ensure that the overarching information cascades down to inclusion and implementation at an individual recycled water system plan level. 	Before finalisation of the overarching Recycled Water Management Manual.
2014- 2015 R-2	Clause 2.2(a) AGWR Framework Element 2: Assessment of the Recycled Water System	Risk assessment consequences are sometimes rated lower than would be expected for the stated hazardous event. For example 'Risk 28: Exposure of customers and their staff/contractors to recycled water results in illness', specifically mentions illness from recycled water within the hazardous event, however the impact is only rated as	I. Ensure consistent application of the HIDRA Risk Matrix and Consequence Key.	As part of each Scheme's Recycled Water Quality Management Plan review.

Recor and Lice	mmendation # d Operating nce Context	Background to Recommendation	Action/s	Timeframe
		minor (No increase in illnesses) rather than moderate, which is the minimum appropriate level for this impact.		
2014- 2015 R-3	Clause 2.2(a) AGWR Framework Element 3: Preventive Measures for Recycled Water Management Element 9: Validation, Research and Development	Uncertainty in relation to whether UV disinfection units are operating within their validation envelope.	I. Confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place.	By end December 2016 with a report on progress as at 30 June 2016.
2014	Clause 2.2(a)	Gaps in currency of information in	I. Establish a review frequency for each action within the AGWR Framework.	By end September 2016.
2015 R-4	AGWR Framework Element 10	documentation, long review timeframes and/or lack of review within stated timeframes.	2. Ensure that the review frequency is implemented in practice for both the Recycled Water Management Manual and the Scheme Recycled Water Quality Management Plans.	By end September 2016.

3. Infrastructure Performance

Specific Clauses / Sub-clauses Audited		Comments	
3.1	3.1.1 3.1.2	Assessed as 'high compliance'. There are 3 recommendations for this clause (see table below).	
 3.3.1 3.3.2 Assessed as 'fully compliant'. There are no recommendations. 3.3.3 		Assessed as 'fully compliant'. There are no recommendations.	

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-5	Clause 3.1	Sydney Water's M&E service contractor is currently not meeting contractual KPIs relating to asset data.	I. Ensure that measures are put in place to ensure that data of sufficient quality and coverage is obtained from works completed by Sydney Water's M&E service contractor (Auditor Note: Sydney Water has already been working with the service contractor to improve data quality and coverage and the resolution under the service contract will likely fulfil the requirements of this recommendation).	By end September 2016.
2014- 2015 R-6	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	 Ensure that the technical asset register in Maximo is reviewed (for active assets) to identify: a) If the existing asset hierarchy across all asset classes meets business needs b) Where the existing asset hierarchy does meet business needs, the extent to which asset data conforms to this hierarchy (structure, coverage and quality) (Auditor Note: The review should be fit for purpose and a sample 	By end September 2016.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
			approach may be appropriate in the first instance. This recommendation is not intended to duplicate the data integrity program Sydney Water is currently undertaking, it is expected that the scope of this project would largely address this recommendation).	
2014- 2015 R-7	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	I. If the review detailed in 2014-2015 R-6 identifies areas that require improvement, Sydney Water should undertake a program of work to improve the asset register so that it meets business needs.	Sydney Water should propose an appropriate program based on the scope of works and risk to achieving business objectives posed by any issues identified

5. Complaint and Dispute Handling

Specific Clauses / Sub-clauses Audited		Comments
5.1	(a) – (d)	Assessed as 'fully compliant'. There are no recommendations.

9. Reporting and Maintaining Records

Specific Clauses / Sub-clauses Audited		Comments
N/A	N/A	Assessed as 'fully compliant'. There are no recommendations.

Recommend	ATION	Progress	Status
2012-13-1: Recycled Water – Condition 2.2	Sydney Water's internal processes for ensuring compliance of customer's operating recycled water schemes (classified municipal use - restricted access and application, or municipal use - enhanced restrictions on access and application) with their contract should be strengthened. At the moment Sydney Water relies on the Annual Declarations from customers to manage the potential exposure risks or inappropriate uses of recycled water: · As a minimum, Annual Declarations forms need to be strengthened and all customers advised on how to properly complete their Annual Declarations. Where appropriate, customers are to re-submit declarations for 2012-13 that have not been completed properly. · Additional procedures, such as site inspections for signage and usage controls, should be considered.	Sydney Water has provided sufficient evidence to demonstrate strengthened internal processes to ensure compliance with customers' operating schemes.	Closed
2013-14-1: Recycled Water – Condition 2.2	Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health ('Part A').	Sydney Water's rolling review of the Scheme RWQMP has been delayed from that advised in previous annual reports. Given the slippage in progress, the auditors consider that this part of the recommendation remain open but keep the following wording to ensure alignment of the recommendation with the rolling program agreed with NSW Health: "Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health."	Open
	Part B: Further, Sydney Water should be able to demonstrate progress with its program in both documentation development and scheme specific implementation by 30 June 2015. Formal endorsement of the Liverpool plan by NSW Health should also be achieved by 30 June 2015 ('Part B').	NSW Health considered the Liverpool Scheme RWQMP satisfactory and the auditors consider this part of the recommendation closed.	Closed
2013-14-2: Recycled Water – Condition 2.2	Sydney Water should update site inspection checklists for water recycling schemes to include the names and contact details of the inspector and 'inspectee', and note the date and conditions during the inspection. Sydney Water should demonstrate that a number of schemes have been audited and field verified during 2014-15.	The compliance inspection checklist has been revised to include the names and contact details of the inspector and 'inspectee', and the date and conditions prevailing during the inspection. Business Customer Representatives are responsible for following up on any actions identified in the reviews or any identified issues. Issues associated with backflow prevention devices are logged in the appropriate system and follow-up notices are issued. Sydney Water advised for the period 01/07/2014 to 30/06/2015 inspections have been completed and checklists recorded for all 21 recycled water customers. While considered closed, there is the potential that other actions identified during the inspections are not followed-up or more systemic issues are not noted and therefore, some opportunities for improvement were identified for this recommendation.	Closed

Previous Audit Recommendations

Recommendation		Progress	Status
2013-14-3: Recycled Water – Condition 2.2	Sydney Water should undertake a site verification audit of the Recycled Water Quality Management Plan for the Stonecutters Ridge scheme during 2014-15.	An audit of the Recycled Water Management Plan for the Stonecutters Ridge scheme was conducted in June with a site verification carried out on 16 June 2015.	Closed
2013-14-4: Asset Management	Sydney Water should ensure that document control is implemented across the organisation for all key documents relating to its services and activities covered by the operating licence. Key knowledge processes and practices should be documented, controlled and endorsed with appropriate signoff ('Part A').	Sydney Water has established a spreadsheet for tracking key documents relating to its Operating Licence Folio. The tracking spreadsheet has a separate tab for each licence area and each area of the business is responsible for providing details of key documents, the status of these documents and the review cycle. The level of information provided and completeness varies between business areas. This is still a work in progress.	Open
Condition 3.1.2(e)	Sydney Water should demonstrate that information in controlled documents retains currency by implementing regular reviews in accordance with its risk based document control review schedules. By 30 June 2015, Sydney Water should establish a review schedule to ensure that all controlled documents are brought up to date according to the risk level of the document ('Part B').	A risk assessment that considers existing controls and proposed additional controls has been undertaken to arrive at a recommended review frequency and trigger for audit of documentation if errors are identified.	Closed
2013-14-5: Asset Management Framework – Condition 3.1.2(e)	By 30 June 2015, Sydney Water should review its incident and scenario close out procedures and documentation relating to services and activities covered by the operating licence, to ensure appropriate and timely close out of actions are implemented.	Sydney Water engaged with internal stakeholders and users of incident and scenario close out information to identify expectations for close out of identified actions, as well as issues that they were aware of. The root cause of the issues identified were determined and recommendations to address these root causes were made. The recommendations cover areas including improving the close out process, implementing risk based criteria for incident investigation and building capacity in staff to investigate and report on incidents. The recommendations were presented to Sydney Water Service Delivery executive in February 2015.	Closed
2013-14-6: Reporting and Maintaining Records – Condition 9(a)	By 30 June 2015, Sydney Water should review its QA processes to ensure that data reported to regulatory bodies is accurate and meets the assigned definitions.	Sydney Water has reviewed its QA processes for data generated for regulatory reports (including procedures or performance indicator (PI) sheets to validate/trace data). These PI sheets cover the definition and reporting requirements (definition, interpretation, data source, data provider, due date) as well as the data collection process and associated procedures. In conjunction with this, an audit schedule was being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual.	Closed

TABLE OF CONTENTS

GLOSSARY	
EXECUTIVE SUMMARY	6
Audit Background	6
AUDITOR STATEMENT	6
Major Findings	7
Licence Section 2. Water Quality (Clause 2.1 Drinking Water)	7
Licence Section 2. Water Quality (Clause 2.2 Recycled Water)	7
Licence Section 3. Infrastructure Performance (Clause 3.1 Asset Management Obligations)	8
Licence Section 3. Infrastructure Performance (Clause 3.3 System Performance Standards)	
Licence Section 5. Complaint and Dispute Handling (Clause 5.1 Internal Dispute Resolution Proce	ss)9
Licence Section 9. Reporting and Maintaining Records	
Current Audit Recommendations	
Previous Audit Recommendations	
I INTRODUCTION	
I.I OBJECTIVES	
I.2 Audit Method	
1.2.1 Audit Scope	
1.2.2 Audit Standard	
1.2.3 Audit Steps	
1.2.4 Audit Team	
1.2.5 Audit Grades	
1.2.6 Sites Visited	
I.3 REGULATORY REGIME	
1.3.1 System Context	
1.3.2 Stakeholder Context	
1.3.3 Legal and Regulatory Context	
1.4 Quality Assurance Process	
1.4.1 Information	
1.4.2 Reporting	
2 SECTION 2: WATER QUALITY	
2.1 Summary of Findings	
2.2 Recommendations	
2.2.1 Recommendations	
2.2.2 Opportunities for Improvement	
3 SECTION 3: INFRASTRUCTURE PERFORMANCE	
3.1 Summary of Findings	
3.2 Recommendations	
3.2.1 Recommendations	
3.2.2 Opportunities for Improvement	
4 SECTION 5: COMPLAINT AND DISPUTE HANDLING	40
4.1 Summary of Findings	
4.2 Recommendations	

	4.2	2.1	Recommendations	
	4.2	2.2	Opportunities for Improvement	
5	SEG	сті	ON 9: REPORTING AND MAINTAINING RECORDS	42
	5.1	Sun	1Mary of Findings	42
	5.2	Rec	COMMENDATIONS	42
	5.2	2.1	Recommendations	
	5.2	2.2	Opportunities for Improvement	
6	RE	col	MMENDATIONS FROM PREVIOUS AUDITS	43
	6.1	201	2-13-1 (Recycled Water – Condition 2.2)	43
	6.2	201	3-14-1 (Recycled Water – Condition 2.2)	
	6.3	201	3-14-2 (Recycled Water – Condition 2.2)	45
	6.4	201	3-14-3 (Recycled Water – Condition 2.2)	46
	6.5	201	3-14-4: (Asset Management Framework – Condition 3.1.2(e))	47
	6.6	201	3-14-5: (Asset Management Framework – Condition 3.1.2(e))	
	6.7	201	3-14-6: (Reporting and Maintaining Records – Condition 9(a))	49
A	PPEN	DIX	(A. DETAILED AUDIT FINDINGS	50
	A.I	Siti	e Visit	50
	A.2	Sec	CTION 2: WATER QUALITY	52
	A.3	Sec	ction 3: Infrastructure Performance	82
	A.4	Sec	ction 5: Complaint and Dispute Handling	94
	A.5	Sec	ction 9: Reporting and Maintaining Records	

TABLES

Table 1-1. Clauses audited for the 2014/2015 Operational Licence audit of Sydney Water	17
Table 1-2. Recommendations for inclusion in 2014/2015 audit scope	21
Table 1-3. Steps involved in the 2014/2015 audit of Sydney Water	23
Table 1-4. Audit team members and their roles	24
Table 1-5. Compliance grades for public utilities	24
Table I-6. Sites and key items viewed during the site verification visit	25
Table 1-7. Key stakeholders for Sydney Water, in the context of the operating licence	26
Table 1-8. Key legal and formal instruments for Sydney Water in the context of the operating licence	28
Table 2-I. Element by element audit grade summary for Clause 2.I	31
Table 2-2. Element by element audit grade summary for Clause 2.2	33
Table 2-3. Recommendations for Clause 2.2	34
Table 3-1. Recommendations for Clause 3.1	39

Appendix Table 1. Site verification visit locations, team members present, and auditor focus	
Appendix Table 2. Site verification visit notes	50
Appendix Table 3. Framework for Management of Drinking Water Quality focus for this audit	60
Appendix Table 4. Framework for Management of Recycled Water Quality and Use focus for this audit	72
Appendix Table 5. IPART indicators audited under Clause 3.3	

FIGURES

Figure 1-1. Sydney Water's area of operations.....

.....27

Introduction 1

1.1 Objectives

The objective of this project was to conduct an audit of Sydney Water Corporation's (Sydney Water or SWC) operations, consistent with audit requirements set out in the "Public Water Utility Audit" (June 2015) (Audit Guideline 2015), against:

- The Sydney Water "Operating Licence 2010-2015" and
- The Sydney Water Act 1994 (NSW)¹. ٠

It should be noted that: the audit is not of the full Operating Licence but against specific clauses, which are selected by IPART on a risk-basis.

The Risk Edge[™] team was also required to:

- Audit any existing recommendations outstanding from previous audits and express an opinion on progress to meeting or closing-out these recommendations, as well as the audit compliance of the auditable Licence clauses.
- Audit Sydney Water's calculation of its performance against, and data collection methods adopted in relation to, specified NWI indicators for the period from 1 July 2014 to 30 June 2015 (NWI Indicators Audit) (the NWI outcomes are documented in a separate report).

1.2 Audit Method

I.2.1 Audit Scope

The scope for the 2014/2015 audit is shown in Table 1-1 including any considerations to be taken into account as instructed by IPART.

In addition, Recommendations from the previous audit were also included as part of the scope (Table 1-2).

Licence Section / Name / Clause	Description	Note/Guidance
2. Water Quality 2. I (Drinking Water)	 (a) Sydney Water must manage drinking water quality to the satisfaction of NSW Health in accordance with the Australian Drinking Water Guidelines (unless NSW Health specifies otherwise). Licence Note: It is generally expected that Sydney Water will be required to comply with the Australian Drinking Water Guidelines but, where NSW Health consider it appropriate, the application of these guidelines can be varied or amended to take account of Sydney Water's circumstances and/ or drinking water quality policy and practices within NSW. (d) Sydney Water is to implement procedures and processes for the appropriate management of the drinking water supply system under its control in light of its knowledge of the entire drinking water supply system (from the source to the consumer). Sydney Water must have adequate systems and processes in place to manage drinking water quality taking into account planning and risk management and their implementation across the entire drinking water supply system. 	This condition was last audited in 2013-14 and was awarded full compliance in that audit. Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the ADWG will be the main focus of the audit. This will be done prior to sending out of questionnaire. The scheme/sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health. IPART will write to NSW Health regarding its satisfaction with Sydney. Water's management of Drinking Water Quality prior to audit. Audit subconditions (a), (d), (e) and (f) only.

Table I-1. Clauses audited for the 2014/2015 Operational Licence audit of Sydney Water.

¹ Noting that a reference to an Act implies a reference to its supporting regulation/s.

 ² Audit Guideline (2015), Table 2.1, p7.
 ³ Audit Guideline (2015), Table C.1, page 27.

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

Licence Section / Name / Clause	Description	Note/Guidance
	Licence Note: Under clause 2.1 (d) Sydney Water is to demonstrate that the outcomes of joint processes (such as risk assessments with bulk suppliers) are implemented effectively where their implementation relates to a part of the drinking water supply system that is within Sydney Water's control. Outcomes that do not lie within Sydney Water's area of responsibility in the system are not covered by this obligation. Sydney Water is to demonstrate that relevant training, operating, maintenance and incident response procedures have been developed with due consideration to upstream and downstream conditions and impacts. (e) Sydney Water must comply with the fluoridation plant operating targets set out in the <i>Fluoridation Code</i> . (f) Sydney Water must report on drinking water quality monitoring in the manner and form outlined in the <i>Reporting manual</i> .	
2. Water Quality 2.2 (Recycled Water (including stormwater))	Sydney Water must manage Recycled Water quality in accordance with: (a) The Australian Guidelines for Water Recycling [AGWR] (unless NSW Health specifies otherwise) to the satisfaction of NSW Health; and/or (b) any other guidelines specified by NSW Health to the satisfaction of IPART (c) Sydney Water must report on Recycled Water quality monitoring in the manner and form outlined in the Reporting Manual	This condition was last audited in 2013-14 and was awarded a high compliance grade in that audit. The 2013-14 audit identified deficiencies in documentation and reporting, evaluation and audit and review and continual improvement plans. Elements 10, 11 and 12 of AGWR were not met. Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the AGWR will be the main focus of the audit. This will be done prior to sending out of questionnaire. The scheme/sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health.
3 Infrastructure Performance 3.1 Asset Management Obligation 3.1.1 Managing Assets	Sydney Water must ensure that its Assets are managed consistently with the asset management framework described in condition 3.1.2.	This condition was last audited in 2013-14 and was awarded full compliance in that audit. The primary focus of the audit is to be on implementation of the framework. The auditor in consultation with the IPART will select one or two classes of asset/facilities to check implementation of the framework. Note: the adequacy of some components of the framework may be assessed if issue arises or is required for checking implementation.
3 Infrastructure Performance 3.1 Asset Management Obligation 3.1.2 Asset Management Framework	 Sydney Water's asset management framework must demonstrate: (a) robust and transparent methodologies for determining and prioritising licensing and other regulatory requirements and current and future service levels as well as identifying the infrastructure needed to achieve those service levels and requirements robust, transparent and consistent processes, practices and programs to ensure sustainable delivery of service levels and regulatory requirements, based on sound risk management, including: (1) asset inventory (2) asset planning incorporating both business and technical risk assessments (3) maintenance of adequate records and robust and reliable data 	This condition was last audited in 2013-14 and was awarded a high compliance in that audit. The primary focus of the audit is to be on implementation of the framework. The auditor in consultation with the IPART will select one or two classes of asset/facilities to check implementation of the framework. Past field verification sites are provided in Table 4 [of the RFQ]. Note: the adequacy of some components of the framework may be assessed if issue arises or is required for checking implementation.

Licence Section / Name / Clause	Description	Note/Guidance
	 (4) asset replacement, rehabilitation, augmentation, creation/acquisition and/or substitution (asset and non- asset substitutions) (5) management of service provision, including contracts (6) monitoring and condition assessment (7) proactive and reactive maintenance (8) operations (9) training and resourcing (10) contingency planning covering both emergency management and business continuity (11) asset rationalisation and disposal (c) robust and transparent decision making processes that balance acceptable risk with cost and service provision to achieve prudent, efficient and effective operating and capital investment (d) an approach that achieves the lowest cost of service delivery through the effective life cycle management of the asset base (e) robust and transparent processes of review and continuous improvement in asset management. 	
3 Infrastructure Performance 3.3 System Performance Standards	 (a) For the purposes of this clause 3.3 (except in relation to uncontrolled sewerage overflows under clause 3.3.3), each separately billed or separately occupied part of a multiple occupancy property is considered to be a separate property. (b) For the purposes of uncontrolled sewerage overflows under clause 3.3.3, each multiple occupancy property is counted as a single property. (c) In the case of any ambiguity in the definition or application of any system performance standards, IPART's interpretation or assessment of the system performance standards will prevail. 	This condition was last audited in 2013-14 and was awarded full compliance in that audit.
3 Infrastructure Performance 3.3 System Performance Standards 3.3.1 Water Pressure Standard	 Water pressure standard. (a) Sydney Water must ensure that no more than 6,000 Properties experience a Water Pressure Failure in a financial year in its Drinking Water supply system. (b) Water Pressure Failure: (1) A Property is taken to have experienced a Water Pressure Failure at each of the following times: (A) when a person notifies Sydney Water that the Property has experienced a Water Pressure Failure and that Water Pressure Failure is confirmed by Sydney Water; or (B) when Sydney Water's systems identify that the Property has experienced a Water Pressure Failure. (2) A Property will not be taken to have experienced a Water Pressure Failure only because of a short term operational problem (such as a main break) which is remedied within 4 days of its occurrence or from abnormal demand (such as demand during fire fighting). (3) Condition 3.3.1(b)(1) does not limit the circumstances in which a Property will have experienced a Water Pressure Failure. 	Audit to also check calculation methods. This condition was last audited in 2013-14 and was awarded full compliance in that audit.
3 Infrastructure Performance 3.3 System Performance Standards 3.3.2 Water	 (a) Water continuity standard - Sydney Water must ensure that: (1) no more than 40,000 Properties experience an Unplanned Water Interruption exceeding 5 hours in a financial year; and (2) no more than 14,000 Properties experience 3 or more Unplanned Water Interruptions of more than 1 hour duration 	Audit to also check calculation methods. This condition was last audited in 2013-14 and was awarded full compliance in that audit. In November 2014, Sydney Water contacted IPART to identify a miscalculation and that it had been

Licence Section / Name / Clause	Description	Note/Guidance
Continuity Standard	 in a financial year, in its Drinking Water supply system (b) Unplanned Water Interruption (1) In determining whether a Property experiences an Unplanned Water Interruption a best estimate is to be applied from the best available data, taking account of water pressure data where that data is available. (2) A Property is taken to have experienced a separate Unplanned Water Interruption for each period of 5 hours or more that the Unplanned Water Interruption exists (3) Condition 3.3.2(b)(2) does not limit the circumstances in which a Property will have experienced an Unplanned Water Interruption under condition 3.3.2(b)(1). 	underreporting against water continuity standards. Audit of the calculation of these standards is required in addition to the data collection systems. Step by step through the calculation is expected until the reported numbers are verified.
3 Infrastructure Performance 3.3 System Performance Standards 3.3.3 Sewage overflow standard	 (a) no more than 14,000 Properties (other than Public Properties) experience an Uncontrolled Sewage Overflow in dry weather in a financial year; and (b) no more than 175 Properties (other than Public Properties) experience 3 or more Uncontrolled Sewage Overflows in dry weather in a financial year 	Audit to also check calculation methods.
5. Complaint and Dispute Handling 5.1 Internal Dispute Resolution Process	 (a) Sydney Water must establish and maintain internal complaint handling procedures for receiving, responding to and resolving Complaints by Customers and Consumers against Sydney Water. (b) The internal complaints handling procedures of Sydney Water must be based on the Australian Standard AS/ISO 10002: 2004 MOD Customer Satisfaction - Guidelines for Complaint Handling, as amended or replaced from time to time. (c) Sydney Water must make available to Customers and Consumers information concerning its internal complaints handling procedures which explains how to make a Complaint and how the complaint handling procedure works. (d) Sydney Water must provide information of the nature described in condition 5.1 (c) to Customers through their quarterly, or other, bills at least once annually. 	There are no notes for this licence section.
9. Reporting and Maintaining Records	 (a) Sydney Water must comply with its reporting obligations set out in the Reporting Manual and must report to IPART in accordance with the Reporting Manual. (b) Sydney Water must provide to NSW Health a copy of any report referred to in the Reporting Manual relating to water quality monitoring. (c) Sydney Water must maintain records that are sufficient to enable it to accurately report in accordance with condition 9(a). 	This condition was last audited in 2013-14 and was awarded a high compliance grade in that audit. IPART consider the errors relating to Sydney Water's water continuity standards reporting were significant, as the data has been misreported for four years.

RECOMMENDATION / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit
APPLICABLE) 2012-13-1: Recycled Water – Condition 2.2 Sydney Water's internal processes for ensuring compliance of customer's operating recycled water schemes (classified municipal use - restricted access and application, or municipal use - enhanced restrictions on access and application) with their contract should be strengthened. At the moment Sydney Water relies on the Annual Declarations from customers to manage the potential exposure risks or inappropriate uses of recycled water: • As a minimum, Annual Declarations forms need to be strengthened and all customers advised on how to properly complete their Annual Declarations. Where appropriate, customers are to re-submit declarations for 2012-13 that have not been	Partially Completed. An inspection checklist has been drawn up, but inspections have not been carried out. Business customer service officers have been allocated as liaison points for each scheme customer and to maintain contact as required. Annual declarations were received from all customers, incorrectly completed declarations were resubmitted.	Audit to confirm recommendations have been satisfactorily resolved. Check that the inspection has been completed and at the appropriate times (summer) when recycled water is in greater and more consistent use.
 completed properly. Additional procedures, such as site inspections for signage and usage controls, should be considered. 		
2013-14-1: Recycled Water – Condition 2.2 Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health.	Sydney Water is reviewing and updating Recycled Water Quality Management Plans in-line with the four year rolling program agreed with NSW Health. An overarching Recycled Water Management Manual to support the scheme plans is also in development with a draft due for completion by 30 June 2015.	Audit progress. Completion due – 30/6/2015
Further, Sydney Water should be able to demonstrate progress with its program in both documentation development and scheme specific implementation by 30 June 2015. Formal endorsement of the Liverpool plan by NSW Health should also be achieved by 30 June 2015.	The Liverpool Scheme Plan has been submitted to NSW Health for endorsement. NSW Health has advised that they do not intend to endorse the plan but will provide comments on the plans suitability. We will aim to have this by 30 June 2015. On receipt of these comments Sydney Water will incorporate them and finalise the plan.	
2013-14-2: Recycled Water – Condition 2.2 Sydney Water should update site inspection checklists for water recycling schemes to include the names and contact details of the inspector and 'inspectee', and note the date and conditions during the inspection. Sydney Water should demonstrate that a number of schemes have been audited and field	The compliance inspection checklist has been revised to include the names and contact details of the inspector and 'inspectee', and the date and conditions prevailing during the inspection. For the period 01/07/2014 to 28/02/2015 inspections have been completed and checklists recorded for 20 of the 21 recycled water customers.	Audit – review checklist. Completion due – 30/6/2015

Table 1-2. Recommendations for inclusion in zor fizors addit scope	Table	I-2.	Recommendations	; for	inclusion	in	2014/2015	audit :	scope.
--	-------	------	-----------------	-------	-----------	----	-----------	---------	--------

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit
verified during 2014-15.		
2013-14-3: Recycled Water – Condition 2.2	A site verification audit of the Recycled Water Management Plan for the Stonecutters Ridge	Audit Progress.
Sydney Water should undertake a site verification audit of the Recycled Water Quality Management Plan for the Stonecutters Ridge scheme during 2014-15.	scheme is scheduled for June 2015.	Due for completion – 30/6/2015
2013-14-4: Asset Management Framework – Condition 3.1.2(e)	Sydney Water currently uses various document control methods across the organisation including:	Audit progress of this project. Review the list of out of date documents and the priority of
Sydney Water should ensure that document control is implemented across the organisation for all key documents relating to its services and activities covered by the operating licence. Key knowledge processes and practices should be documented, controlled and endorsed with appropriate signoff. Sydney Water should demonstrate that information in controlled documents retains currency by implementing regular reviews in accordance with its risk based document control review schedules. By 30 June 2015, Sydney Water should establish a review schedule to ensure that all controlled documents are brought up to date according to the risk level of the document.	 Business Management Information System (BMIS - system used for controlling management system documents); Sydney Water Information Management System (SWIM - corporate records management system); Local area network drives iConnect (intranet); Hard copy registered files. With the implementation of an organisation wide QMS Sydney Water will transition to using BMIS (or similar) for controlling all key documents. In the interim, Sydney Water will address this requirement via a two-pronged approach: In order to cover key documents related to compliance with the Operating Licence, staff with primary responsibility for ensuring compliance with the Licence conditions (primary contacts) will document the key documents that support or demonstrate compliance. To facilitate this, an Operating Licence document control template managed by Corporate Compliance has been created. The template will identify the key document name, document owner, document control method, last review date, review period and the next review date for each key document. A list of expired documents will be compiled and the primary contacts and document review schedule (based on the determined risk of the document) to ensure that key documents are brought 	updates are related to risk level. Review the new template for documents managed by Corporate Compliance. Due for completion – 30/6/2015
2013-14-5: Asset Management	up to date in a timely manner. Sydney Water is reviewing its incident and	Audit Progress.
Framework – Condition 3.1.2(e) By 30 June 2015, Sydney Water should review its incident and scenario close out procedures and documentation relating to services and activities covered by the operating licence, to ensure appropriate and timely close out of	scenario close-out procedures relating to services and activities covered by the Operating Licence. In addition, a review is being carried out of outstanding incident management actions to ensure these are prioritised for timely close out. Sydney Water has robust incident management processes. The process follows an 'All Hazards' approach, that is universally accepted by all emergency services and utilities for managing incidents.	Check the progress of closeout procedures projects. Select a number of incidents from the audit period and follow through to demonstrate closeout process is working.

Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit
actions are implemented.		Due for completion – 30/6/2015
2013-14-6: Reporting and Maintaining Records – Condition 9(a) By 30 June 2015, Sydney Water should review its QA processes to ensure that data reported to regulatory bodies is accurate and meets the assigned definitions.	Sydney water is currently reviewing data included in regulatory reports to ensure that it is documented in procedures or performance indicator (PI) sheets sufficient to trace and validate data logic and QA steps. In conjunction with this, an audit schedule is being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual.	Audit Progress. Review performance indicator sheets. See audit schedule for upcoming or completed audits. Audit schedule to be in place by 30/06/2015. Audits will be ongoing.

I.2.2 Audit Standard

In conducting this audit, the auditors adopted the audit standard ISO 19011:2011 *Guidelines for auditing management systems.* This standard ensures that the audit is conducted in accordance with an established and recognised audit protocol.

Regard was also given to the following standard, especially where it provided specific detail that was appropriate to this audit.

• ASAE 3100 (2008) Compliance Engagements issued by the Auditing and Assurance Standards Board

From, a practical auditing perspective, regard was also had to:

• Hutchins, G. (2014) Value Added Auditing The Standard Manual of Risk-Based Process-Auditing.

1.2.3 Audit Steps

The audit steps taken were largely as set out in the Audit Guideline 2015 (as relevant to the audit team; Table 1-3).

Table 1-3. Steps involved in the 2014/2015 audit of Sydney Water.²

Step	Description	Responsibility
Step 1	Audit scoping	IPART
Step 2	Appointment of the auditor	IPART
Step 3	Audit preparation	Auditor/Utility/IPART
Step 4	Audit interview	Auditor/Utility (IPART observer)
Step 5	Field verification site visits	Auditor/Utility (IPART observer)
Step 6	Wrap up and close out sessions	Auditor/Utility (IPART observer)
Step 7	Audit assessment and reporting	Auditor/Utility/IPART
Step 8	Report to the Minister	IPART
Step 9	Report on audit recommendations	Utility

I.2.4 Audit Team

The audit team and the roles of each member are provided in Table 1-4.

Table 1-4. Audit team members and their roles.

Team Member	ROLE IN PROJECT
Dr Annette Davison	 Project Manager (overall responsibility for quality assured outcomes) Auditor Services responsible in particular for: Lead Auditor Drinking Water Quality Joint Auditor of Recycled Water Quality Auditor Retail Supply Joint auditor NWI indicators
Dr Annalisa Contos	 Auditor Services responsible in particular for: Lead Auditor Recycled Water Quality Joint Auditor of Drinking Water Quality
Mr Stephen Walker	 Auditor Services responsible in particular for: Lead Auditor Infrastructure Performance Lead auditor of NWI indicators

1.2.5 Audit Grades

The audit grade definitions used in assessing the licensee's performance against the requirements are set out in Table 1-5.

Table	I-5.	Compliance	grades	for	public	utilities. ³	3
			-		-		

Grades of compliance	Description
Full Compliance	Sufficient evidence to confirm that the requirements have been fully met.
High Compliance	Sufficient evidence to confirm that the requirements have generally been met apart from very few minor shortcomings which do not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
Adequate Compliance	Sufficient evidence to confirm that the requirements have generally been met apart from a number of minor shortcomings which do not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
Non compliant	Sufficient evidence has not been provided to confirm that all major requirements are being met and the deficiency adversely impacts the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
No Requirement	The requirement to comply with the licence condition does not occur within the audit period or there is no requirement for the utility to meet this assessment criterion.

³ Audit Guideline (2015), Table C.I, page 27.

1.2.6 Sites Visited

Table I-6 shows the sites and key items that were visited and inspected during the site verification visit. Table 1-6. Sites and key items viewed during the site verification visit.

	Key Items Viewed				
LOCATION	Drinking Water	RECYCLED WATER			
Parklea	Reservoir WS 0337 Chlorine (hypochlorite) Dosing Station WX0080	Reservoir RS0449 Chlorine (hypochlorite) Dosing Station RX0003			
Box Hill	Pumping Station WP0187 Chlorine (hypochlorite) Dosing Station WX0049 Flow Meter WF0577 Inlet Tap sampling point WP187 / Outlet sampling point (asset number not sighted)				
North Richmond	Water Filtration Plant (WFP11) Reservoir WS159 Reservoir WS308 Laboratory SCADA setpoints (for filtration and fluoridation) Chemical storages (ferric chloride, sodium hydroxide)				
Rouse Hill		Water Recycling Plant (Process Train) (Legacy Code ST0031-9007)			

1.3 Regulatory Regime

In order to set out the regulatory regime for Sydney Water, the following are described in this section:

- System context
- Stakeholder context
- Legal and regulatory context ٠

System Context⁴ 1.3.1

Sydney Water is a statutory State Owned Corporation, wholly owned by the New South Wales Government, having three principal and equal objectives these being to protect public health and the environment and to be a successful business.

Its area of operations covers 12,700 km² including Sydney, the Illawarra and the Blue Mountains regions (Figure 1-1). Sydney Water provides wastewater, recycled water, drinking water and stormwater services.

1.3.2 Stakeholder Context

Stakeholders are an important component of the operating context as they may impact on, or be impacted by Sydney Water's activities including key legal and formal instruments such as Acts, contracts and Memoranda of Understanding.

⁴ http://www.sydneywater.com.au/SW/about-us/our-organisation/who-we-are/index.htm

Key stakeholders⁵ for Sydney Water include those set out in Table 1-7.

Table	I-7. Ke	v stakeholders	for Sydn	ev Water	in the	context	of the	operating	licence.
1 4010	1 / 1 100		101 0/01		,	001100/00	01 0110	oporating	110011001

Source	Key Stakeholders					
	NSW Government including:					
	Premier (overarching oversight)					
	 Department of Finance, Services and Innovation (numerous administrative aspects of Sydney Water's operations) 					
	Department of Premier and Cabinet					
	NSW EPA (regulation of environmental aspects)					
External	NSW Health (regulation of water quality relating to public health issues)					
	IPART NSW (operating licence administration and pricing matters)					
	NSW Treasury (financial aspects of Sydney Water's operations)					
	Customers and consumers (key stakeholders in the operating licence)					
	Key input stakeholders to Sydney water's systems:					
	• WaterNSW					
	Sydney Desalination Plant Pty Ltd					
	Public					
	External consultants and contractors (provision of services to Sydney Water)					
	CEO (responsibility for the running and successful operation of Sydney Water)					
Internal	Staff (responsible for operation and management of Sydney Water)					
	Board (oversight and direction for Sydney Water's activities and operation)					

⁵ A reference to a NSW agency or department also implies a reference to the Minister/Director-General of that agency or department as a key stakeholder.



Figure 1-1. Sydney Water's area of operations.⁶

 $^{^{6}\} http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq1/~edisp/dd_045280.pdf$

1.3.3 Legal and Regulatory Context

Sydney Water operates largely in a NSW context but must also have regard to matters outside of that jurisdiction, where those matters may impact on how it does business. A summary of the key legal and regulatory instruments for Sydney Water is provided in Table 1-8.⁷

Table 1-8.	Key legal	and formal	instruments fo	r Sydney	Water in the	e context of t	ne operating licence.8
		and ronnar					

Instrument	Relevance
Annual Reports (Statutory Bodies) Act 1984 (NSW)	Applies to reporting requirements of Sydney Water
Bulk Water Supply Agreement	Agreement in place with Sydney Catchment Authority (now WaterNSW). Raw water is a significant input into Sydney Water's system.
Operating Protocol between Sydney Desalination Plant and Sydney Water	Protocol on place between Sydney Desalination Plant Pty Ltd and Sydney Water. Desalinated water from the desalination plant at Kurnell forms an input to the Sydney Water network when it is operating. This protocol sets out the criteria for operation.
Competition and Consumer Act 2010 (Cth)	An Act for the promotion of competition and fair trading and provision for consumer protection. Could apply to the 'fitness for purpose' of any product service supplied including drinking water and recycled water.
Current versions of the Australian Drinking Water Guidelines and the Australian Guidelines for Water Recycling	These guidelines are called up under Sydney Water's Operating Licence obligations.
Fluoridation of Public Water Supplies Act 1957 (NSW)	Together with the current Fluoride Code, this Act sets out obligations for utilities fluoridating public water supplies. Sydney Water has a requirement to comply with the Code in its Operating Licence.
Government Information (Public Access) Act 2009 (NSW)	Information may be requested from Sydney Water, which relates to aspects of the licence.
Independent Pricing and Regulatory Tribunal Act 1992 (NSW)	Allows for the regulation of utilities such as Sydney Water including the administration and auditing of licences and pricing functions.
Memorandum of Understanding with NSW EPA 2015	Sets out the working relationship between NSW EPA and Sydney Water.
Memorandum of Understanding with NSW Health 2012	Sets out the working relationship between NSW Health and Sydney Water.
Protection of the Environment Operations Act 1997 (NSW)	This Act sets out the environmental operating context for Sydney Water including, where relevant, the need to gain and operate under an Environmental Protection Licence for its facilities.
Public Health Act 2010 (NSW)	The objectives of this Act are to protect and promote public health, control risks to public health, promote the control and prevent the spread of infectious diseases and recognise the role of local governments in protecting public health. Supporting Regulations are intended to support the smooth operation of the Act. Sydney Water has obligations under this Act including notifying the Minister of any situation that is likely to be a risk to public health.
Sydney Water Operating Licence 2010-2015	A licence issued by IPART NSW, which enables Sydney Water to provide relevant services within its area of operations. This licence also gives effect to the operational audits (this audit) to which Sydney Water is subject.

⁷ Intended to be illustrative, not exhaustive, for the purposes of this report.

⁸ Where legislation is identified in this table, a reference to that legislation should be taken to include any Regulation/s made pursuant to it.

1.4 Quality Assurance Process

I.4.1 Information

Our quality assurance approach to this audit involved peer review and audit team leader responsibility for all material outputs from the Risk Edge™ team, commencing from the development and submission of the audit questionnaires through to the various levels of reporting.

Checks of information received were conducted and included aspects such as dates for audit scope compliance, veracity of information, coverage of the subject area being audited and depth of implementation. Auditors liaised frequently within the team including having 'shadow' or 'support' auditors for subject areas where the audit load was heavy.

1.4.2 Reporting

Throughout the audit report writing process, the documentation was proofed and cross-checked by the audit team members as well as undergoing an overall quality assurance review from the audit team leader (Dr Davison).

2 Section 2: Water Quality

2.1 Summary of Findings

Clause 2.1 – Full Compliance (Clauses 2.1 (a), (d), (e) and (f))

The team was required to audit Clause 2.1 (a), (d), (e) and (f). Clauses 2.1 (a) and 2.1 (d) pertained to Sydney Water having to meet the requirements of the ADWG, including the Framework for Management of Drinking Water Quality. Clause 2.1 (e) involved having systems and processes in place to meet the requirements of the fluoride plant operating targets of the NSW Fluoride Code. Clause 2.1 (f) involved having to meet the Reporting Manual requirements for drinking water quality monitoring.

Detailed assessment in respect of this clause is presented in Appendix A.2.1 and A.2.3.

Clause 2.2 (a) – Adequate Compliance

Clause 2.2 (b) – No Requirement

Clause 2.2 (c) - Full Compliance

The team was required to audit Clause 2.2 (a), (b) and (c). Clauses 2.2 (a) and (b) pertained to Sydney Water having to meet the requirement of the AGWR including the Framework for Management of Recycled Water Quality and Use and any other guidelines as specified by NSW Health. Since no other guidelines were specified, there was no requirement to audit Clause 2.2 (b). Clause 2.2 (c) involved having to meet the Reporting Manual requirements for recycled water quality monitoring.

Detailed assessment in respect of this clause is presented in Appendix A.2.2 and A.2.4.

A field verification audit was undertaken, details of which are presented in **Appendix A.I** (Appendix Table I and Appendix Table 2).

As appropriate per clause, the auditors used the Framework for Management of Drinking Water Quality in the Australian Drinking Water Guidelines and the Framework for Management of Recycled Water Quality and Use in the Australian Guidelines for Water Recycling to test adequacy and implementation of systems and processes. Further details are provided on an element-by-element basis in **Appendix A.2** (Appendix Table 3 and Appendix Table 4).

To support the grading for Clauses 2.1(a) and (d), the compliance grades and key issues for each element, are provided in Table 2-1. In summary, Sydney Water manages drinking water quality in accordance with the ADWG. It does this through having developed and implemented a number of systems relevant to the components of the water supply delivery chain. Examples of its approaches include having good processes in place for capturing legal and formal requirements (though a detailed compliance accountability register), understanding its stakeholders, understanding its system risks (though integrated risk workshops and risk capture), having sound, multiple party incident management plans and learning in place, having good corporate to coalface reporting and review of reports including capturing of improvements within an overarching Drinking Water Improvement Plan.

Sydney Water has sound agreements and protocols in place with key stakeholders such as WaterNSW (Sydney Catchment Authority for the audit scope period), Sydney Desalination Plant and NSW Health. All of these stakeholders were contacted either by the auditor or by IPART as part of the audit process. NSW Health noted that it was satisfied that SWC had met its obligations under the Operating Licence and MoU. Similarly, representatives from the Sydney Desalination Plant and WaterNSW noted the shared understanding of system supply risks and management between the parties – operationalized through their operating protocols and through good officer relationships. Sydney Desalination Plant noted that it would prefer greater future participation, from its own context, in the overall catchment to tap system understanding (tempered currently by the fact that the plant is not in production).

The auditor did note some small areas for improvement such as checking of flow diagrams through site 'walkaround' and sign off for veracity, updating of site signage and more integration of product specification limits for CCPs vs those used in practice on SCADA. However, these areas are not considered to compromise Sydney Water's ability to meet its obligations. Fluoridation management was tested by reviewing information from North Richmond and Prospect including testing fluoride reporting



against the Fluoride Code, checking calculated values of grab samples against online monitoring and checking fluoride training records. For the Prospect WFP, the stock fluoride levels were not provided in the initial evidence as the bulk storage hoppers are not equipped with weight sensors. However, a SCADA screenshot was provided as additional evidence to show that levels are actually recorded.⁹ The monthly fluoride analysis results were compared with the average calculated fluoride dose. Results from the average calculated dose were generally within 10% of the grab sample result. An opportunity for improvement was noted for fluoride reporting. If not already covered in SCADA, it would be useful to record the initials/name of the operator having taken the sample for diligence in record keeping and follow up in the case of an incident and/or anomaly. Management of fluoridation is overall considered compliant with the plant operating target requirements of the Fluoride Code and the licence clause.

Sydney Water has met the drinking water quality reporting obligations in the Reporting Manual.

The auditors reached the conclusion that given the findings, drinking water clauses 2.1(a), (d), (e) and (f) are in 'full compliance' with the licence obligations.

Element	Compliance Grade	Key Issues
Element I: Commitment to Drinking Water Quality Management	Full	Commitment to drinking water quality is in place from corporate to coalface including contractor and key stakeholder management (including WaterNSW (Sydney Catchment Authority during the audit date scope) and Sydney Desalination Plant). Sydney Water also has a dedicated contract manager in place for the contractor-managed plants. The new drinking water quality policy needs to be made visible and communicated once signed off.
Element 2: Assessment of the Drinking Water Supply System	Full	Sydney Water has an overarching system-wide flow diagram in place supported by process flow diagrams for each system and SCADA records and diagrams for each plant. While some issues were noted with the flow diagram for North Richmond (chemical inputs and clarification of flow paths – constant vs intermittent), these were more in line with continuous improvement and OFIs have been captured to address this. Similarly, some old signage was observed during the site verification audit and OFIs have been included. Key stakeholders were included in the C2C risk review.
Element 3: Preventive Measures for Drinking Water Quality Management	Full	Preventive measures are captured and are in place. CCPs are identified in a comprehensive Product Specification. Procedures are in place to support correct operation of the CCPs including corrections and incident and emergency response procedures.
Element 4: Operational Procedures and Process Control	Full	See comments in Element 3. SCADA was viewed at the site verification visit to test process control in practice. It was noted that the SCADA setpoints for critical limits are more stringent than those identified in the Product Specification. An OFI has been captured to address this issue. It was pleasing to see that historical information on customer complaints has been used to develop good response programs to allow Sydney Water to proactively manage system performance. This approach has facilitated avoidance of incidents and is an excellent example of data interrogation being used to improve system performance.
Element 5: Verification of Drinking Water Quality	Full	Sydney Water has a comprehensive drinking water quality verification program in place supported by external reviews (external consultant) and external consultation (NSW Health). Parameters monitored are in line with expectations and frequency. The internal laboratory has appropriate NATA certification and where required for infrequent parameters (e.g. radionuclides and acrylamide), Sydney Water outsources their analysis (e.g. ANSTO for radionuclides). A small issue with sample tap security was noted during the site verification audit and an OFI has been captured for this.
Element 6: Management of Incidents and Emergencies	Full	There are good CCP and incident management response procedures in place.
Element 7: Employee Awareness and Training	Full	Systems and processes are in place to address training needs including an overarching Education Assistance Policy. Training records were checked and found to be in place for fluoride operation at both a contract plant (Prospect) and a Sydney Water operated plant (North Richmond). Some training opportunities for improvement have been captured for this element.
Element 8: Community Involvement and	Full	Sydney Water has good programs in place to support this element including Customer Council and other community wide communication programs. This

Table 2-1. Element b	y element	audit grad	e summary	for	Clause	2.1.
			/			

⁹ NR_Fluoride storage set points in SCADA.png

Element	Compliance Grade	Key Issues
Awareness		element was also supported by the findings for Clause 5.1.
Element 9: Research and Development	Full	Sydney Water has a dedicated research group and staff members are active in national programs including the Health-based Targets initiative (dependent on source water quality and analogous to the log10 reduction focus of the AGWR) which is likely to be introduced into the next revision of the ADWG.
Element 10: Documentation and Reporting	Full	Sydney Water uses the Business Information Management System for much of its documentation and record keeping, supported by sub-ordinate systems where required e.g. Oracle. Sydney Water is required to report under the obligations of its Operating Licence and therefore this element is also covered in the findings for Clause 2.1 (f). Some minor observations were made in relation to document control in terms of keeping information current.
Element II: Evaluation and Audit	Full	Evaluation and audit is undertaken at an internal and external level as required by the Framework, planned via an itemised audit schedule. The schedule covers many aspects of water quality management including the Field Services Group and Analytical Services. Results are used to generate system improvements and this was in evidence through documents such as the DWIP. Evaluation and audit is also integrated through other elements such as the C2C risk review which generated system improvements that were then added to the DWIP.
Element 12: Review and Continual Improvement	Full	Sydney Water has good review processes in place including verified lines of communication on water quality with its Board. A DWIP is also in place, which is consistent with the requirements of this Element.

There was no requirement to audit Clause 2.2 (b) as no other guidelines had been specified.

To support the grading for the Clause 2.2 (a), the compliance grades and key issues for each element, are provided in Table 2-2.

Sydney Water has an effective management system and supporting processes in place for the following elements of the AGWR Framework for Management of Recycled Water Quality and Use:

- Element 1: Commitment to responsible use and management of recycled water quality
- Element 4: Operational Procedures and Process Control
- Element 5: Verification of Recycled Water Quality and Environmental Performance
- Element 6: Management of incidents and emergencies
- Element 7: Operator, Contractor and End User Awareness and Training
- Element 8: Community Involvement and Awareness

Weaknesses were noted in the remaining elements as shown in Table 2-2.

The auditor notes that Sydney Water has been focussing on developing its Recycled Water Management Manual to demonstrate compliance with its new Operating Licence clause. As a result, some aspects of the current QMP-RWS have not been updated into the current documentation but into the new system which is not within the scope of this audit. Many of these issues should be resolved once the Recycled Water Management Manual and its supporting documents "go live". Some of the evidence reviewed for the audit had not been updated for six years and the lack of currency makes it difficult for Sydney Water to demonstrate a thorough preventive risk management approach to recycled water management.

The auditor noted issues with the integration of information and knowledge transfer between sites and groups.

The auditors reached the conclusion that given the findings for each element, recycled water Clause 2.2 (a) is in 'adequate compliance' with the licence obligations.

As there were no other guidelines specified by NSW Health, auditing of Clause 2.2 (b) was not required.

Sydney Water has met its reporting obligations in respect of Clause 2.2 (c).

Element	Compliance Grade	Key Issues
Element 1: Commitment to Responsible Use and Management of Recycled Water Quality	Full	Sydney Water has demonstrated compliance with this element.
Element 2: Assessment of the Recycled Water System	Adequate	Sydney Water has a four year rolling program to review the Scheme RWQMP however this will mean that some risk assessments (e.g. Rouse Hill) have not been updated for seven years. There are some inconsistencies in how public health risks have been assessed in more recent risk assessment (e.g. Stonecutters Ridge – noting that this risk assessment is in draft form, not yet finalised).
Element 3: Preventive Measures for Recycled Water Management	Adequate	Sydney Water has well established preventive measures and multiple barriers in place. The grade of adequate was awarded due to a number of minor shortcomings identified by the auditor including; that Sydney Water could not be assured that the Rouse Hill UV unit was operating within its validated UV envelope, claimed LRVs for UV not being reflecting of adenovirus kill and verification data for secondary treatment at Rouse Hill only being available for the Stage I treatment train (BNR and secondary clarifier) and not Stage 2 (IDAL and equalisation basin).
Element 4: Operational Procedures and Process Control	Full	Effective procedures and processes for managing recycled water were observed at Rouse Hill. Evidence of continual review of practices was noted.
Element 5: Verification of Recycled Water Quality and Environmental Performance	Full	Sydney Water has a well-developed system with electronic notification of exceedances.
Element 6: Management of Incidents and Emergencies	Full	Sydney Water has an excellent hierarchy of documents for managing incidents and emergencies. Contact information was consistent between documents
Element 7: Operator, Contractor and End User Awareness and Training	Full	Sydney Water has adequate practices in place for training staff contractors and end users in recycled water awareness.
Element 8: Community Involvement and Awareness	Full	Sydney Water utilises a range of different tools to communicate recycled water messages with its customers.
Element 9: Validation, Research and Development	Adequate	Sydney Water has developed a validation hierarchy and has good documentation of the validation for the two Scheme RWQMPs reviewed (Rouse Hill and Quakers Hill). However key aspects of UV validation had not been carried over into operational monitoring for Rouse Hill.
Element 10: Documentation and reporting	High	A number of issues with cross references and document control were noted.
Element II: Evaluation and Audit	Adequate	During the IPART audit period Sydney Water's internal audit program was designed on business structure. Two recycled water sites had an internal QES (Quality, Environment Safety) audit in the 2014-15 period ¹⁰ . The completed internal audit checklists were reviewed ¹¹¹² . The integrated checklist provided as evidence for these QES audits does not provide strong evidence for auditing of the RW QMS in line with the AGWR. Sydney Water is now conducting audits on 'end to end' processes with a focus on process performance and risks covering a number of business areas. Evidence of a recycled water process audit ¹³ subsequent to the audit period was provided and this provides good evidence that Sydney Water now has practices in place that meet this element. Because

Table 2-2. Element by element audit grade summary for Clause 2.2.

IA-15 DIVIsional level audits.aisA
 SDIMS0008 - Quakers Hill Audit Report.docx
 SDIMS0011 - St Marys SDIMS Audit Report.docx
 QEM SWC Audit Report on Recycled Water -full report.docx



¹⁰ 14-15 Divisional level audits.xlsx

Element	Compliance Grade	Key Issues
		Sydney Water has stronger evidence for the next audit period, no recommendation or OFI have been made for this audit period, regarding specific auditing against the AGWR.
Element 12: Review and Continuous Improvement	Adequate	Sydney Water did not have a formalised improvement plan during the audit period. Sydney Water reported ¹⁴ this issue as an action to be undertaken in its Annual Report to IPART. As Sydney Water has already identified to its regulator it is addressing this area, no further recommendation has been made for this audit period. As part of its licence requirement, Sydney Water will report its progress on this action in the next Annual Report and the auditor for the next Operational Licence audit should verify progress as part of that audit.

General comments for both drinking water and recycled water: While drinking water has been assessed as 'fully compliant', there are some wider system issues that need to be discussed. For both Clause 2.1(a) and (d) and Clause 2.2 (a), the auditors noted some issues with integration of system information and knowledge transfer between sites and groups. For instance, there was no common point of truth in the information supplied to the auditors on the precise number for either drinking water schemes or number of recycled water customers. Various numbers were stated in the information provided to the auditors (e.g. 14 drinking water supply systems in one document and 13 in another document) prior to the interviews. At the interviews it was clarified that for drinking water, there are now 13 systems because the Greaves Creek system is no longer included. Understanding how many systems/customers a utility has to manage should be fundamental and kept up to date in documentation. Further, while a Catchment to Consumer risk review for drinking water had been undertaken, the information feeding into the risk assessment was sparse (and had stated that 14 supply systems were within the operating context). At interview, staff confirmed that information was sourced from other internal systems and locations to help inform the risk assessment, however, in the C2C Report (for drinking water) it was noted that "it was quite hard to find summary information on the system.....to help orient new staff and third parties"¹⁵. Not having relevant information available and in an appropriate format for review prior to the risk assessment, may result in key risk areas being missed. An opportunity for improvement has been added to capture this issue. Sydney Water has implemented multiple barriers (including wastewater source control, primary and secondary treatment, filtration, disinfection) for the production of recycled water. However the auditors did not see evidence to be assured that barriers could and did meet the claimed log reductions. For instance, it was noted that key aspects of UV validation / barrier understanding had not been carried over into operational monitoring for Rouse Hill (lack of UVT data). UVT is an important monitoring parameter for UV disinfection efficiency and without timely information on this parameter, it is possible that the UV unit could be operating but not achieving the required pathogen reduction. Where protozoa have been detected¹⁶ in recycled water schemes and where a log reduction requirement is in place, Sydney Water should also be supplying information to Health on UVT, specifically as part of the validated range information.

2.2 Recommendations

2.2.1 Recommendations

The recommendations identified for Clause 2.2 are shown in Table 2-3.

Table 2-3. Recommendations for Clause 2.2.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-1	Clause 2.2(a) Overarching	Even with Sydney Water's established processes and organisational controls in place, gaps were present in the information provided to support recycled water	I. Ensure that an overarching description of organisational controls used in recycled water management is developed, including linkages between the controls and responsible persons.	Before finalisation of the overarching Recycled Water Management Manual.

¹⁴ pH.

¹⁵ C2C Report final.pdf, p I 6.

¹⁶ E.g. *Cryptosporidium* and *Giardia* at the Wollongong Stage 2 scheme, rolling 12 month rolling period, p9, Schedule G: Quarterly Recycled Water Quality Monitoring Report for NSW Health 2014-15, Fourth Quarter 2014-15.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
		management during the audit period.	2. Ensure that the overarching information cascades down to inclusion and implementation at an individual recycled water system plan level.	
2014- 2015 R-2	Clause 2.2(a) AGWR Framework Element 2: Assessment of the Recycled Water System	Risk assessment consequences are sometimes rated lower than would be expected for the stated hazardous event. For example 'Risk 28: Exposure of customers and their staff/contractors to recycled water results in illness', specifically mentions illness from recycled water within the hazardous event, however the impact is only rated as minor (No increase in illnesses) rather than moderate, which is the minimum appropriate level for this impact.	I. Ensure consistent application of the HIDRA Risk Matrix and Consequence Key.	As part of each Scheme's Recycled Water Quality Management Plan review.
2014- 2015 R-3	Clause 2.2(a) AGWR Framework Element 3: Preventive Measures for Recycled Water Management Element 9: Validation, Research and Development	Uncertainty in relation to whether UV disinfection units are operating within their validation envelope.	I. Confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place.	By end December 2016 with a report on progress as at 30 June 2016.
2014- 2015 R-4	Clause 2.2(a) AGWR Framework Element 10	Gaps in currency of information in documentation, long review timeframes and/or lack of review within stated timeframes.	I. Establish a review frequency for each action within the AGWR Framework.	By end September 2016.
			2. Ensure that the review frequency is implemented in practice for both the Recycled Water Management Manual and the Scheme Recycled Water Quality Management Plans.	By end September 2016.

2.2.2 Opportunities for Improvement

The opportunities for improvement identified for Clause 2.1 and 2.2 are as follows:

- OFI 2.1(a)(d) Element 2-1: Update risk documents to include the definition of control provided in ISO 31000.
- OFI 2.1(a)(d) Element 2-2: Ensure that the signs on both the Parklea chlorine dosing shed and the Box Hill pumping station are changed to reflect the new mode of chlorine delivery i.e. hypochlorite dosing not chlorine-generation from brine.
- OFI 2.1(a)(d) Element 2-3: Sodium hypochlorite dosing of the raw water is marked on the flow diagram (for the North Richmond WFP) as always in use. Use is contingent on requirements (although it was noted as usually in use). Add in brackets '(as required)' after the sodium hydroxide. Non-ionic polymer is added to the clarifier, this input is missing from the flow diagram and needs to be added.
- OFI 2.1(a)(d) Element 2-4: The flow diagram (for the North Richmond WFP) as drawn represents the dual media filter (DMF) and the granular activated carbon (GAC) unit as one component. The DMF comprises 6 units (one of which was off line during the visit) and the GAC 4 units. The units and the flow (e.g. series and/or parallel) should be clearly indicated on

the flow diagram as the number of units and the flow through the units can have an impact on process and risk.

- OFI 2.1 (a) (d) Element 2-5: The way the North Richmond flow diagram is currently drawn implies that the clarifier and DAF are always online and used together in equal proportions. Given that the DAF is only in use for up to 20% of the year (depending on algal conditions), the flow diagram should reflect the intermittent nature of the DAF usage (e.g. dotted line or other). Bringing process components into use from being offline, can represent a source of risk both in terms of when to bring the process online and operating it when online (noting that the auditor acknowledges that a procedure is in place for managing DAF/clarifier readiness).
- OFI 2.1 (a) (d) Element 2-6: The flow diagram (for the North Richmond WFP) needs to be taken out of the office and verified via a 'plant walkthrough' as a true and accurate representation of the process and flows (including inputs and monitoring). The verification needs to be undertaken by a person with responsibility and accountability and signed off as such. Sign-off could be achieved through a notation on the diagram and/or through an entry into BMIS.
- OFI 2.1(a)(d) Element 2-7: Ensure that for future risk reviews, a summary of each drinking water supply system is produced that meets the intent of the Framework and integrates and summarises all relevant information held by Sydney Water and others.
- OFI 2.1(a)(d) Element 3-1: Ensure that the Product Specification document captures the fact that individual plants may have different operational SCADA limits, for ease of operation and ensure that any changes do not compromise barrier efficacy.
- OFI 2.1(a)(d) Element 5-1: Review the location of the sampling tap at the Box Hill pumping station and consider whether (and if possible) the tap-in needs to be moved to within the security fence.
- OFI 2.1(a)(d) Element 7-1: Ensure that Performance Development Plan targets are completed within the PDP summary.
- OFI 2.1(a)(d) Element 7-2: Include water quality risk management training (e.g. Certificate 2 NWP279) for employees and contractors (where appropriate e.g. for BOO contractors).
- OFI 2.1(a)(d) Element 7-3: Include the new drinking water policy in induction materials and training for all staff and contractors.
- OFI 2.1(a)(d) Element 12-1: Include numbering of actions in the DWIP to facilitate tracking and cross-referencing.
- OFI 2.1(e)-1: For fluoride reporting, and if not already covered in SCADA, it would be useful to record the initials/name of the operator having taken the sample for diligence in record keeping and follow up in the case of an incident and/or anomaly.
- OFI 2.2(a) Element 3: Sydney Water could consider how to improve the visibility of CCP monitoring points to operations. This may include labelling on CCP instruments in the field and the development of a CCP SCADA page so operators can see at a glance that the system is operating within its critical limits. The monitoring instrument for the CCP could be recorded in the CCP table.
- OFI 2.2(a) Element 9: Where Sydney Water is relying on secondary treatment to achieve necessary LRVs for the end use, Sydney Water should consider developing a clearer understanding of the mechanisms for log reductions within these processes and provide the Production Officers with monitoring points and critical limits related to pathogen reduction.
- OFI 2.2(a) Element 10: Sydney Water should develop processes to proactively report implementation of the AGWR to the CEO and Board.

The following opportunities for improvement result from Recommendation 2013-14-2 (Recycled Water – Condition 2.2) (Section 6.3), which is now closed:

Sydney Water could update the [compliance inspection] checklist to include:



- Issues from previous audit to be checked
- Issues raised in this audit requiring action by the recycled water customer and priority of action
- Any follow-up inspection requirement

3 Section 3: Infrastructure Performance

3.1 Summary of Findings

Clause 3.1 – High Compliance

This clause requires Sydney Water to ensure that its Assets are managed consistently with the asset management framework described in Clause 3.1.2 of the Operating Licence.

Detailed assessment in respect of this clause is presented in Appendix A.3.1.

Clause 3.3 – Full Compliance

This clause requires Sydney Water to meet performance standards relating to water pressure, continuity of water supply and sewage overflows (**Appendix A.3.2**, Appendix Table 5).

Detailed assessment in respect of this clause is presented in Appendix A.3.2.

Clause 3.1: The assets covered under this audit, critical water mains and water pumping stations, are an integrated part of Sydney Water's asset management framework and asset management planning process. The auditor found that Sydney Water has in place appropriate processes for managing the lifecycle of these assets.

In reviewing the maintenance history for the Box Hill WPS, the auditor identified that although a condition assessment was scheduled to have been completed recently (June 2015), the results of the condition assessment were not in the Computerised Maintenance Management System. Sydney Water advised that its service contractor for M&E assets is not meeting its contractual KPIs for data collection. Its performance for 2014/15 against the data KPIs was: Work Order data Quality (Comprehensiveness and Accuracy) – 66%, Accuracy of data on assets – 3.7%. The expected performance for these KPIs is 85% and the "fail level" is 75%. Sydney Water stated that it expects to be able to recover data of sufficient quality as the underperformance is mostly due to the time lag in entering records into the Computerised Maintenance Management System. If data of sufficient quality is unable to be recovered it may lead to some uncertainty over the condition and performance of affected assets and the status of planned maintenance. This may lead to sub-optimal asset management decisions being made while data quality is improved. The auditor notes that Sydney Water has available to it contractual means to recover quality data and to minimise the cost to Sydney Water of recovering this data.

These observations are consistent with the 2015 State of the Assets report, which states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning." The State of the Assets report also notes that Sydney Water is continuing its data integrity program, which is "now verifying the assets in the network facilities and also assessing their condition".

The auditor also noted that the asset register for this site has some inconsistencies and was missing some asset elements.

Sydney Water has demonstrated improvements in document control process across organisation however, on some occasions, the auditor found that the versions of the document were not correct, and/or the document attributes were not consistent. The auditor also found that Sydney Water has finished reviewing its Incident Reporting process and is currently implementing identified improvements in this area.

Overall, Sydney Water has demonstrated implementation of its asset management framework in the many areas that the auditor tested. However, we identified two minor shortcomings in the application of the asset management framework, being the quality of data being received by the M&E service contractor and the asset hierarchy for the one site reviewed. We consider that in the overall context of Sydney Water's asset management approach that these issues constitute a few minor shortcomings. We also consider that these shortcomings do not compromise the ability of Sydney Water to achieve its defined objectives or assure controlled processes, products or outcomes. On this basis, we have awarded a compliance grade of 'high compliance'.

Clause 3.3: The auditor's review of System Performance Standards shows that Sydney Water has been able to meet its Operating Licence targets in all areas under this requirement. We have verified the available data and associated processes and procedures in various information management systems currently in use by Sydney Water.

3.2 **Recommendations**

3.2.1 Recommendations

There are no recommendations for Clause 3.3. The recommendations identified for Clause 3.1 are shown in Table 3-1.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-5	Clause 3.1	Sydney Water's M&E service contractor is currently not meeting contractual KPIs relating to asset data	1. Ensure that measures are put in place to ensure that data of sufficient quality and coverage is obtained from works completed by Sydney Water's M&E service contractor (Auditor Note: Sydney Water has already been working with the service contractor to improve data quality and coverage and the resolution under the service contract will likely fulfil the requirements of this recommendation).	By end September 2016.
2014- 2015 R-6	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	 Ensure that the technical asset register in Maximo is reviewed (for active assets) to identify: a) If the existing asset hierarchy across all asset classes meets business needs b) Where the existing asset hierarchy does meet business needs, the extent to which asset data conforms to this hierarchy (structure, coverage and quality) (Auditor Note: The review should be fit for purpose and a sample approach may be appropriate in the first instance. This recommendation is not intended to duplicate the data integrity program Sydney Water is currently undertaking, it is expected that the scope of this project would largely address this recommendation). 	By end September 2016.
2014- 2015 R-7	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	 If the review detailed in 2014-2015 R-6 identifies areas that require improvement, Sydney Water should undertake a program of work to improve the asset register so that it meets business needs. 	Sydney Water should propose an appropriate program based on the scope of works and risk to achieving business objectives posed by any issues identified

Table 3-1. Recommendations for Clause 3.1.

3.2.2 Opportunities for Improvement

There are no opportunities for improvement for Clause 3.3. The opportunity for improvement identified for Clause 3.1 is as follows:

• OFI 3.1-1: There is an opportunity for Sydney Water to continue to improve its document control.

4 Section 5: Complaint and Dispute Handling

4.1 Summary of Findings

Clause 5.1 – Full Compliance

The components pertinent to this audit were 5.1(a) to (d). Based on the current version of AS/ISO 10002, Sydney Water is required to establish and maintain internal complaint handling procedures for receiving, responding to and resolving Complaints by Customers and Consumers against Sydney Water. Sydney Water must make available to Customers and Consumers information concerning its internal complaints handling procedures which explains how to make a Complaint and how the complaint handling procedure works and must provide information of the nature described in condition 5.1 (c) to Customers through their quarterly, or other, bills at least once annually.

Detailed assessment in respect of this clause is presented in Appendix A.4.

During the audit period, the standard in place was AS ISO 10002-2006, which was then superseded by AS/NZS 10002:2014 (Guidelines for complaint management in organizations) published on 29 October 2014. The overarching components of AS ISO 10002-2006 are largely included in AS/NZS 10002:2014, these being:

- Enhancing customer satisfaction by creating a customer focused environment that is open to feedback (including complaints), resolving any complaints received, and enhancing the organisation's ability to improve its product and customer service
- Top management involvement and commitment through adequate acquisition and deployment of resources, including personnel training
- Recognising and addressing the needs and expectations of complainants
- Providing complainants with an open, effective and easy-to-use complaints process
- Analysing and evaluating complaints in order to improve the product and customer service quality
- Assessment of the complaints management process
- Reviewing the effectiveness and efficiency of the complaints handling process.

Sydney Water has various documents and systems in place, to satisfy the intent of this clause, including a Customer Complaints Policy, a Customer Complaint Procedure and a Customer Management System which houses core customer information including customer complaints. Sydney Water has attained certification to AS ISO 10002-2006. Sydney Water is a member of EWON. Sydney Water publishes two brochures which satisfy clause 5.1(c) and (d), these being 'Waterwrap' and 'Our contract with you SW323 06/15' (noting that both the summary and the full contract were sighted). Both documents were confirmed as being made available to customers annually with customers' quarterly accounts. In addition, Sydney Water's website contains information for customers through links such as the 'Contact Us' page which demonstrates how customers can lodge complaint information.

Some discrepancies with document control were noted and opportunities for improvement have been captured to address these issues including incorrect referencing of the standard, incorrect footer information and reference to filepath of previous document i.e. field had not been updated and incorrect referencing of regulators (out of date departments were still cited). Further, while Sydney Water operationally includes social media as a mode of contact, this is not yet stated specifically in the Customer Complaints Procedure. An opportunity for improvement has therefore been included that at the next review of the Customer Complaints Procedure, social media should be specifically included as a mode of contact from customers. While document control is noted as an issue for this clause, it is noted that document control and records should be covered under the existing recommendation of document control to avoid double-counting from a compliance perspective. Therefore based on the findings, a grade of 'full compliance' has been awarded to this clause.


4.2 Recommendations

4.2.1 Recommendations

There are no recommendations for this clause.

4.2.2 Opportunities for Improvement

There are three opportunities for improvement for this clause.

- OFI 5.1-1: Document Control: Several document control issues were noted including incorrect referencing of the standard, incorrect footer information and reference to filepath of previous document i.e. field had not been updated. Ensure that a hard review of documentation is undertaken to avoid document control issues for the future.
- OFI 5.1-2: Incorrect or Out of Date Referencing: Several incorrect referencing issues were noted during the audit (DECCW not OEH/EPA and AS ISO 10002 2014 not AS/NZS 10002:2014). Ensure that in future, key regulators and references to standards (especially where those standards are specifically referred to in Operating Licence clauses), are referenced correctly. Noting that Sydney Water has recently subscribed to 'Standards Watch' from a corporate perspective, so the issue of keeping up to date with standards should be managed for the future.
- OFI 5.1-3: Social Media: Ensure that at the next review of the Customer Complaints Procedure, that social media is specifically covered as a mode of contact from customers e.g. in Section 3 and 7.1 of the Customer Complaints Procedure.

5 Section 9: Reporting and Maintaining Records

5.1 Summary of Findings

Clause 9 – Full Compliance

This clause requires Sydney Water to comply with and report on the reporting obligations set out in the Reporting Manual including providing to NSW Health a copy of any report referred to in the Reporting Manual relating to water quality monitoring. This clause also requires Sydney Water to maintain records that are sufficient to enable it to accurately report in accordance with condition 9(a).

Detailed assessment in respect of this clause is presented in Appendix A.5.

Sydney Water has developed, and maintains a folio of progress to meet its Operating Licence requirements in relation with its reporting requirements. The folio contains various clauses and debrief of reporting process, which gets updated every six months.

The auditor also reviewed Sydney Water's audit schedule and performance indicator sheets as per the previous audit recommendations. The auditor found the evidence provided by Sydney Water adequate in order to meet its Licence requirements.

5.2 Recommendations

5.2.1 Recommendations

There are no recommendations for this clause.

5.2.2 Opportunities for Improvement

There are no opportunities for improvement for this clause.

6 Recommendations from Previous Audits

The auditors reviewed Sydney Water's progress against the previous operational audit recommendations. These are discussed below.

Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
 2012-13-1: Recycled Water – Condition 2.2 Sydney Water's internal processes for ensuring compliance of customer's operating recycled water schemes (classified municipal use - restricted access and application, or municipal use - enhanced restrictions on access and application) with their contract should be strengthened. At the moment Sydney Water relies on the Annual Declarations from customers to manage the potential exposure risks or inappropriate uses of recycled water: As a minimum, Annual Declarations forms need to be strengthened and all customers advised on how to properly complete their Annual Declarations. Where appropriate, customers are to re- submit declarations for 2012-13 that have not been completed properly. Additional procedures, such as site inspections for signage and usage controls, should be 	Partially Completed. An inspection checklist has been drawn up, but inspections have not been carried out. Business customer service officers have been allocated as liaison points for each scheme customer and to maintain contact as required. Annual declarations were received from all customers, incorrectly completed declarations were resubmitted.	Audit to confirm recommendations have been satisfactorily resolved. Check that the inspection has been completed and at the appropriate times (summer) when recycled water is in greater and more consistent use.	Sydney Water advised that annual declarations forms have been improved and annual declarations received from all customers. A sample of annual declarations was reviewed both during on-site interviews and provided as evidence. ¹⁷ Sydney Water has provided sufficient evidence to demonstrate strengthened internal processes to ensure compliance with customers operating schemes. Additional Procedures are discussed in the recommendation Recycled Water – Condition 2.2 2013-2014 – 2.

6.1 2012-13-1 (Recycled Water - Condition 2.2)

Auditors' Recommendation:

This recommendation can be closed.

¹⁷ Including Location of SWIM Documents for Recycled Water, EMAI Annual Recycled Water declaration 2014 Elizabeth Macarthur Agricultural Institute.

6.2 2013-14-1 (Recycled Water – Condition 2.2)

Recommendation /	Progress since	Guidance	Finding
Operational Issue	2013/14 Audit	for	
(Licence Reference	Reported in 31	2014/15	
Where Applicable)	March Report 2015	Audit	
 2013-14-1: Recycled Water – Condition 2.2 Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four- year rolling program agreed with NSW Health. Further, Sydney Water should be able to demonstrate progress with its program in both documentation development and scheme specific implementation by 30 June 2015. Formal endorsement of the Liverpool plan by NSW Health should also be achieved by 30 June 2015. 	Sydney Water is reviewing and updating Recycled Water Quality Management Plans in-line with the four year rolling program agreed with NSW Health. Part A: An overarching Recycled Water Management Manual to support the scheme plans is also in development with a draft due for completion by 30 June 2015. Part B: The Liverpool Scheme Plan has been submitted to NSW Health for endorsement. NSW Health has advised that they do not intend to endorse the plan but will provide comments on the plans suitability. We will aim to have this by 30 June 2015. On receipt of these comments Sydney Water will incorporate them and finalise the plan.	Audit progress. Completion due – 30/6/2015	For ease of addressing this recommendation, the auditors have divided Sydney Water's response into two parts. Various evidence was sighted ¹⁸ . Part A Sydney Water is progressing the rolling review of its Scheme RWQMPs. This program has been delayed from that advised in previous annual reports ¹⁹ . Sydney Water has decided to undertake verification testing ²⁰ across key process units at each plant prior to updating the risk assessments, which has pushed the timeline out. As discussed in the detailed findings, failure of the phage host has further delayed testing. NSW Health has advised Sydney Water that they will no longer endorse Scheme RWQMPs but instead review submitted plans and provide correspondence as to whether the Scheme RWQMPs are satisfactory. Given the slippage in progress, the auditors consider that this part of the recommendation remain open but be reworded as reflected below to better align the recommendation with the rolling program agreed with NSW Health. Part B NSW Health considered the Liverpool Scheme RWQMP satisfactory and the auditors consider this part of the recommendation closed.

Auditors' Recommendation:

Part A: This part of the recommendation should remain open and the following wording remain attached:

"Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health."

Part B: This part of the recommendation can be closed.



¹⁸ Annexure 2-Four-year Schedule for review of Scheme RWQMP, Annual Report on Recycled Water Quality Management 2014-15.pdf, Recycled Water Management Manual.pdf, PAMWP0001_RW Verification Monitoring for Pathogen Reduction.docx. ¹⁹ Annual Report on Recycled Water Quality Management 2014-15.pdf, p9

²⁰ PAMWP0001_RW Verification Monitoring for Pathogen Reduction.docx

6.3 2013-14-2 (Recycled Water – Condition 2.2)

Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
2013-14-2: Recycled Water – Condition 2.2 • Sydney Water should	The compliance inspection checklist has been revised to include the names and contact details of the inspector and 'inspectee',	Audit – review checklist. Completion due	The compliance inspection checklist ²¹ has been revised to include the names and contact details of the inspector and 'inspectee', and the date and conditions prevailing during the inspection.
update site inspection checklists for water recycling schemes to include the names and contact details of the inspector and 'inspectee', and note the date and conditions during the	and the date and conditions prevailing during the inspection. For the period 01/07/2014 to 28/02/2015 inspections have been completed and checklists recorded for 20 of the 21 recycled water customers.	- 30/6/2015	Sydney Water advised that the Business Customer Representatives are responsible for following up on any actions identified in the reviews or any identified issues. Issues associated with backflow prevention devices are logged in the appropriate system and follow-up notices are issued.
inspection. Sydney Water should demonstrate that a number of schemes have been audited			Sydney Water advised for the period 01/07/2014 to 30/06/2015 inspections have been completed and checklists recorded for all 21 recycled water customers.
and field verified during 2014-15.			There is the potential that other actions identified during the inspections are not followed-up or more systemic issues are not noted.

Auditors' Recommendation:

This recommendation is considered closed but with the following opportunities for improvement:

Sydney Water could update the checklist to include:

- Issues from previous audit to be checked
- Issues raised in this audit requiring action by the recycled water customer and priority of action
- Any follow-up inspection requirement

Sydney Water could consider how other issues identified during the inspection reports can be given greater visibility in terms of tracking and reviewing and closing out outstanding issues (e.g. where end user training issues are monitored or requests for information about monitoring requirements are made).

²¹ Recycled Water Use Compliance Inspection Report for Ron Dine Reserve (21 Jan 2015), Recycled Water Use Compliance Inspection Report for Hayter Reserve (21 Jan 2015), BCS0342 Recycled Water Use Compliance Inspection Report template.docx.



Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
2013-14-3: Recycled Water – Condition 2.2 • Sydney Water should undertake a site verification audit of the Recycled Water Quality Management Plan for the Stonecutters Ridge scheme during 2014- 15.	A site verification audit of the Recycled Water Management Plan for the Stonecutters Ridge scheme is scheduled for June 2015.	Audit Progress. Due for completion – 30/6/2015	An audit of the Recycled Water Management Plan for the Stonecutters Ridge scheme was conducted ²² in June with a site verification done on the 16 June 2015. The audit noted one minor non-conformance that appears to have been addressed in the Draft Recycled Water Quality Management Plan for Quakers Hill WRP supply to the Stonecutters Ridge Golf Course. The auditor notes that the First Column heading of Table 3-5 Quakers Hill WRP/SRGC Recycled Water Scheme Operational Control Points is mislabelled as ' <i>CCP No</i> ' rather than ' <i>OCP No</i> ' and this should be changed.

6.4 2013-14-3 (Recycled Water – Condition 2.2)

Auditors' Recommendation:

This recommendation is now closed as the site verification audit has been conducted and the findings are currently being actioned by Sydney Water. Once these actions are complete the Recycled Water Quality Management Plan for Quakers Hill WRP supply to the Stonecutters Ridge Golf Course should be thoroughly reviewed for accuracy and consistency prior to commencement of supply of recycled water.

 $^{^{\}rm 22}$ Internal Audit - Stonecutters Ridge Recycled Water Scheme (20/7/2015).

6.5 2013-14-4: (Asset Management Framework – Condition 3.1.2(e))

	1	1	
Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
2013-14-4: Asset Management Framework – Condition 3.1.2(e) Sydney Water should ensure that document control is implemented across the organisation for all key documents relating to its services and activities covered by the operating licence. Key knowledge processes and practices should be documented, controlled and endorsed with appropriate signoff ('Part A'). Sydney Water should demonstrate that information in controlled documents retains currency by implementing regular reviews in accordance with its risk based document control review schedules. By 30 June 2015, Sydney Water should establish a review schedule to ensure that all controlled documents are brought up to date according to the risk level of the document ('Part B').	 Sydney Water currently uses various document control methods across the organisation including: Business Management Information System (BMIS - system used for controlling management system documents); Sydney Water Information Management System (SWIM - corporate records management system); Local area network drives; iConnect (intranet); Hard copy registered files. With the implementation of an organisation wide QMS Sydney Water will transition to using BMIS (or similar) for controlling all key documents. In the interim, Sydney Water will address this requirement via a two-pronged approach: In order to cover key documents related to compliance with the Operating Licence, staff with primary responsibility for ensuring compliance with the Licence conditions (primary contacts) will document the key documents that support or demonstrate compliance. To facilitate this, an Operating Licence document control template managed by Corporate Compliance has been created. The template will identify the key document control method, last review date, review period and the next review date for each key document. A list of expired documents will be compiled and the primary contacts and document review schedule (based on the determined risk of the document) to ensure that key documents are brought up to date in a timely manner. 	Audit progress of this project. Review the list of out of date documents and the priority of updates are related to risk level. Review the new template for documents managed by Corporate Compliance. Due for completion – 30/6/2015	For ease of addressing this recommendation, the auditors have divided it into two parts. Part A The first part of this recommendation requires that document control is implemented for all key documents relating to services and activities covered by the operating licence. Sydney Water states that it is transitioning to an organisation wide quality management system as required under its 2015-2020 Operating Licence and is implementing interim measures until this system is in place. Sydney Water has established a spreadsheet for tracking key documents relating to its Operating Licence Folio. The tracking spreadsheet has a separate tab for each licence area and each area of the business is responsible for providing details of key documents, the status of these documents and the review cycle. The level of information provided and completeness varies between business areas. This is still a work in progress. The auditors have noted in the areas covered by this audit various instances of key document control (Clause 2, Clause 5). The auditors therefore conclude that this part of the recommendation requires that Sydney Water establishes a review schedule for all controlled document so be brought up to date according to the risk level of the document. A risk assessment that considers existing controls has been undertaken to arrive at a recommended review frequency and trigger for audit of documentation if errors are identified. On this basis, the auditors consider that Sydney Water has met the requirement of the second half of this recommendation and that this part of
			the recommendation can be closed.

Auditors' Recommendation:

Part A: This part of the recommendation should remain open.

Part B: This part of the recommendation can be closed.

6.6 2013-14-5: (Asset Management Framework – Condition 3.1.2(e))

Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
2013-14-5: Asset Management Framework – Condition 3.1.2(e) By 30 June 2015, Sydney Water should review its incident and scenario close out procedures and documentation relating to services and activities covered by the operating licence, to ensure appropriate and timely close out of actions are implemented.	Sydney Water is reviewing its incident and scenario close-out procedures relating to services and activities covered by the Operating Licence. In addition, a review is being carried out of outstanding incident management actions to ensure these are prioritised for timely close out. Sydney Water has robust incident management processes. The process follows an 'All Hazards' approach, that is universally accepted by all emergency services and utilities for managing incidents.	Audit Progress. Check the progress of closeout procedures projects. Select a number of incidents from the audit period and follow through to demonstrate closeout process is working. Due for completion – 30/6/2015	Sydney Water formed a project team to address this recommendation. The project team engaged with internal stakeholders and users of incident and scenario close out information to identify their expectations for close out of identified actions, as well as issues that they were aware of. The root cause of the issues identified were determined and recommendations to address these root causes were made. The recommendations cover areas including improving the close out process, implementing risk based criteria for incident investigation and building capacity in staff to investigate and report on incidents. The recommendations were presented to Sydney Water Service Delivery executive in February 2015.

Auditor Recommendation:

The auditor considers that the requirement of this recommendation to review incident and scenario close out by 30 June 2015 has been met and that this recommendation should be closed.

6.7 2013-14-6: (Reporting and Maintaining Records – Condition 9(a))

Recommendation / Operational Issue (Licence Reference Where Applicable)	Progress since 2013/14 Audit Reported in 31 March Report 2015	Guidance for 2014/15 Audit	Finding
2013-14-6: Reporting and Maintaining Records – Condition 9(a) By 30 June 2015, Sydney Water should review its QA processes to ensure that data reported to regulatory bodies is accurate and meets the assigned definitions.	Sydney water is currently reviewing data included in regulatory reports to ensure that it is documented in procedures or performance indicator (PI) sheets sufficient to trace and validate data logic and QA steps. In conjunction with this, an audit schedule is being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual.	Audit Progress. Review performance indicator sheets. See audit schedule for upcoming or completed audits. Audit schedule to be in place by 30/06/2015. Audits will be ongoing.	Sydney water had reported in its 31 March 2015 report that it was in a process of reviewing data included in regulatory reports to ensure that it was documented in procedures or performance indicator (PI) sheets sufficient to trace and validate data logic and QA steps. In conjunction with this, an audit schedule was being developed to progressively validate these QA processes to ensure that the specifications match the requirements as detailed in the Operating Licence Reporting Manual. Sydney Water has advised during the audit that an audit of the implementation of findings from the 2014/15 audit and selected indicators will be conducted in 2016. A full-scale audit on system performance standards was conducted in 2014/15 due to the reporting issues that became apparent the previous year. The focus of ongoing audits and their frequency will be determined according to the assessed risk. The auditors were provided with a copy of the report for the audit conducted in August-September. Further, documentation of PI sheets is held within Sydney Water Information Management system, SVVIM. These PI sheets cover the definition, interpretation, data source, data provider, due date) as well as the data collection process and associated procedures. An annual review of the PI sheets was completed before end of June 2015. As evidence, the auditors were provided with the audit report on SPS reporting process and individual PI sheets.

Auditor Recommendation:

The auditor is satisfied that Sydney Water has met the requirements of this recommendation and that this recommendation can be closed.

APPENDIX A. Detailed Audit Findings

A.1 Site Visit

Sites were visited on Friday 13 November 2015 by the auditor team as detailed in Appendix Table 1 with auditor notes in Appendix Table 2.

Appendix	Table	I. Site	verification	visit	locations,	team	members	present,	and	auditor	focus.
					,			F · · · · · · · ,			

		Sites and Key Items Viewed				
		Parklea	Box Hill	North Richmond	Rouse Hill	
Team Member	Focus	Drinking Water Reservoir WS 0337 Chlorine (hypochlorite) Dosing Station WX0080 Recycled Water Reservoir RS0449 Chlorine (hypochlorite) Dosing Station RX0003	Drinking Water Pumping Station WP0187 Chlorine (hypochlorite) Dosing Station WX0049 Flow Meter WF0577 Inlet Tap sampling point WP187 / Outlet sampling point (asset number not sighted)	Water Filtration Plant (WFP11) Drinking Water Reservoir WS159 Drinking Water Reservoir WS308 Laboratory SCADA setpoints (for filtration and fluoridation) Chemical storages (ferric chloride, sodium hydroxide)	Water Recycling Plant (Legacy Code ST0031-9007)	
Annette Davison	Drinking Water Quality	×	×	×	×	
Stephen Walker	Assets	Х	Х	Х	Х	
Annalisa Contos	Recycled Water Quality				×	

Appendix Table 2. Site verification visit notes.

SITE	Notes
Parklea	The drinking water reservoir (60 ML) was out of service at the site visit due to refurbishment. Drinking water is being supplied to the network from other reservoirs (e.g. Rogans Hill) during the refurbishment. Chlorine meter and sampling point were inspected. Evidence of analyser calibration was sighted up to the point that the reservoir was taken off line. Temperature analysis is undertaken at time of grab sample. Temperatures are usually not >20 °C (noting that temperatures consistently above 25 °C accompanied with low chlorine residuals can be a risk for maintaining safety of water quality ²³). The reservoir includes a mixer to ensure good mixing, including when rechlorinating, The rechlorination dosing line was sighted. When in operation, chorine is dosed to reach breakpoint.
	Asset diagram WS337_1.DWG Issue A, Revision 0 12/02/08 provided as evidence. WS0337 and RS0449 matched the diagram in terms of numbering and location. However, the diagram would be usefully updated (note OFI on flow diagram verification for North Richmond also).
	The site was tidy and well kept. Staff members who met the audit team on site were courteous and during discussion, confirmed implementation of the procedures including monitoring, provided as pre-audit evidence e.g. Rechlorination Plant Monthly Report – June 2015.xls. Locations and assets stated on the monthly rechlorination plant report matched those seen at the site visit.
	The sign on the chlorine re-dosing shed is still the old sign relating to the onsite generation of chlorine (from brine). The sign should be changed to reflect the new arrangement.
	The recycled water reservoir (2 ML) was sighted. The potable top up pipe was viewed on the outside of the reservoir. An air gap is used to prevent backflow but this could not be verified at the visit as the auditors did not access the reservoir roof.
Box Hill	The sign on the chlorine re-dosing shed is still the old sign relating to the onsite generation of chlorine (from

²³ Naegleria fowleri Factsheet, Australian Drinking Water Guidelines 2011, updated March 2015 p322-323.

Site	Notes
	brine). The sign should be changed to reflect the new arrangement. The pumping shed was viewed.
	Locations and assets stated on the monthly rechlorination plant report matched those seen at the site visit.
	The inlet sampling tap point of connection was located outside of the security fence with the sampling tap inside the security fence. While this is not an issue for water quality, it may present an issue for security of the sampling point itself.
	The site visit confirmed that chlorine re-dosing assets are located at this site despite not being detailed within Maximo.
	A walk-through of the North Richmond WFP was undertaken to test the flow diagram ²⁴ provided (from the clarifier onwards – noting that the raw water pumps were not viewed because of time constraints). The plant has no 'pumping rules' in that water is nearly always pumped from the river (Hawkesbury River). Water that is not fit for purpose can be 'overboarded' back to the Hawkesbury River (under the conditions of the plant's Environment Protection Licence) rather than taken into the rest of the process. Water flow is generally through the clarifier (for up to 80% of the year) with the DAF plant being brought on line for periods of the year (usually summer) when algal hazards are present. A procedure is in place for management decisions on when to bring the DAF online. While there was no document control information on the document, the auditor sighted the document in BMIS at the site visit and confirmed the document number and date of revision. ²⁵ In general, the 'flow' components of the process flow diagram was inaccurate and require updating (these issues are captured in the OFIs). In general, each flow diagram should be followed up with a 'walk-through' of each plant to ensure that the flows, components, inputs and monitoring are a true representation of the process flow and that a person with responsibility and accountability signs off on the veracity of the flow diagram. Checking of flow diagrams is especially important following any plant modifications (noting that construction/refurbishment was in place at both North Richmond and Parklea reservoir sites during the verification visit).
North Richmond	SCADA was viewed on-screen. The filtration and fluoridation components were checked. As noted by the interviewees, one of the filters (filter 3) was confirmed as being offline on SCADA (and by walk-past of the filter bed). Sydney Water's policy involves setting operational limits that are more stringent then the Product Specifications, ²⁷ for instance, the turbidity setpoint for the filters is 0.09 NTU for each individual filter ²⁸ which is more stringent than the target criterion of <0.2 NTU >95 % of the time and the critical limit of >0.5 NTU. Fluoride limits in SCADA similarly were 1.35 mg/L high and 0.8 mg/L low which contrasts with > 1.5 mg/L critical limit (online). The auditor notes that while there is no issue with SCADA limits being more stringent than the Product Specification and understands why this approach has been taken from an operational perspective, the basis for difference from the Product Specification needs to be captured to show the reasoning and authority for the change. As only one drinking water plant was viewed, it was not possible to check whether the approach across all plants was the same further, how this issue was covered at the BOO plants. Often plants may have slightly different operating targets and setpoints due to peculiarities with system operation and changing water sources – Sydney Water will need to pay focus to each plant to ensure that it understands deviations in place from the Product Specification and that these deviations do not compromise the efficacy of the barriers in place.
	Laboratory calibration logbook ²⁹ and IICATS logbook ³⁰ records were sighted. For the calibration records, water analysis of raw water and calibration of monitoring equipment was reviewed. Batch numbers of chemical standards were recorded, results of calibration recorded, acceptance or otherwise recorded and operator initials and/or name recorded. Laboratory was clean and tidy. To aim for consistency, calibration standards are purchased from one source, the Sydney Water West Ryde laboratory. Chemical standards for Fe and Mn were sighted and were within their expiry date. ³¹ DAF jar testing equipment has been purchased to allow for simulation of the DAF units and optimise dosing requirements. The Plant Manager noted that the equipment has made a marked improvement in DAF operations.
	A walk-past of chemical storage of ferric chloride and sodium hydroxide (caustic) was viewed. The storages were secure and delivery points were locked. Chemical deliveries are made as 'assisted deliveries' to ensure that chemicals are delivered to the correct storage vessel.

²⁴ North Richmond WFP process flow diagram.pdf, Revised 1 January 2014.

³¹ Fe standard 50 ug/L, expiry 02/12/2015, Batch number 02/09/2015; Mn standard 20 ug/L Batch number 03/09/2015.



²⁵ WTNR 5029 Management of DAF/clarifier processes at North Richmond WFP Revised 25/08/2014.

 ²⁶ Can potentially be an issue in terms of bird access and build up and entry of bird faces into the reservoir in the event of breaches.
 ²⁷ IMS0152.01_Drinking Water Product Specifications.docx, Issue Date: 07/04/2015, Review Date: 07/04/2017.
 ²⁸ IMS0152.01_Drinking Water Product Specifications.docx, Issue Date: 07/04/2015, Review Date: 07/04/2017, Table 1, p16.

 ²⁹ Daily Water Monitoring Logbook June 2015
 ³⁰ Daily Monitoring Logbook North Richmond WFP11 IICATS etc. June 2015

Site	Notes
Rouse Hill	The site visit at Rouse Hill Commenced with an induction and a virtual walk through of the site explaining the process flow diagram and process units. The field verification commenced with a walk through of the Stage 2 IDEA Tanks and the secondary clarifier. Tertiary filters and associated turbidity meter was sighted. Both UV disinfection and chlorination systems were viewed and staff discussed the operation of these systems and the CCP triggers. These were verified on SCADA. Further aspects of the site visit are recorded in the element-by-element breakdown discussion (Section A.2.4) including in particular, Elements 4 and 9.

A.2 Section 2: Water Quality

A.2.1 Drinking Water Quality (sub-clause 2.1)

Requirement

	Requirement			
Sub- clause 2.1	(a) Sydney Water must manage drinking water quality to the satisfaction of NSW Health in accordance with the Australian Drinking Water Guidelines (unless NSW Health specifies otherwise). [Licence Note: It is generally expected that Sydney Water will be required to comply with the Australian Drinking Water Guidelines but, where NSW Health consider it appropriate, the application of these guidelines can be varied or amended to take account of Sydney Water's circumstances and/ or drinking water quality policy and practices within NSW.]			
	(d) Sydney Water is to implement procedures and processes for the appropriate management of the drinking water supply system under its control in light of its knowledge of the entire drinking water supply system (from the source to the consumer). Sydney Water must have adequate systems and processes in place to manage drinking water quality taking into account planning and risk management and their implementation across the entire drinking water supply system. [Licence Note: Under clause 2.1 (d) Sydney Water is to demonstrate that the putcomes of joint processes (such as risk assessments with bulk suppliers) are implemented effectively where their implementation relates to a part of the drinking water supply system that is within Sydney Water's control. Outcomes that do not lie within Sydney Water's area of responsibility in the system are not covered by this obligation. Sydney Water is to demonstrate that relevant training, operating, maintenance and incident response procedures have been developed with due consideration to upstream and downstream conditions and impacts.]			
	(e) Sydney Water must comply with the fluoridation plant operating targets set out in the <i>Fluoridation Code</i> .			
	(f) Sydney Water must report on drinking v outlined in the <i>Reporting manual</i> .	vater quality monitoring in the manner and form		
		Target for Full Compliance		
Risk Waterborne outbreaks from mis-management of drinking water quality still occur in the developed world and therefore, the risk posed to public health from non- compliance with this clause could be significant.		Systems and processes in place to identify the requi Australian Drinking Water Guidelines (assumed to a Framework for Management of Drinking Water Quality Water's context, and their implementation in practic overall catchment to consumer supply chain (depen properly identified responsibilities and accountabilities components).	rements of the llso include the /), in Sydney ce across the ding on es for system	
		Systems and processes in place to ensure correct identification, management and monitoring of fluoridation plant operating targets.		
		Systems and processes in place to ensure compliance with the reporting requirements of the Reporting Manual and their correct reporting in practice.		
Evidence Sighted				
• Inte	 Interviews with water quality team members (12 November 2015) 			

- Site visit (13 November 2015)
- Annual Report on Implementation of 5-year Drinking Water Quality Management Plan.pdf
- Approval memo Drinking Water Management Manual.pdf
- Approval page Drinking Water Management Manual.pdf
- BMIS0213_Drinking Water Management Manual.pdf (Drinking Water Management Manual)

- BMIS0214_Drinking Water Improvement Plan.pdf
- BMIS0249_Sydney Water and WaterNSW Risk Review Catchment to Customer Water Quality and Quantity.docx
- C2C Report_final.pdf
- CatchtoConsumer Risk Register_150316_summary.xlsm
- Drinking Water Quality_Folio of Progress 2014-15.pdf
- Email_Showing Delivery of draft revised 5-year DWQMP.pdf
- Fluoride Dec I 4and May 15 Prospect.xlsx
- IMS0152.01_Drinking Water Product Specifications.docx
- JOG Minutes 27 May 2015_final draft.docx
- Minutes and Action items SCA-SWC Strategic Operational Interface 12 December 2014.docx
- Mnutes Water Forum Q1 2015.docx
- North Richmond Fluoride Dec14andMay15.xlsx
- NR_Fluoride storage set points in SCADA.png
- Quarterly drinking water report for NSW Health Q3 2014-15.pdf
- Reporting Manual for Sydney Water Corporation Water Reporting Manual June 2013 (IPART) (Reporting Manual)
- SA-M&R0013 Procedure for delivering monthly fluoride to NSW Health.docx
- Screen Capture_detail of entry for SWIRL WQ incidents_INC7376_13Jan15.JPG
- Screen Capture_Oracle_Dates Quarterly DWQ reports loaded to web.JPG
- Screen Capture_SWIRL WQ incidents_Jan I 5.JPG
- SDIMS0015_Compliance Reporting Procedure.docx
- Situation Report _5 Main Break 08102014.docx
- SLG Agenda_10 December 2014.docx
- SW Monthly Fluoride Report to NSW Health December 2014.xlsx
- SW Monthly Fluoride Report to NSW Health May 2015.xlsx
- WPIMS5015_MoU NSW Health and Sydney Water.pdf
- WPIMS5152_Five-Year Drinking Water Quality Management Plan 2010-2015.pdf
- NR_Fluoride dosing process in SCADA.png
- NR_Fluoride Ops Certificates_2.pdf
- NR_Fluoride Ops Certificates.pdf
- NR_Fluoride storage set points in SCADA.png
- Prospect_Flouride training record.pdf
- Prospect_Fluoride_certificate.pdf
- Prospect_Training Matrix Updated 14-08-2015.xls
- PWFP Fluoride trend.pdf
- New South Wales Code of Practice for Fluoridation of Public Water Supplies 2011 (Fluoride Code) (Fluoridation of Public Water Supplies Act 1957 (NSW)) NEW SOUTH WALES GOVERNMENT GAZETTE No. 35

Summary of Reasons for Grade

Sydney Water manages drinking water quality in accordance with the ADWG. It does this through having developed and implemented a number of systems relevant to the components of the water supply delivery chain. Examples of its approaches include having good processes in place for capturing legal and formal requirements (though a detailed compliance accountability register), understanding its stakeholders, understanding its system risks (though integrated risk workshops and risk capture), having sound, multiple party incident management plans and learning in place, having good corporate to coalface reporting and review of reports including capturing of improvements within an overarching Drinking Water Improvement Plan. Sydney Water has sound agreements and protocols in place with key stakeholders such as WaterNSW (Sydney Catchment Authority for the audit scope period), Sydney Desalination Plant and NSW Health. All of these stakeholders were contacted either by the auditor or by IPART as part of the audit process. NSW Health noted that it was satisfied that SWC had met its obligations under the Operating Licence and MoU. Similarly, representatives from the Sydney Desalination Plant and WaterNSW noted that the shared understanding of system supply risks and management between the parties - operationalized through their operating protocols and through good officer relationships. Sydney Desalination Plant noted that it would prefer greater future participation in the overall catchment to tap system understanding (tempered currently by the fact that the plant is not in production). The auditor did note some small areas for improvement such as checking of flow diagrams through site 'walkaround' and sign off for veracity, updating of site signage and more integration of product specification limits for CCPs vs those used in practice on SCADA. However, these areas are not considered to compromise Sydney Water's ability to meet its obligations. Fluoridation management was tested by reviewing information from North Richmond and Prospect including testing fluoride reporting against the Fluoride Code, checking calculated values of grab samples against online monitoring and checking fluoride training records. For the Prospect WFP, the stock fluoride levels were not provided in the initial evidence as the bulk storage hoppers are not equipped with weight sensors. However, a SCADA screenshot was provided as additional evidence to show that levels are actually recorded.³² The monthly fluoride analysis results were compared with the average calculated fluoride dose. Results from the average calculated dose were generally within 10% of the grab sample result. Management of fluoridation is therefore considered compliant with the requirements of the Code and the licence clause. Sydney Water has met the drinking water quality reporting obligations in the Reporting Manual.

³² NR_Fluoride storage set points in SCADA.png

Discussion and Notes

(a) Management of drinking water quality in accordance with the Australian Drinking Water Guidelines: The two main documents supplied by Sydney Water as evidence for meeting this clause are:

- BMIS0213_Drinking Water Management Manual (DWMM)
- BMIS0214_Drinking Water Improvement Plan (DWIP)

The DWMM is aligned with the 12 elements of the *Framework for Management of Drinking Water Quality* within the ADWG. The DWMM is dated 1 July 2015 which is outside of the audit scope period however, as noted by Sydney Water, it was developed during the 2014-2015 year to allow transitioning of Sydney Water to the new systems-based licence. A memo was provided as evidence to show internal signoff and approval of the DWMM including how NSW Health's comments had been taken into consideration.³³ Evidence supporting feedback from NSW Health on the DWWM was also sighted in the JOG Minutes.³⁴ The document active during the 2014-2015 operational year was:

WPIMS5152_Five Year Drinking Water Quality Management Plan (2010-2015) (DWQMP)

The DWIP sets out key improvement actions for Sydney's drinking water systems in the areas of quality, quantity and system performance standards³⁵. Recycled water is only addressed in the DWIP as far as it may impact on drinking water quality and quantity. Identification of improvement areas is undertaken through a range of sources³⁶ including via the catchment to tap risk assess process and incident debriefs. It was possible to track how improvements identified in the Catchment to Customer risk review³⁷ were captured in the DWIP.

Sydney Water is required to have an MoU in place with NSW Health. The MoU was provided and the same (May 2012, which is current for the audit period) is also available on Sydney Water's website³⁸ as noted in the DWMM. The MoU sets the context and purpose for the parties. The MoU is given effect as part of key initiatives such as the Joint Operational Group meetings and through the Strategic Liaison Group.³⁹ Minutes of the meetings were provided⁴⁰ and reviewed. Drinking water quality risk management is a key component of the meetings.

During the audit period, Sydney Water regularly met with other key stakeholders in the catchment to tap supply chain including at formalised meetings⁴¹ and through involvement in risk reviews.⁴²

The remainder of the findings for this clause are presented in Section A.2.3.

(d) Implementation of procedures and processes for the appropriate management of the drinking water supply system: See findings in Section A.2.3.

(e) Compliance with Fluoride Code Targets: Sydney Water is required to submit a monthly fluoride report to NSW Health in accordance with the Fluoride Code.⁴³ Sydney Water has a procedure for delivering the monthly fluoride report to NSW Health⁴⁴.

The Fluoride Code referenced in the procedure⁴⁵ is Code of Practice for the Fluoridation of Public Water Supplies (2002) – not 2011 as is current. This reference needs to be updated.

The procedure details the correct fluoride concentrations of 0.9 to 1.5 mg/L fluoride.⁴⁶

"The report must be delivered to NSW Health and internal stakeholders by the 7th day of each month. It summarises the previous month's fluoride data at Sydney Water or Built Owned and Operated (BOO) Water Filtration Plants (WFP), the desalination plant (when operational) and at customer taps in the reticulated network."

Outputs from the procedure are Excel® reports. Two fluoride reports were sighted prior to the onsite interviews, these being for December 2014 and May 2015.⁴⁷ The format met the reporting requirements. 'Out-of-spec' fluoride outcomes and comments were noted for the Nepean plant. While some findings from the online measurements were below the 0.9 mg/L, the corresponding grab samples demonstrated compliance.

From an operational perspective, the Fluoride Code requires a water supplier that is fluoridating its supply to maintain a daily record of:

The volume of water treated.

•

³³ Approval of Drinking Water Management Manual , revised following NSW Health feedback (Approval memo - Drinking Water Management Manual.pdf).

³⁴ Joint Operational Group (JOG) Wednesday 27 May 2015, 9:30 AM – 12:30 PM, Item 8, p4.

³⁵ BMIS0214_Drinking Water Improvement Plan, p3.

³⁶ BMIS0214_Drinking Water Improvement Plan, Section 3.1, p5.

³⁷ C2C Report Final.pdf, p17.

³⁸ http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd_047318.pdf

³⁹ Strategic Liaison Group Meeting 9:30 am – 11.30 am, Wednesday 10 December 2014.

⁴⁰ E.g. Joint Operational Group (JOG) Wednesday 27 May 2015, 9:30 AM – 12:30 PM

⁴¹ Strategic Operations Group Meeting 12 December 2014, meeting with Sydney Water and the then Sydney Catchment Authority.

⁴² C2C Report_final.pdf

⁴³ Reporting Manual, Section 3.1.2, p5.

⁴⁴ SA-M&R0013 - Procedure for delivering the monthly fluoride report to NSW Health (currency 15/03/2015, next review 15/03/2017)

⁴⁵ Page 1.

⁴⁶ Fluoride Code, Section 10.1.1, p30.

⁴⁷ SW Monthly Fluoride Report to NSW Health December 2014.xlsx; SW Monthly Fluoride Report to NSW Health May 2015.xlsx

- The quantity of fluoridating agent added over the same time period.
- The corresponding average calculated fluoride dose.
- The fluoride analysis result from the treated water.
- Sample taken during this time period.
- The stock of fluoridating agent on hand.

Records were requested and provided for North Richmond and Prospect WFPs for December 2014 and May 2015⁴⁸. The reports generally met the requirements of the above bullet points. For Prospect, the stock levels were not provided as the bulk storage hoppers are not equipped with weight sensors. However, a SCADA screenshot was provided as additional evidence to show that levels are recorded.⁴⁹ The monthly fluoride analysis results were compared with the average calculated fluoride dose. Results from the average calculated dose were generally within 10% of the grab sample result:

	North Richmond (Fluoride mg/L)		Prospect (Fluoride mg/L)	
Date	Calc. Avge. Dose (operational data)	Grab Sample (monthly report)	Calc. Avge. Dose (operational data)	Grab Sample (monthly report)
09/12/14	1.13	1.0	0.9	1.0
25/12/14	1.16	1.07	0.9	0.98
15/05/15	1.02	1.04	0.93	1.01
26/05/15	1.1	1.0	0.92	1.03

Fluoride certificates were provided as evidence. See Element 7 in Section A.2.3 for more detail.

(f) Reporting Manual compliance for drinking water quality monitoring: The requirements for drinking water quality monitoring are prescribed in general in Section 2 Annual licence compliance reporting requirements and specifically in Section 3 Reporting to NSW Health on water quality in the Reporting Manual. Sydney Water manages its compliance reporting requirements through the procedure SDIMS0015 Compliance Reporting Procedure⁵⁰. Drinking water quality reporting requirements in general are identified and itemised in Sydney Water's Drinking Water Management Manual.⁵¹

Legal and formal requirements are identified and verified (see further commentary in Element 1 of Section A.2.3).

Full reporting requirements are captured in the Corporate Compliance Program (see further commentary in Element 1 of Section A.2.3).

All drinking water quality quarterly reports were sighted on Sydney Water's website.

2014-15

- Quarter 4 1 April to 30 June 2015
- Quarter 3 1 January to 31 March 2015
- Quarter 2 1 October to 31 December 2014
- Quarter 1 1 July to 30 September 2014

Further information to support this clause is provided in Element 10 of Section A.2.3).

Based on the evidence provided, this sub-clause is considered fully compliant.

Recommendations

There are no recommendations for this clause.

Opportunities for Improvement

OFI 2.1(a)(d) Element 2-1: Update risk documents to include the definition of control provided in ISO 31000.

OFI 2.1 (a)(d) Element 2-2: Ensure that the signs on both the Parklea chlorine dosing shed and the Box Hill pumping station are changed to reflect the new mode of chlorine delivery i.e. hypochlorite dosing not chlorine-generation from brine.

OFI 2.1 (a)(d) Element 2-3: Sodium hypochlorite dosing of the raw water is marked on the flow diagram as always in use. Use is contingent on requirements (although it was noted as usually in use). Add in brackets '(as required)' after the sodium hydroxide. Non-ionic polymer is added to the clarifier, this input is missing from the flow diagram and needs to be added.

⁵¹ Section 2.



⁴⁸ North Richmond Fluoride Dec14andMay15.xlsx; Fluoride Dec14andMay15 - Prospect.xlsx

⁴⁹ NR_Fluoride storage set points in SCADA.png

⁵⁰ Current at 25/02/2015.

OFI 2.1 (a)(d) Element 2-4: The flow diagram as drawn represents the dual media filter (DMF) and the granular activated carbon (GAC) unit as one component. The DMF comprises 6 units (one of which was off line during the visit) and the GAC 4 units. The units and the flow (e.g. series and/or parallel) should be clearly indicated on the flow diagram as the number of units and the flow through the units can have an impact on process and risk.

OFI 2.1(a)(d) Element 2-5: The way the North Richmond flow diagram is currently drawn implies that the clarifier and DAF are always online and used together in equal proportions. Given that the DAF is only in use for up to 20% of the year (depending on algal conditions), the flow diagram should reflect the intermittent nature of the DAF usage (e.g. dotted line or other). Bringing process components into use from being offline, can represent a source of risk both in terms of when to bring the process online and operating it when online (noting that the auditor acknowledges that a procedure is in place for managing DAF/clarifier readiness).

OFI 2.1(a)(d) Element 2-6: The flow diagram needs to be taken out of the office and verified via a 'plant walkthrough' as a true and accurate representation of the process and flows (including inputs and monitoring). The verification needs to be undertaken by a person with responsibility and accountability and signed off as such. Sign-off could be achieved through a notation on the diagram and/or through an entry into BMIS.

OFI 2.1(a)(d) Element 2-7: Ensure that for future risk reviews, a summary of each drinking water supply system is produced that meets the intent of the Framework and integrates and summarises all relevant information held by Sydney Water and others.

OFI 2.1(a)(d) Element 3-1: Ensure that the Product Specification document captures the fact that individual plants may have different operational SCADA limits, for ease of operation and ensure that any changes do not compromise barrier efficacy.

OFI 2.1(a)(d) Element 5-1: Review the location of the sampling tap at the Box Hill pumping station and consider whether (and if possible) the tap-in needs to be moved to within the security fence.

OFI 2.1(a)(d) Element 7-1: Ensure that Performance Development Plan targets are completed within the PDP summary.

OFI 2.1(a)(d) Element 7-2: Include water quality risk management training (e.g. Certificate 2 NWP279) for employees and contractors (where appropriate e.g. for BOO contractors).

OFI 2.1 (a)(d) Element 7-3: Include the new drinking water policy in induction materials and training for all staff and contractors.

OFI 2.1(a)(d) Element 12-1: Include numbering of actions in the DWIP to facilitate tracking and cross-referencing.

OFI 2.1 (e)-1: For fluoride reporting, and if not already covered in SCADA, it would be useful to record the initials/name of the operator having taken the sample for diligence in record keeping and follow up in the case of an incident and/or anomaly.

A.2.2 Recycled Water Quality (sub-clause 2.2)

Sub-clause	Requirement			
2.2	Sydney V	Vater must manage Recyc	Grade	
	(a)) The Australian Guidelines for Water Recycling [AGWR] (unless NSW Health specifies otherwise) to the satisfaction of NSW Health; and/or		Adequate
	(b) any other guidelines specified by NSW Health to the satisfaction of IPART (IPART was to advise if this was required		ified by NSW Health to the satisfaction of IPART his was required	Compliance Grade No Requirement
	(c)	(c) Sydney Water must report on Recycled Water quality monitoring in the manner and form outlined in the Reporting Manual		Compliance Grade Full
Risk	•		Target for Full Compliance	
Public health and the environment can be placed at risk if recycled water that is not fit for purpose is supplied.		nt can be placed at risk if ourpose is supplied.	Sydney Water has managed recycled water quality in line with the 12 elements within the Framework for Management of Recycled Water Quality and Use.	
			Reports have been submitted as required by the I	Reporting Manual.
Evidence Sighted				
Recycled W	'ater Qualit	ty Folio of Process ⁵²		

Q3 Recycled Water Quality Monitoring Report for NSW Health 2014-15_signed⁵³

⁵² Recycled Water Quality (including_stormwater)_Folio of Progress 2014-15.pdf

- Q4 Recycled Water Quality Monitoring Report for NSW Health 2014-15 signed⁵⁴
- Annual Report on Recycled Water Quality Management, 2014-1555
- Screen shots from SWIRL of examples of recycled water incidents listed in the Q4 RW Quality Monitoring Report
 provided to NSW Health:
 - o Screen capture_details of RW SWIRL Incident-INC-831656
 - o Screen capture_details of RW SWIRL Incident-INC-893957

See evidence for 2.2 (a) in the Element by Element Breakdown (Appendix A.2.4).

Summary of Reasons for Grade

Sydney Water has a successful management system and supporting processes in place for the following elements of the AGWR Framework for Management of Recycled Water Quality and Use for

- Element 1: Commitment to Responsible Use and Management of Recycled Water Quality
- Element 4: Operational Procedures and Process Control
- Element 5: Verification of Recycled Water Quality and Environmental Performance
- Element 6: Management of Incidents and Emergencies
- Element 7: Operator, Contractor and End User Awareness and Training
- Element 8: Community Involvement and Awareness

The following key issues were noted for the remaining elements.

Element	Key Issues
Element 2: Assessment of the Recycled Water System	Sydney Water has a four year rolling program to review the Scheme RWQMP however this means that some risk assessments (e.g. Rouse Hill) have not been updated for seven years. There are some inconsistencies in how public health risks have been assessed in more recent risk assessment (e.g. Stonecutters Ridge).
Element 3: Preventive Measures for Recycled Water Management	Sydney Water has well established preventive measures and multiple barriers in place. The grade of adequate was awarded due to a number of minor shortcomings identified by the auditor including; that Sydney Water could not be assured that the Rouse Hill UV unit was operating within its validated UV envelope, claimed LRV's for UV not being reflecting of adenovirus kill and verification data for secondary treatment at Rouse Hill only being available for the Stage I treatment train (BNR and secondary clarifier) and not Stage 2 (IDAL and equalisation basin).
Element 9: Validation, Research and Development	Sydney Water has developed a validation hierarchy and has good documentation of the validation for the two Scheme RWQMPs reviewed. However key aspects of UV validation had not been carried over into operational monitoring for Rouse Hill.
Element 10: Documentation and reporting	A number of issues with cross references and document control were noted.
Element I: Evaluation and Audit	During the IPART audit period Sydney Water's internal audits program was designed on business structure. Two recycled water sites had an internal QES audit in the 2014-15 period ⁵⁸ . The completed internal audit checklists were reviewed ^{59,60} . The integrated checklist provided as evidence for these Quality, Environment Safety audits do not provide strong evidence for auditing of the RW QMS in line with the AWGR. Sydney Water are now conducting audits on 'end to end' processes with a focus on process performance and risks covering a number of business areas. Evidence of a recycled water process audit ⁶¹ outside the audit period was provided and this provides good evidence that Sydney Water now has practices that meet this element.
Element 12: Review and Continuous Improvement	Sydney Water did not have a formalised improvement plan during the audit period.

⁵³ Q3 Recycled Water Quality Monitoring Report for NSW Health 2014-15_signed.pdf

⁵⁶ Screen Capture_Detail of RW SWIRL Incident_INC-8316.JPG

⁵⁸ 14-15 Divisional level audits.xlsx

⁶¹ QEM SWC Audit Report on Recycled Water -full report.docx



⁵⁴ Q4 Recycled Water Quality Monitoring Report for NSW Health 2014-2015 signed.pdf

⁵⁵ Annual Report on Recycled Water Quality Management 2014-15.pdf

⁵⁷ Screen Capture_Detail of RW SWIRL Incident_INC-8939.JPG

⁵⁹ SDIMS0008 - Quakers Hill Audit Report.docx

⁶⁰ SDIMS0011 - St Marys SDIMS Audit Report.docx

As no other guidelines have been specified by NSW Health, there was no requirement to audit Clause 2.2 (b).

Sydney Water met its reporting requirements for licence Clause 2.2 (c).

Discussion and Notes

See Element by Element Breakdown against the Framework for Management of Recycled Water Quality and Use for a detailed discussion of clause 2.2(a).

Reporting obligations are covered by Clause 2.2 (c). The Reporting Manual⁶² has the following requirements in relation to recycled water:

- Quarterly reporting to NSW Health
- Annual Management of recycled water quality (2.2.1)
 - o Activities and programs undertaken in the previous year and corresponding results, including both routine and non-routine monitoring.
 - o Any proposed amendments to management of water quality issues or risks, including any activities and programs proposed for monitoring, operation, maintenance or emergency and incident management.
 - Additional water quality improvement actions for both routine and non-routine monitoring to be implemented in the coming year, including details on the expected outcomes, scope and timeframe of actions.
- Immediate notification
- Significant changes to management of water quality

2.2.1 Annual reports on the implementation of the Five Year Drinking Water Quality Management Plan and recycled water quality management

This was submitted in the Annual Report on Recycled Water Quality Management, 2014-15 submitted to IPART. Annexure. Sydney Water provided a concise summary of its proposed work on p5 and Annexure 2, monitoring results on p 7-8 and improvement actions on p9-10.

2.3.1 Incident and emergency reporting

Incidents that may impact on Recycled Water quality are reported and tracked in Sydney Water's Incident and Reporting Learning system (SWIRL) to NSW Health and are summarised in the Quarterly Reports to NSW Health.

2.3.3 Notification of significant changes to the management of Water Quality

Sydney Water advised it was planning three significant changes to the management of recycled water quality:

- The establishment of a Recycled Water Management Manual, which will fulfil the function of the 'overarching' instrument of the Recycled Water Quality Management System required under Clause 2.1 of the Operating Licence 2015–20, replacing the Five-year Plan;
- Development of a 'catchment-to-customer' risk assessment;
- Development of a Recycled Water Improvement Plan.

While the reporting met the obligations, the auditor notes that the report included terms such as 'expected to occur' in relation to actions rather than being more active in stating exactly when actions would occur.

Further, in terms of 'significance' the auditor notes that deleting a UVT meter could be termed significant as not measuring UVT can have a significant impact on recycled water quality, and therefore, public health outcomes from a recycled water scheme.

Recommendations

There are 4 recommendations for this clause.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-1	Clause 2.2(a) Overarching	Even with Sydney Water's established processes and organisational controls in place, gaps were present in the information provided to support recycled water management during the audit period.	 Ensure that an overarching description of organisational controls used in recycled water management is developed, including linkages between controls and responsible persons. Ensure that the overarching information cascades down to inclusion and implementation at an individual recycled water system plan 	Before finalisation of the overarching Recycled Water Management Manual.

 $^{^{\}rm 62}$ Reporting Manual For Sydney Water Corporation, IPART, June 2013

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
			level.	
2014- 2015 R-2	Clause 2.2(a) AGWR Framework Element 2: Assessment of the Recycled Water System	Risk assessment consequences are sometimes rated lower than would be expected for the stated hazardous event. For example 'Risk 28: Exposure of customers and their staff/contractors to recycled water results in illness', specifically mentions illness from recycled water within the hazardous event, however the impact is only rated as minor (No increase in illnesses) rather than moderate, which is the minimum appropriate level for this impact.	I. Ensure consistent application of the HIDRA Risk Matrix and Consequence Key.	As part of each Scheme's Recycled Water Quality Management Plan review.
2014- 2015 R-3	Clause 2.2(a) AGWR Framework Element 3: Preventive Measures for Recycled Water Management Element 9: Validation, Research and Development	Uncertainty in relation to whether UV disinfection units are operating within their validation envelope.	I. Confirm that all validated UV units are operating within their UVT validation envelope, appropriate to the dose monitoring strategy in place.	By end December 2016 with a report on progress as at 30 June 2016.
2014-	Clause 2.2(a)	Gaps in currency of information in	1. Establish a review frequency for each action within the AGWR Framework.	By end September 2016.
2015 R-4	AGWR Framework Element 10	AGWR documentation, long review Framework timeframes and/or lack of review Element 10 within stated timeframes.	2. Ensure that the review frequency is implemented in practice for both the Recycled Water Management Manual and the Scheme Recycled Water Quality Management Plans.	By September 2016.

Opportunities for Improvement

OFI 2.2(a) Element 3: Sydney Water could consider how to improve the visibility of CCP monitoring points to operations. This may include labelling on CCP instruments in the field and the development of a CCP SCADA page so operators can see at a glance that the system is operating within its critical limits. The monitoring instrument for the CCP could be recorded in the CCP table.

OFI 2.2(a) Element 9: Where Sydney Water is relying on secondary treatment to achieve necessary LRVs for the end use, Sydney Water should consider developing a clearer understanding of the mechanisms for log reductions within these processes and provide the Production Officers with monitoring points and critical limits related to pathogen reduction.

OFI 2.2(a) Element 10: Sydney Water should develop processes to proactively report implementation of the AGWR to the CEO and Board.

A.2.3 Framework for Management of Drinking Water Quality: Element by Element Breakdown

Focus for this audit is detailed below in Appendix Table 3.

Appendix Table 3. Framework for Management of Drinking Water Quality focus for this audit.

Element and Components	Adequacy	Implementation
I Commitment to Drinking Water Quality Management		
I.I Drinking water quality policy		Ý
1.2 Pagulatany and formal requirements		
1.2 Regulatory and formal requirements		
1.5 Engaging stakenolders		
2 Assessment of the Water Supply System	\checkmark	\checkmark
2.1 Water supply system analysis		
2.2 Assessment of water quality data	Ĭ	Ť V
2.3 Hazard Identification and risk assessment	ľ	ľ
3 Preventive Measures for Drinking Water Quality Management		
3.1 Preventive measures and multiple barriers	Ύ	Ϋ́
3.2 Critical control points	Y	Ϋ́
4. Operational Procedures and Process Control		
4.1 Operational Procedures	Y	Ύ
4.2 Operational monitoring	Y	Y
4.3 Corrective action	Y	Y
4.4 Equipment capability and maintenance	Y	Y
4.5 Materials and chemicals	Y	Y
5 Verification of Drinking Water Quality		
5.1 Drinking water quality monitoring	Y	Y
5.2 Consumer satisfaction	Y	Υ
5.3 Short term evaluation of results	Y	Y
5.4 Corrective action	Y	Y
6 Management of Incidents and Emergencies		
6.1 Communication	Y	Y
6.2 Incident and emergency response protocols	Y	Y
7 Employee Awareness and Training		
7.1 Employee awareness and involvement		Y
7.2 Employee training		Y
8 Community Involvement and Awareness		
8.1 Community consultation		Ý
8.2 Communication		Ý
9 Research and Development		
9.1 Investigative studies and research monitoring		Ý
9.2 Validation of processes		Ý
9.3 Design of equipment		Ý
10 Documentation and Reporting		
10.1 Management of documentation and records	Y	Y
10.2 Reporting	Ý	Y
L Evaluation and Audit		
ong term evaluation of results	Y	Y
11.2 Audit of drinking water quality management	Y	Y
12 Review and Continual Improvement		
12 Review by senior executive	Y	Y
12.1 Neview by serilor executive		
rz.z prinking water quality management improvement plan		

Evidence Provided (pre-audit and additional samples requested)
 Interviews with water quality team members (12 November 2015)

- Site visit (13 November 2015)
- 00 EH Committee Agenda Final.docx
- I_NORTH RICHMOND WATER QUALITY REVIEW_June 2014.docx
- 12_16 CHER Committee agenda.docx
- 20120417_SDP_SWC_Operating_protocols.doc
- 2015 Compliance Accountability Register.pdf
- 2015_CAR_entire_updated version final.pdf
- 4th Drinking Water Quarterly report 2014-15-Final.pdf
- ACDP0414_Changes to disinfection for new water mains.pdf
- AFS0002_Chemical Testing NATA certificate ISO IEC 17025.pdf
- AFS0002.01_Scope of Accreditation Chemical Testing. Accreditation number 63.pdf
- AFS0003_Biological Testing NATA certificate ISO IEC 17025.pdf
- AFS0003.01_Scope of Accreditation Biological Testing Accreditation number 610.pdf
- Agenda C2T 2014 Workshop #4.pdf
- Agenda C2T 2014 Workshop 1 V5.pdf
- Agenda C2T 2014 Workshop 2 V3.pdf
- Agenda C2T 2014 Workshop 3 V4.pdf
- Agenda_SLG_10 December 2014.docx
- Annual Drinking Water Quality Monitoring Plan 2014-15.pdf
- Annual Report on Implementation of 5-year Drinking Water Quality Management Plan.pdf
- AR0005 Dialysis Chlorine Notification arragements.doc
- BMIS0038_SCA & SWC Protocol for Detection of Crypto and Giardia.doc
- BMIS0213_Drinking Water Management Manual.pdf
- BMIS0213.14_Procedure Audit Drinking Water Policy.docx
- BMIS0214_Drinking Water Improvement Plan.pdf
- BMIS0249_SW and WaterNSW Risk Review CtoC Water Quality Quantity.docx
- BMIS0250_Sydney Water contact list for NSW Health.docx
- C2C Report final.pdf
- C2T 5 year review workshop #1 Rev 2.pdf
- C2T 5 year review workshop #2.pdf
- C2T 5 year review workshop #3.pdf
- C2T 5 year review workshop #4.pdf
- C2T 5 year review workshop #6 V3.pdf
- C2T Workshop 5 Scenario V3.pdf
- CatchtoConsumer Risk Register_150316_summary.xlsm
- CCR Folder- Q4 2014-15.docx
- Chlorine_20140730 Northern Linley Point.doc
- Control Charts_Reservoirs_North Richmond_JUN15_BOXES.docx
- D_Set point table for NR Rechloro plants 2014_2015_141209.doc
- D2014 48380 SCA_SWC_operating protocols.pdf
- Daily DW Actions_02012015_i.PDF
- Daily DW Actions_02012015_ii.PDF
- Daily DW Actions_02012015_iii.PDF
- Daily DW Actions_02012015_iv.PDF
- Daily DW Actions_05012015_i.PDF
- Daily DW Actions_12052015_i.PDF
- Daily DW Actions_12052015_ii.PDF
- December 2014 Performance Report-western.pdf
- DOC0040_Conducting SD Component of IPART audit.docx
- DOC0193_Plan for PAM Communication and Stakeholder Engagement.docx
- DOC0282_Abnormal Water Event_North Richmond_DRAFT For review.pdf
- DOC0333 Investigating & Reporting Water Pressure Failure.docx
- DOC0350_Process Decision and Abnormal Water Quality.pdf
- Drinking Water Management Manual VI audit trail.pdf
- Drinking Water Management Manual V2 audit trail.pdf
- Drinking Water Management Manual V3 audit trail.pdf
- DW Operational monitoring plan 2014-15.pdf
- Educational Assistance Policy_ICONN_UD_CT_014818.pdf
- EM0010_Sydney Water Incident Response Plan.doc
- EMSIMS0016_Incident Management Procedure.doc

- Example of Calcium Hypochlorite Tablet Dosing form (Falconbridge Run).pdf
- Example of chloramination report 15-09-14 (covering email).pdf
- Example of chloramination report 15-09-14 (excel attachment).pdf
- Example of Compass training record.pdf
- Example of Tablet dosing report_26 June 2015 (Faulconbridge).xlsx
- Executive Business Performance Review Forecast meeting 19 oCT 2015_Agenda.pdf
- Exercise pipebuster 2014_Report.docx
- Fluoridation Management System Checklist IMS OCS5003.pdf
- IMS0067 Management of Disinfection of Drinking Water.doc
- IMS0089_Customer Stakeholder Notification Procedure.doc
- IMS0152.01_Drinking Water Product Specifications.docx
- Incident debrief Nth Richmond crypto incident_Final.pdf
- June 2015 Monthly Disinfection Report.pdf
- Level C PO PDP 14_15.pdf
- Level D PO PDP 14_15.pdf
- Local procedure Re-Training through review.docx
- [Manager] 14-15 PDP Goals.pdf
- Minutes Water Forum Q1 2015.docx
- Minutes and Action items SCA-SWC Strategic Operational Interface 12 December 2014.docx
- Minutes JOG 27 May 2015_final draft.docx
- MPMS0101_AS ISO IEC 17025 accreditation of laboratories.pdf
- NL_RANKING_JUN15.docx
- North Richmond RA Draft 24 July 2014.docx
- North Richmond WFP process flow diagram.pdf
- North Richmond_Maintenance Work orders.pdf
- North Richmond_On-line pH meter Calibration.pdf
- North Richmond_On-line Turbidimeter Calibration.pdf
- NR_Fluoride dosing process in SCADA.png
- NR_Fluoride Ops Certificates_2.pdf
- NR_Fluoride Ops Certificates.pdf
- NR_Fluoride storage set points in SCADA.png
- Org Structure_Service Delivery.pdf
- PAM Networks Dashboard June 2015.pdf
- PC-06-Chemical Procurement.Issue 6.docx
- PD Product Manager Water & Wastewater 20121003.docm
- Plant Manager PDP 14_15.pdf
- Position Description Service Delivery Officer 6.pdf
- Position Description_Plant Mgr 200911-oct13 final.xlsx
- Position Description_Production Officers AB and C Final Dec2014.xls
- Prospect_Flouride training record.pdf
- Prospect_Fluoride_certificate.pdf
- Prospect_Training Matrix Updated 14-08-2015.xls
- PWFP Fluoride trend.pdf
- QMAF0003_Risk Management Policy.pdf
- QMAF0018_Corporate Risk and Opportunity Criteria.docx
- QMAF0067_Customer complaints policy.docx
- Rechlorination Plant Monthly Report June 2015.xls
- Rechlorination Plant Monthly Report June 2015.zip
- Report Review Form Q4-2014-15.pdf
- Screen Capture_detail of entry for SWIRL WQ incidents_INC7376_13Jan15.JPG
- Screen Capture_LIMNOS actions running.png
- Screen capture_LIMNOS result check.png
- Screen Capture_Oracle_Q3 DWQ report.JPG
- Screen Capture_Oracle_Q4 DWQ report.JPG
- Screen Capture_SWIM_DW Compliance reporting.JPG
- Screen Capture_SWIRL WQ incidents_Jan I 5.JPG
- Screen Capture_Water Supply Code of Australia.JPG
- SD Document management progress.pptx
- SD Expired Document Action List.xlsx
- SDIMS Audit Schedule.xlsx
- SDIMS0002_Service Delivery Integrated Managment System SDIMS Manual.docx
- SDIMS0006_Stakeholder Management.docx
- SDIMS0008_Document Management procedure.docx

- SDIMS0010 Assurance and Monitoring (Audit and Inspections).docx SDIMS0011_Non-conformance corrective and preventative action procedure.docx ٠ ٠ SDIMS0012 Management Review.docx SDIMS0013_Incident Prevention and Preparedness.docx ٠ SDIMS0015_Compliance Reporting Procedure.docx SDIMS0017_Records Management procedure.docx SDIMS0161 Ozone Audit Findings and actions.xlsx SDIMS0161 Ozone disinfection audit and actions.png SDIMS0163 Audit report on SPS reporting processes SDIMS0163 SPS reporting audit and actions.png Service Delivery Performance Report_May data.pdf Service Delivery Performance Report_Nov data.pdf Situation Report _5 - Main Break - 08102014.docx Situation Report #12 Macarthur Main break.pdf SWEMS0003_External Requirements Register.docx SYS13_JUN2015.docx Team meeting minutes October-2015 NR.docx Treatment Combined Water Specification Report June 2015.pdf Unified monthly report May 2015.xls Unified monthly report September 2014.xls Viridis Monitoring Report-draft.docx Water Product Deep Dive BPRF - Mark Crabtree Final v2.pptx Water Product Integrated Management System Policy.pdf Ways staff can access relevant documents.docx Western Water Link Forum Minutes_August_ 2014.docx WNC0001 Dirty Water Alert Instruction.docx WOQ5162_Managing Customer Water Quality Complaints.docx WP_20151117_002.jpg WPIMS5015_MoU NSW Health and Sydney Water.pdf WPIMS5027.01_Disinfecting new water mains_analysis sheet.docx WPIMS5041 R5 Manual Disinfection of Service Reservoirs2015.doc WPIMS5152_Five-Year Drinking Water Quality Management Plan.pdf WPIMS5228_Drinking Water Quality Event Management SOP.docx WPIMS5261_Certifying water quality when commissioning returning reservoirs to service.doc WPIMS5274_Triggers Notifications and Actions for Adverse Water Quality Results SOP.doc WSA 201 Manual for Selection and Application of Protective Coatings.pdf WTCS5035 Dual media filter commissioning procedure.doc WTNR 5029 DAF Clarifier Protocol.pdf WTNR5004 Daily Workflow Process and Equipment Monitoring.pdf WTNR5005_R8. Receiving Bulk Chemicals.pdf WTNR5009 Process and Decision Making.pdf WTNR5010 Clarifier Operation R5.pdf WTNR5016_BCP_Index.pdf (pp 1-3)
 - WTNR5016_Clearwater exceeds guidlines contingency.pdf (p51)
 - WTNR5016_Crypto-Giardia Contingency.pdf (p52)
 - WTNR5016_Dirty Water Contingency.pdf (pp19-25)
 - WTNR5027_DAF Operation.pdf

Discussion and Notes

Element | Commitment to Drinking Water Quality Management

This element covers the drinking water quality policy, identification of regulatory and formal requirements and identification and engagement with stakeholders.

The overarching plan for the audit period was the DWQMP. The DWQMP, in part (Section 4), is constructed in the format of the 12 Elements of the Framework. For the audit period, the policy in place was the Water Product Integrated Management System Policy. This policy was endorsed⁶³ by a senior executive⁶⁴ of Sydney Water. Although the policy is not exclusively related to drinking water quality, it covers the requirement to manage and prevent risks to drinking water quality and sets out Sydney Water's commitment to do so – while the policy does not specifically apply to contractors, it is noted that the current policy (within the DWMM⁶⁵) does. The DWQMP notes that the policy was available through the document management

⁶⁵ Annexure A.



⁶³ December 2010.

⁶⁴ General Manager Operations.

system and as hard copy on physical display as per the ISO 9001 certification requirements. Sydney Water stated that the policy was sent to all Operations staff when initially created however, the Framework requires that the policy should be communicated and implemented by all involved in drinking water supply production. The pre-existing SDIMS policy was sighted at Sydney Water head office (on one level of the building) and was present at the site visit (North Richmond⁶⁶). The new policy had yet to be officially signed off so is not yet on display.

Sydney Water audits documents, including policies, periodically as part of its certified management system.

The regulatory and formal requirement was covered by the DWQMP.⁶⁷ While the DWQMP covers some of the legal and formal requirements for the production of drinking water quality, it misses key legislation such as the *Competition and Consumer Act 2010* (Cth) which covers issues related to product quality (although a hard copy of the Compliance Accountability Register was sighted at interview⁶⁸ and this did address the Act). The Compliance Accountability Register and the External Requirements Register provide summaries of existing relevant legislation. Legal advice is sought when required and evidence was provided where advice had been sought on the DWWM.

Responsibilities identified in this component are communicated through training programs. Summaries of the regulatory framework are provided on the intranet. Further information on position descriptions and water quality is provided under Element 7.

The External Requirements Register sets out who is accountable for the requirements

Documents and compliance requirements are kept up to date through the quality management system⁶⁹ and through a 'Legislative Update' which is produced as part of a corporate scan to detect and notify changes.

Folios of progress are captured under the online Compliance Tool. An example for Drinking Water Quality⁷⁰ was provided which itemized the Operating Licence and other relevant drinking water requirements under the Sydney Water Act. The folio contains a table detailing the compliance requirements and whether Sydney Water is on track in terms of meeting compliance.

Sydney Water's stakeholders were identified within the DWQMP.⁷¹ A procedure is in place for stakeholder management⁷² and engagement⁷³ and key mechanisms for interaction are identified. Sydney Water is required to have an MoU in place with NSW Health. The MoU was provided and the same (May 2012, which is current for the audit period) is also available on Sydney Water's website⁷⁴ as noted in the DWMM. The MoU sets the context and purpose for the parties. The MoU is given effect as part of key initiatives such as the Joint Operational Group meetings and through the Strategic Liaison Group.⁷⁵ Minutes of the meetings were provided⁷⁶ and reviewed. Drinking water quality risk management is a key component of the meetings. A contact list of Sydney Water staff is in place for contact by NSW Health.⁷⁷

During the audit period, Sydney Water regularly met with other key stakeholders in the catchment to tap supply chain including at formalised meetings⁷⁸ and through involvement in risk reviews.⁷⁹

Agreements are in place for key Sydney Water providers (service and/or product) including:

- Sydney Desalination Plant Pty Ltd (operational agreement)⁸⁰
- Build Own Operate WFPs (BOO contracts)
- WaterNSW (ex Sydney Catchment Authority) (raw water supply agreement)

Audit trail information was provided to show how the DWMM is kept up to date.⁸¹

The auditor discussed stakeholder interactions between Sydney Water, WaterNSW⁸² and the Sydney Desalination Plant Pty Ltd⁸³. The conversations are summarised below:

WaterNSW summary: Both organisations have a shared understanding of the water quality risks across the catchment to tap continuum and work collaboratively in order to minimise these risks to the end user; this is done in a commercial manner with a view to minimising the total cost to the customer (as per the Raw Water Supply Agreement).

Sydney Desalination Pty Ltd: SDP was invited to and undertook participation in the recent (mid-2014) overall catchment

⁷⁸ Strategic Operations Group Meeting 12 December 2014, meeting with Sydney Water and the then Sydney Catchment Authority.



⁶⁶ Photo provided as evidence post site visit, 13 November 2015.

⁶⁷ Section 2.1, p9.

⁶⁸ 2015 Compliance Accountability Register – current at 13/4/15

⁶⁹ SDIMS0008_Document Management procedure.docx, 12/03/2015.

⁷⁰ Drinking Water Quality_Folio of Progress 2014-15.pdf, summary for 30 June 2015.

⁷¹ Section 4, p22.

⁷² SDIMS0006_Stakeholder Management.docx

⁷³ DOC0193_Plan for PAM Communication and Stakeholder Engagement.docx (undated)

⁷⁴ http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd_047318.pdf

⁷⁵ Strategic Liaison Group Meeting 9:30 am – 11.30 am, Wednesday 10 December 2014.

⁷⁶ E.g. Joint Operational Group (JOG) Wednesday 27 May 2015, 9:30 AM – 12:30 PM

⁷⁷ BMIS0250_Sydney Water contact list for NSW Health.docx, 6 February 2014

⁷⁹ C2C Report_final.pdf

⁸⁰ 20120417_SDP_SWC_Operating_protocols.doc

⁸¹ Audit trail.pdf, Drinking Water Management Manual - VI audit trail.pdf, Drinking Water Management Manual - V2 audit trail.pdf, Drinking Water Management Manual - V3 audit trail.pdf.

⁸² Water Operations Manager

⁸³ Exec General Manager Operations

to tap risk review. SDP is generally comfortable with the relationship with Sydney Water but SDP would like more involvement and consideration from Sydney Water in the overall catchment to tap systems-based understanding and management from its own context as together SDP and SWC are managing a combined system. Based on the findings of this element it is considered fully compliant. There were no opportunities for improvement identified.

Element 2 Assessment of the Water Supply System

This element covers assessment of the water supply system, water quality data and the need to undertake a hazard identification and risk assessment.

A team was assembled for the 2014 catchment to tap risk review. The competencies and expertise of the overarching team was provided.⁸⁴ An overarching flow diagram detailing all of Sydney Water's systems is provided on its website.⁸⁵ There is no flow diagram in the DWQMP but there is in the DWMM.⁸⁶ The detailed flow diagram provided for North Richmond⁸⁷ satisfies the requirements of the Framework but lacks some information such as where free residual chlorine is monitored given that chlorine is not dosed into the clear water tank (see also information provided in the site visit for North Richmond). WFP flow diagrams are stored in Citect in practice and viewed on a daily basis by operators. Diagrams are also included in SCADA, HYDRA and GIS.

Live reports of water quality trends can be produced. An example was provided of a monthly networks dashboard per system for a range of parameters including Customer Complaints, System Integrity and Disinfection By-products.⁸⁸ Water quality data trends can also be viewed through IICATS and SCADA.

Sydney Water uses the LIMNOS Actions database to capture daily water quality exception action reports. Exceptions are also recorded in periodic reports to NSW Health and IPART (see above, Clause 2.1 (f) for reporting requirements). The Sydney Water Incident Reporting and Learning tool (or SWIRL) is used to capture the more notable exceptions. Screen capture information was provided as evidence of the tool or database⁸⁹ e.g. the 14/01/2015 raw water *Cryptosporidium* event at North Richmond WFP. Data are analysed on a monthly basis and trends identified. Evidence of such information for the Western Region and for North Richmond in particular was provided.⁹⁰

Overall corporate risk is managed through the Board-approved Risk Management Policy⁹¹ and the Corporate Risk and Opportunity Criteria.⁹² Drinking water quality risks are captured in 'KnowRisk'. An extraction from 11 March 2015 was provided as evidence.⁹³ The elements of a risk assessment as required in Element 2 of the Framework all appear to be present apart from clear identification of uncertainty. A catchment to consumer risk review was completed mid 2014. Catchment to customer risks between Sydney Water and WaterNSW are managed through a specific procedure (4 January 2015)⁹⁴. While Sydney Water uses a specialised software package to manage its water quality risks, KnowRisk is accessible by more than one person therefore managing the risk of only one person being able to use the software.

Risk uncertainties are captured in the DWIP as improvement actions.

CCPs and OCPs for Sydney Water's systems are documented in a product specification and help to show priority for risk management (see also information on SCADA review at the North Richmond site visit).⁹⁵ Risk reviews between Sydney Water and WaterNSW are captured in a procedure.

Several additional pieces of evidence were provided to support the Catchment to Customer risk review.⁹⁶ This evidence covered background information for the following areas of risk review:

- Pathogens and Cyanotoxins (25 June 2014)
- NOM, DBP (and T&O) (27 June 2014)
- Water Quantity Risk Workshop #1 of 2 (Discontinuation or interruption of supply; Pressure; 7 July 2014)
- Water Quantity Risk Workshop #2 of 2 (Water leakage and losses; Monitoring, reporting & accounting for water; 11 July 2014)
- Changes to SW and its operating environment (8 September 2014)

⁹⁶ C2T 5 year review workshop #1 Rev 2.pdf; C2T 5 year review workshop #2.pdf; C2T 5 year review workshop #3.pdf; C2T 5 year review workshop #4.pdf; Agenda C2T 2014 Workshop 1 V5.pdf; Agenda C2T 2014 Workshop 2 V3.pdf; Agenda C2T 2014 Workshop 3 V4.pdf



⁸⁴ C2C Report_final.pdf, Section 2.1.2, Table 1, p9.

⁸⁵ http://www.sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/water-network/index.htm

⁸⁶ DWMM, p20.

⁸⁷ North Richmond WFP process flow diagram.pdf

⁸⁸ PAM Networks Dashboard June 2015.pdf

⁸⁹ Screen Capture_detail of entry for SWIRL WQ incidents_INC7376_13Jan15.JPG, Screen Capture_LIMNOS actions running.png, Screen capture_LIMNOS result check.png, Screen Capture_SWIM_DW Compliance reporting.JPG, Screen Capture_SWIRL WQ incidents_Jan15.JPG ⁹⁰ December 2014 Performance Report-western.pdf, commencing Section2, p16 for North Richmond and Control Charts_Reservoirs_North Richmond_JUN15_BOXES.docx

⁹¹ QMAF0003_Risk Management Policy.pdf , dated 6/12/13, next review due 31/10/15.

⁹² QMAF0018_Corporate Risk and Opportunity Criteria.docx

⁹³ CatchtoConsumer Risk Register_150316_summary.xlsm

⁹⁴ BMIS0249_Sydney Water and WaterNSW Risk Review - Catchment to Customer Water Quality and Quantity.docx

⁹⁵ IMS0152.01_Drinking Water Product Specifications.docx

While some of the information was out of the audit date scope, it was accepted as evidence of an ongoing risk review process, which commenced outside of and continued into the audit date scope period. While the information contained in the evidence provided met the intent of the system assessment component, it was sparse. Further, there was some discrepancy in documents between understanding the number of water supply systems that Sydney Water actually has (at the interview it was confirmed as being 13). However, at the interview, it was noted that Sydney Water uses other channels⁹⁷ for collecting background system context information not just that provided in the C2C supporting documents. Sydney Water also uses many other systems for accessing and trending water quality data including SCADA and Integrated Instrumentation Control Automation and Telemetry System (IICATS) as well as drinking water quality within the Business Information system.

It is noted that an outdated description of 'control' is included in the C2C documents⁹⁸ i.e. AS/NZS 4360 definition rather than the ISO 31000 definition⁹⁹.

Outcomes from the C2C process were incorporated into the DWIP¹⁰⁰ therefore helping to address areas of uncertainty and potential risk gaps.

In the document, 'BMIS0249_Sydney Water and WaterNSW Risk Review - Catchment to Customer Water Quality and Quantity.docx' – the 'Table I' cited in the text¹⁰¹ was missing. When queried at interview, this omission was noted as an oversight i.e. that the table had been taken out but not the cross-referencing.

Based on the findings of this element it is considered fully compliant. There were seven opportunities for improvement identified.

Element 3 Preventive Measures for Drinking Water Quality Management

This element covers the need to understand and identify all preventive measures and multiple barriers in place in the water supply system and to identify which of those, are critical control points.

See information in Element 2 relating to the KnowRisk software and risk register. Actions arising from the C2C risk assessment were identified and itemised in the report¹⁰² following the risk assessment. Examples of SOPs were provided for North Richmond.¹⁰³

Preventive measures were identified and assessed through the C2C risk assessment mid 2014 and evidence from KnowRisk was provided (see Element 2 information for more detail). See notes in Element 4 for procedures and preventive measures.

CCPs and OCPs for Sydney Water's systems are documented in a product specification and help to show priority for risk management.¹⁰⁴ CCPs are set for filtration, disinfection and fluoridation. OCPs are set within the distribution network.

Action limits and critical limits are incorporated as online alarms in SCADA/IICATS. Plant staff members follow procedure if results deviate from the limits. Further information on CCP implementation is provided in the Site Visit summary for North Richmond WFP.

Key stakeholders were included in the C2C risk assessment (see further comments in Element 1 and 2).

Based on the findings of this element it is considered fully compliant. There was one opportunity for improvement identified.

Element 4. Operational Procedures and Process Control

This element's focus is on having the correct operational procedures in place for a range of management issues including equipment capability and maintenance and materials and chemicals management.

CCPs are itemized in IMS0152.01. BMIS is used to house operational procedures. As standard practice for a utility of Sydney Water's size, many water supply system processes and procedures are automated, using SCADA systems and telemetry (IICATS) – these systems have standardised alarm protocols and operational procedures. BOO plants are managed under contract. Procedures are in place for contract management. Of the procedures supplied, not all document control information was consistent or in place e.g. issue date and review date, issue date only. WPIMS5041 only had the issue date¹⁰⁵ and another procedure had minimal document control information with no sign off of approval.¹⁰⁶ Trended information is used to support the correct monitoring of key system elements.¹⁰⁷ SDIMS is used to house documents relevant to operational processes including Work Instructions, Procedures, Work Instruction – Incident Management. SDIMS is accessed through BMIS. Example screen shots of BMIS access points were provided and the system was checked at the site interview.¹⁰⁸

⁹⁷ E.g. Minutes and Action items SCA-SWC Strategic Operational Interface - 12 December 2014.docx; Minutes JOG 27 May 2015_final draft.docx

⁹⁸ E.g. C2C Report Final.pdf, p 26.

⁹⁹ "2.26 control: measure that is modifying risk (2.1) NOTE 1 Controls include any process, policy, device, practice, or other actions which modify risk. NOTE 2 Controls may not always exert the intended or assumed modifying effect."

¹⁰⁰ BMIS0214_Drinking Water Improvement Plan.pdf

¹⁰¹ BMIS0249_Sydney Water and WaterNSW Risk Review - Catchment to Customer Water Quality and Quantity.docx, p3.

¹⁰² C2C Report_final.pdf

¹⁰³ WTNR 5029 DAF Clarifier Protocol.pdf, WTNR5004 Daily Workflow Process and Equipment Monitoring.pdf, WTNR5005_R8. Receiving Bulk Chemicals.pdf, WTNR5009 Process and Decision Making.pdf

¹⁰⁴ IMS0152.01_Drinking Water Product Specifications.docx

¹⁰⁵ WPIMS5041 R5 Manual Disinfection of Service Reservoirs2015.doc, Issue date of 23/02/15, no review date.

¹⁰⁶ D_Set point table for NR Rechloro plants 2014_2015_141209.doc.

¹⁰⁷ SYS13_JUN2015.docx

¹⁰⁸ Ways staff can access relevant documents.docx

Operational monitoring is covered in the Drinking Water Product Specifications document¹⁰⁹ however it is not clear from the flow diagram provided for North Richmond¹¹⁰, exactly where the monitoring takes place for the specific CCPs and other key control points.¹¹¹ Monitoring in general is set out in Sydney Water's Annual Drinking Water Quality Operational Monitoring Plan.¹¹² Various types of operational monitoring are in place as one would expect, including online monitoring, grab sample monitoring and observational monitoring. Physical security alarms are also in place on various assets to indicate security breaches, which may have an impact on water quality. Monitoring is oversighted by the Hydrometrics Operations Group. Various components of evidence were provided to support operational monitoring including a new smartphone App that has been developed for chlorine dosing and email alerts that can also be easily accessed via smartphone (both were demonstrated at interviews). Security alarms are in place for reservoir hatches and are managed through the System Operations Centre. Any water quality exceedances are alerted and reported for action. Several examples of evidence were provided for operational monitoring and how findings are actioned.¹¹³ Operating protocols are in place with key stakeholders.¹¹⁴

Corrective actions are managed via an overarching procedure¹¹⁵ and then variously through sub-ordinate procedures for dealing with the types of actions needed per specific event. The overarching procedure contains the information and procedural flow that meets the requirements of a corrective action procedure. The procedure for investigating and reporting water pressure failures was not within the scope date.¹¹⁶

Sydney Water's assets are listed and have a scheduled inspection period for example, through programs such as the leakage and mains replacement program. Maximo is used as the enterprise asset management system (examined further under Section 3 of this Operational Licence audit). On line instruments are inspected, cleaned and calibrated on a monthly basis. Sydney Water's Service Delivery IMS is set up using the AS ISO/IEC 17025 framework which includes the requirements for tests, calibrations and sampling. Certificates were provided as evidence.¹¹⁷ Sydney Water staff members undertake calibration relevant to the equipment type including laboratory-based and online instruments. External contractors are used for reservoir inspections and cleaning. Asset inspections are carried out periodically for example diver inspections (Aqualift contractors) of reservoirs and a five-year rolling roof inspection.

Sydney Water provided various examples of evidence of operational protocols including for the management of materials and chemicals including delivery of chemicals. Further evidence was provided at the site inspection for the protocol that is currently being developed for the specification of ferric chloride for drinking water treatment, while outside the audit date scope, it was accepted as evidence of continual improvement. See further information in the Site Visit section regarding implementation and variances between SCADA limits and CCP information within the product specification¹¹⁸. Based on the findings of this element it is considered fully compliant. There were no opportunities for improvement identified.

Element 5 Verification of Drinking Water Quality

This element covers how verification monitoring of the system is undertaken including assessment of customer satisfaction, short-term evaluation of results and how corrective actions are taken in response to findings.

The main evidence for this component are:

- Annual Drinking Water Quality Monitoring Plan 2014-15119:
 - o This document covers the monitoring requirements to demonstrate Sydney Water's long term compliance with the ADWG. The focus of the plan is the requirements at customer taps for microbial, physical, chemical and radiological analytes. However for completeness, some raw water quality at the North Richmond WFP is also included.
- Annual Drinking Water Operational Monitoring Plan¹²⁰:
 - o This document covers operational monitoring requirements including raw and treated water intake. This document also supports the CCP product specification.
 - Also included in the plan are characteristics that align with Element 9 (investigative monitoring) and Element
 6 (incident monitoring).

These plans are reviewed on an annual basis.

Characteristics, locations and frequency covered in the above documents are consistent with those expected of a drinking water quality supplier the size of Sydney Water and its systems including the incorporation of population statistics to ensure

¹¹¹ Although the exact monitoring locations are covered in the Drinking Water Quality Operational Monitoring Plan 2014-15.

¹¹² DW Operational monitoring plan 2014-15.pdf BMIS0045 ver5.

¹²⁰ DW Operational monitoring plan 2014-15.pdf



¹⁰⁹ IMS0152.01_Drinking Water Product Specifications.docx

¹¹⁰ North Richmond WFP process flow diagram.pdf

¹¹³ Daily DW Actions_02012015_i.PDF; Daily DW Actions_02012015_ii.PDF; D

¹¹⁴ E.g. D2014 48380 SCA_SWC_operating protocols.pdf

¹¹⁵ SDIMS0011_Non-conformance corrective and preventative action procedure.docx, Issue date 12/03/2015

^{116 23/10/2015}

¹¹⁷ AFS0002_Chemical Testing NATA certificate ISO IEC 17025.pdf, AFS0002.01_Scope of Accreditation Chemical Testing. Accreditation number 63.pdf, AFS0003_Biological Testing NATA certificate ISO IEC 17025.pdf, AFS0003.01_Scope of Accreditation Biological Testing Accreditation number 610.pdf

¹¹⁸ IMS0152.01_Drinking Water Product Specifications.docx

¹¹⁹ Annual Drinking Water Quality Monitoring Plan 2014-15.pdf

continued appropriate system representation. NSW Health is also given opportunity to comment, which adds external review to the monitoring approach. When approached by IPART for comment on the Sydney Water's operations during the audit period, NSW Health noted it was satisfied that Sydney Water had met its obligations under the Operating Licence and had no comment on monitoring.¹²¹

Sydney Water's laboratory is NATA accredited for relevant tests and follows relevant procedures to ensure efficacy and veracity of sampling, monitoring and analysis.¹²² Other infrequently analysed parameters, such as acrylamide and radionuclides, are outsourced where it would not be practical to maintain the skills and accreditation in house.¹²³

Quality checks of data are undertaken including a review of detection limits. Daily reviews of water quality exceedance information in LIMNOS¹²⁴ is undertaken with appropriate follow-up. Automatic alerts are generated where water quality is out of specification. Email examples of automatic alerts were requested from Labstation (September 2014) and were provided as additional evidence.¹²⁵ Data are also quality checked at the plant level and evidence was provided for a procedure for North Richmond WFP.¹²⁶ While the North Richmond procedure provided was out of audit date scope, a draft¹²⁷ of the same document was also provided to show its development before finalisation. Discussion with the Senior Analysis and Reporting Specialist and other water quality team members provided good evidence to the auditor that the procedures provided as evidence pre the audit, are actually followed in practice.

Sydney Water is also required to review and report externally and internally¹²⁸ on various aspects of drinking water quality including fluoride reports, reporting to NSW Health and IPART (see evidence in Appendix A.2.1).

Customer satisfaction was reviewed at part of auditing Clause 5.1. Customer complaints are also reviewed by the water quality team. Trending of information was viewed live at the interviews. Results are reviewed through the Water Forum. Sydney Water is now using customer complaints as an early warning system and has developed responses based on complaints received and their timing, for instance, history has shown that 4 or more complaints in an hour in a zone may result in a water quality incident. Therefore, proactive deployment of field staff is taken based on these criteria, to prevent an incident occurring. Corrective actions are managed through a series of processes depending on the level of the issue identified.¹²⁹

Notifications to customers are also made based on water quality exceedances. For instance, chlorine notifications for 16 July 2014 were provided as evidence where chlorine exceeded an agreed target of 1.7 mg/L total chlorine and included stakeholders such as the Sydney Dialysis Centre, hospitals and NSW Health.¹³⁰ A procedure for notification to dialysis patients was also provided as evidence for follow-up of out of specification water quality.¹³¹ Based on the findings of this element it is considered fully compliant. There was one opportunity for improvement identified.

Element 6 Management of Incidents and Emergencies

This element covers setting out what constitutes an incident for the organisation and having appropriate communication and response protocols in place to deal with any incidents that may arise – including learnings from the incident to avoid it happening again.

Incidents are defined in Sydney Water's overarching Drinking Water Quality Event Management Plan (EMP).¹³² The EMP sets out how incidents are to be managed including clear instructions on who to contact and responsibilities for communication. Included in the document is supporting information such as incident training and learnings from incidents. The EMP is supported by a number of other procedures including Sydney Water Incident Management Procedure,¹³³ the Incident Response Plan 2014¹³⁴ and specifically, the protocol for detection of *Cryptosporidium* and *Giardia*.¹³⁵ Various forms of evidence were presented to show how Sydney Water implements its procedures in practice. Sydney Water Incident Recording and Learning System (SWIRL) is used to log incidents and their follow up and is a resource that can be used for determining root cause analysis of events. SWIRL was viewed at the site interview and screen shots were provided pre-interview¹³⁶. Where required, Sydney Water has access to a NSW Health Expert Panel¹³⁷ (including a *Cryptosporidium* and *Giardia* advisory panel), which can be

¹²⁶ SDIMS Work Instruction for Process Decision and Abnormal Water Quality DOC0350 Issue Date: 9/11/2015 Review Date: 9/11/2016 (DOC0350_Process Decision and Abnormal Water Quality.pdf)

¹²¹ SWC Op Lic audit 2014-2015 NSW Health submission.pdf

¹²² AFS0002_Chemical Testing NATA certificate ISO IEC 17025.pdf; AFS0002.01_Scope of Accreditation Chemical Testing. Accreditation number 63.pdf; AFS0003_Biological Testing NATA certificate ISO IEC 17025.pdf; AFS0003.01_Scope of Accreditation Biological Testing Accreditation number 610.pdf; MPMS0101_AS ISO IEC 17025 accreditation of laboratories.pdf

¹²³ E.g. to ANSTO for the radionuclides.

¹²⁴ Screen Capture_LIMNOS actions running.png; Screen capture_LIMNOS result check.png

¹²⁵ Example of chloramination report 15-09-14 (covering email).pdf; Example of chloramination report 15-09-14 (excel attachment).pdf

¹²⁷ DOC0282_Abnormal Water Event_North Richmond_DRAFT For review.pdf

¹²⁸ E.g. Monthly Disinfection Report (13 Months) (June 2015) and information provided to the Board (see evidence in Element 1).

¹²⁹ DOC0333 Investigating & Reporting Water Pressure Failure.docx; SDIMS0011_Non-conformance corrective and preventative action procedure.docx; WNC0001 Dirty Water Alert Instruction.docx; WOQ5162_Managing Customer Water Quality Complaints.docx; WPIMS5228_Drinking Water Quality Event Management SOP.docx; WPIMS5274_Triggers Notifications and Actions for Adverse Water Quality Results SOP.doc

¹³⁰ Chlorine_20140730 - Northern Linley Point.doc

¹³¹ AR0005 Dialysis Chlorine Notification arragements.doc (Issue Date: 03/06/2014)

¹³² WPIMS5228_Drinking Water Quality Event Management SOP.docx

¹³³ EMSIMS0016_Incident Management Procedure.doc

¹³⁴ EM0010_Sydney Water Incident Response Plan.doc

¹³⁵ BMIS0038_SCA & SWC Protocol for Detection of Crypto and Giardia.doc

¹³⁶ Screen Capture_SWIRL WQ incidents_lan15.|PG

¹³⁷ WPIMS5228_Drinking Water Quality Event Management SOP.docx, Section 14, p11.

consulted. A training exercise¹³⁸ was provided as an example of event training. NSW Health confirmed that it had participated in the training.¹³⁹ A draft abnormal raw water event protocol was provided for North Richmond.¹⁴⁰ An example of an incident de-brief was provided to support implementation of the overarching EMP. Based on the information provided overall and the satisfaction of NSW Health, this element is considered fully compliant. There are no opportunities for improvement.

Element 7 Employee Awareness and Training

This element covers employee awareness, involvement and training for all involved in the water supply delivery chain.

The position description (PD) (26 March 2015) for a Service Delivery Officer was reviewed and contained the requirement to have a thorough knowledge of the relevant regulatory requirements.¹⁴¹ There is no mention of the words 'drinking water' in the PD viewed however, when queried at interview, it was noted that it is Sydney Water's position to view water as a whole rather than segregated products. The PD for Plant Manager Level I and 2¹⁴² was viewed and again, there was no mention of 'drinking water', just 'treated water' which could be any water product. PD for Production Officer A, B and C¹⁴³ does contain the purpose of the position which in part is to produce potable water.

Training records are maintained through Compass. An example training record for North Richmond was provided. The example covered training in accountabilities for maintenance of drinking water quality including Work Instruction - Disinfection of Water mains (30/09/2015) and Ozone Trailer Disinfection Training (1/09/2014) as well as general web-based training SDIMS - Web Based Training (28/08/2014).

Additional evidence was provided in the form of Professional Development Program¹⁴⁴ summaries. This evidence clearly showed the inclusion of the need to meet water quality targets, meet public health compliance and meet turbidity targets. Other PDPs were sighted.¹⁴⁵ A Product Manager (Water & Wastewater) PD¹⁴⁶ was provided as additional evidence. This evidence covered the need to "understand the product requirements and performance across the system" however, it was not possible to verify the evidence date scope as the footer field was tagged to the current date.

Fluoride training evidence¹⁴⁷ was provided for contractors having completed the 'Fluoridation of Public Water: Fluoridation of Public Water Supplies' course. A certificate was provided for one of the contractor staff having completed the course (6-8 November 2007)¹⁴⁸. This information cross-referenced with the overall training record provided (noting that there is no requirement to undertake refresher training so this evidence is within the audit date scope). Certificates were also provided for North Richmond staff.¹⁴⁹ A training matrix¹⁵⁰ was supplied for Prospect. The operator requiring training for fluoride identified in the matrix cross-referenced with the training records provided. Out of scope evidence was provided of Sydney Water having conducted a recent fluoride audit of the Prospect WFP including checking of training requirements.¹⁵¹

Overall awareness is addressed through team meetings.¹⁵² Although the evidence provided for North Richmond Plant Team Meeting minutes was out of the audit date scope¹⁵³.

Sydney Water is progressing the training of non-specific water quality employees (who may still have an impact on water quality outcomes e.g. through finance, procurement). See also comments in Element 1 relating to policy dissemination. Sydney Water has an Educational Assistance Policy in place.¹⁵⁴ Water quality and awareness is also communicated at the Board¹⁵⁵ level with a presentation on water quality having been presented to the Board's Environment and Health Committee and water quality information reviewed via the Sydney Water Corporation Board: Customer, Health, Environment and Research Committee.¹⁵⁶

Based on the findings of this element it is considered fully compliant. There were three opportunities for improvement identified.

Element 8 Community Involvement and Awareness

This element covers understanding the community's water quality needs and perceptions including having effective two-way communication programs in place.

A proportion of the requirement has been addressed in the auditing of Clause 5.1. In addition, Sydney Water conducts a range of community engagement programs including via its website and through routes such as the Business Customer Forum (6-monthly, Consumer Sentiment Monitor and the Business Customer Forum (biennial). The Tap™ campaign has been very

¹⁵⁶ 12_16 CHER Committee agenda.docx (16 December 2014)



¹³⁸ Exercise pipebuster 2014_Report.docx

¹³⁹ SWC Op Lic audit 2014-2015 NSW Health submission.pdf

¹⁴⁰ DOC0282_Abnormal Water Event_North Richmond_DRAFT For review

¹⁴¹ Position Description - Service Delivery Officer 6.pdf, p7.

¹⁴² Position Description_Plant Mgr 2009 I I-oct I 3 final.xlsx

¹⁴³ Position Description_Production Officers AB and C Final Dec2014.xls

¹⁴⁴ E.g. Plant Manager PDP 14_15.pdf

¹⁴⁵ Level C PO PDP 14_15.pdf; Level D PO PDP 14_15.pdf

¹⁴⁶ HRMS_F_0038 Dated 26 November 2015 (PD Product Manager - Water & Wastewater 20121003.docm)

¹⁴⁷ Prospect_Flouride training record.pdf

¹⁴⁸ Prospect_Fluoride_certificate.pdf.

¹⁴⁹ NR_Fluoride Ops Certificates_2.pdf, NR_Fluoride Ops Certificates.pdf

¹⁵⁰ Prospect_Training Matrix Updated 14-08-2015.xls

¹⁵¹ Fluoridation Management System Checklist IMS OCS5003.pdf (11 November 2015)

¹⁵² E.g. Water Forum Quarter I 2015 (17 February 2015; Minutes - Water Forum - Q1 2015.docx)

¹⁵³ Team meeting minutes October-2015 NR.docx

¹⁵⁴ HRMS_P_0008 | June 2012 (Educational Assistance Policy_ICONN_UD_CT_014818.pdf)

¹⁵⁵ 00 EH Committee Agenda Final.docx (13 May 2015)

successful and the auditor can attest to its traction. In addition, Sydney Water engages with customers through a quarterly Customer Council for which it has a supporting Customer Council Charter¹⁵⁷. Sydney Water has also identified the need to review how it communicates with customers¹⁵⁸ and this was sighted as an action within the DWIP¹⁵⁹ Proposed actions include:

- Development of revised key messages better focusing on the role of the management system approach to assuring water quality
- Revision of the analytes and sites included on the web, emphasising critical- and operational-control point reporting in line with the Specification
- Improvement in the level of interaction with water quality data on the web
- Development of a communications plan ٠
- Consultation with the Customer Council. ٠

Based on the findings for Clause 5.1 and the evidence provided for this Element, there are no opportunities for improvement and the Element is considered fully compliant.

Element 9 Research and Development

This element covers the requirement to periodically investigate the water supply system through targeted studies involving where necessary, validation and re-validation of processes to ensure that they are still providing water that is fit for purpose at that step in the supply chain. Design of equipment is also covered to ensure that design meets appropriate industry codes and standards, produces water that is fit for purpose and does not provide a source of risk to the water production process.

Sydney Water has a dedicated research group. It is very active in the research and development space including having developed specific customer complaint parameters for proactive system management (see Element 5) and in being members and contributing to various programs and national initiatives including WSAA's Health-based Targets¹⁶⁰ approach. In particular, Sydney Water has used findings from programs such as the C2C risk review¹⁶¹ to help inform its DWIP. The DWIP was sighted and checked for research improvement programs including for instance, Quantitative Microbial Risk Assessment¹⁶² has been picked up in the need to address the uncertainty in quantifying the risks associated with peak raw water events and a risk around data governance is being addressed through actions such as developing an assumption review process and improved data governance processes. Validation of limits for CCPs is covered in the product specification document and supported by subordinate documents.¹⁶³ Further validation is through reporting requirements (e.g. on CCP performance) which Sydney Water undertakes including where performance may compromise public health as advised by NSW Health¹⁶⁴. Equipment, design and maintenance is guided by standard industry codes and practice including where considered appropriate, making amendments to protocols¹⁶⁵ to achieve improved outcomes. Examples of evidence-based system changes were provided¹⁶⁶. Based on the findings for this Element, it is considered fully compliant.

Element 10 Documentation and Reporting

This element covers the management of documentation and records and the requirement for internal and external reporting on water quality outcomes.

Sydney Water is certified to ISO 9001 for parts of the business. Management of documents and records is achieved through the Service Delivery Integrated Management System and in particular through specific procedures.¹⁶⁷ Further, Sydney Water has a large number of documents, which it must manage and has set a KPI of 5% of expired documents. Evidence was provided to show that the expired document actions are in place and that the KPI target has been met as of September 2015.¹⁶⁸

Reporting is largely covered under the auditing and information addressed in Clause 2.1 and for system specific results under Element I (Board reporting), Element 5 (short-term verification reporting) and Element 6 (incident reporting). Sydney Water has procedures in place to ensure veracity of reporting for external agents such as IPART and through the National Performance Reporting process. Reporting at this level is managed through procedures such as the Compliance Reporting Procedure.¹⁶⁹ The procedure appears sound for water quality with appropriate checks in place¹⁷⁰. Evidence of a completed

¹⁷⁰ However, noting the interpretation and reporting area for Clause 1.9 Pricing (Schedule A Non Compliances_2014-15_Final.pdf), were not in line with requirements.



¹⁵⁷ http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/%7Eedisp/dd_047785.pdf

¹⁵⁸ The risk being that "Customer expectation that monitoring alone produces good water quality drives perverse monitoring outcomes". BMIS0214_Drinking Water Improvement Plan.pdf, Section 4.10, p30.

¹⁵⁹ BMIS0214_Drinking Water Improvement Plan.pdf, Section 4.10, p24/25, p30.

¹⁶⁰ WSAA (2014) Drinking Water Source Assessment and Treatment Requirements Manual for the Application of Health-Based Treatment Targets Release No 1 August 2014; North Richmond RA - Draft 24 July 2014.docx

¹⁶¹ C2C Report_final.pdf

¹⁶² BMIS0214_Drinking Water Improvement Plan.pdf, p28.

¹⁶³ IMS0152.01_Drinking Water Product Specifications.docx

¹⁶⁴ WPIMS5152_Five-Year Drinking Water Quality Management Plan 2010-2015.pdf, p10.

¹⁶⁵ WSAA WSA-03-2011-3.1 Water Supply Code of Australia Sydney Water Edition 2014.

¹⁶⁶ ACDP0414_Changes to disinfection for new water mains.pdf; WPIMS5261_Certifying water quality when commissioning returning reservoirs to service.doc; WTC\$5035 Dual media filter commissioning procedure.doc ¹⁶⁷ SDIMS0008_Document Management procedure.docx; SDIMS0017_Records Management procedure.docx

¹⁶⁸ SD Document management progress.pptx; SD Expired Document Action List.xlsx

¹⁶⁹ SDIMS0015_Compliance Reporting Procedure.docx

report review form for the 4th Quarter Drinking Water Quality Report (1 April 2015 – 30 June 2015) was sighted.¹⁷¹

However, some issues were noted with maintaining currency of key documentation including during the audit of Clause 5.1 and for Clause 2.2. While the element is assessed as fully compliant, the identified issues have been picked up in the existing recommendation under the infrastructure clause and are not further addressed here to avoid double-counting of compliance issues.

Element II Evaluation and Audit

This element covers the longer term evaluation of results and system audit to allow for identification of longer term trends and system improvements as required.

As detailed in previous Elements and directly above, Sydney Water undertakes a wide range of reporting, which requires analysis and evaluation of results. Overarching system assessment/risk audit was conducted through the C2C review, which is detailed in Element 2 with results being used to inform the DWIP. Management review¹⁷² is undertaken as part of continuous improvement of Service Delivery performance through regular review cycles with assigned accountabilities. An audit schedule for internal and external audits was provided as evidence. The schedule is comprehensive and has been extensively addressed not just for the audit period but for a reasonable way into the future. Examples for water quality audits include of the Field Services Group and Analytical Services.¹⁷³ While outside of the audit date scope, an example for auditing of Clause 2.1 (e)). Based on the findings for this aspect, it is considered fully compliant. As well as findings of reviews being used to inform the DWIP, audit reports are also produced and communicated separately. Some of the audit reports provided as evidence were outside of the audit date scope, ¹⁷⁴ however, they were allowed as they showed concurrence with the audit schedule that was in place during the audit date scope. Based on the findings of this Element, it is considered fully compliant.

Element 12 Review and Continual Improvement

This element covers the need for oversight and review of the system from senior management, including the Board and the development of a formalised drinking water management improvement plan to document and plan for system improvements.

Sydney Water conducts corporate to coalface reviews and reporting and this information is covered in Element 1, Element 2, Element 5, Element 10 and Element 11. Other supporting information was provided for this section which helps to show how Sydney Water is moving away from verification to upstream barrier/process monitoring.¹⁷⁵

Sydney Water's DWIP satisfies part of this element and it was possible to see how items identified in other studies are tracked through and included in the DWIP (see notes for Element 2 and Element 11). However, as minor point, it was difficult to track and cross reference the actions in the DWIP as they are currently un-numbered. Sydney Water interacts with key stakeholders through various forums, to identify issues, information of which is covered in Element 1 and Element 9. Based on the findings for this Element, it is considered fully compliant.

¹⁷⁵ Water Product Deep Dive BPRF - Mark Crabtree Final v2.pptx



¹⁷¹ Report Review Form Q4-2014-15.pdf

¹⁷² SDIMS0012 Management Review.docx

¹⁷³ SDIMS Audit Schedule 2015-2016

¹⁷⁴ QEM~SWC Audit Report on SPS reporting processes.pdf; SDIMS0161 Ozone Audit Findings and actions.xlsx; SDIMS0161 Ozone disinfection audit and actions.png; SDIMS0163 SPS reporting audit and actions.png

A.2.4 Framework for Management of Recycled Water Quality and Use: Element by Element Breakdown

Focus for this audit is detailed below in Appendix Table 4.

Appendix Table 4. Framework for Management of Recycled Water Quality and Use focus for this audit.

Framework for Management of Recycled Water Quality and Use	Adequacy	Implementation	
I Commitment to responsible use and management of recycled water quality			
1.1 Responsible use of recycled water		Y	
1.4 Recycled water policy		Y	
1.2 Regulatory and formal Requirements		Ý	
1.3 Partnerships and engagement of stakeholders (including the public)		Ý	
2 Assessment of the Recycled Water System			
2.1 Intended uses and source of recycled water	~	V	
2.2 Recycled water system analysis	Ť	ſ	
2.3 Assessment of water quality data	Y	Y	
2.4 Hazard identification and risk assessment	Y	Y	
3 Preventive Measures for Recycled Water Management			
3.1 Preventive measures and multiple barriers	Y	Ý	
3.2 Critical Control Points	Ý	Ý	
4 Operational Procedures and Process Control			
4.1 Operational procedures	Ý	Ý	
4.2 Operational monitoring	Ý	Ý	
4.3 Operational corrections	Ý	Y	
4.4 Equipment capability and maintenance	Ý	Y	
4.5 Materials and chemicals	Ý	Ý	
5 Verification of Recycled Water Quality and Environmental Performance			
5.1 Recycled water quality monitoring			
5.2 Application site and receiving environment monitoring	Y	Y	
5.4 Satisfaction of users of recycled water	Ý	Y	
5.5 Short-term evaluation of results	Ý	Y	
5.3 Documentation and reliability			
5.6 Corrective responses	Y	Y	
6 Management of Incidents and Emergencies			
6.1 Communication	Ý	Ý	
6.2 Incident and emergency response protocols	Ý	Ý	
7 Operator, Contractor and End User Awareness and Training			
7.1 Operator, contractor and end user awareness and involvement		Ý	
7.2 Operator, contractor and end user training		Ý	
8 Community Involvement and Awareness			
8.1 Consultation with users of recycled water and the community		Y	
8.2 Communication and education		Ý	
9 Validation, Research and Development			
9.1 Validation of processes		Y	
9.2 Design of equipment		Ý	
9.3 Investigative studies and research monitoring		Ý	
10 Documentation and Reporting			
10.1 Management of documentation and records	Y	Y	
10.2 Reporting	Ý	Ý	
I Evaluation and Audit			
11.1 ong-term evaluation of results	Y	Y	
11.2 Audit of recycled water quality management	Y	Ý	
12 Review and Continual Improvement			
12 L Review by senior managers	Y	Y	
12.1 Revoled water quality management improvement plan	Y	Ý	
The request water quarty management improvement plan			

Evidence Sighted

- I 67 IPART SWC Op Audit Questionnaire RevC Section 2 Water Quality (Recycled Water).docx
- Agenda_SLG_10 December 2014.docx
- AMQ0104_Five-Year Recycled Water Quality Management Plan 2009-2014.docx
- Annexure 2 Four-year schedule for review of Scheme RWQMPs.pdf
- Annual Report on Recycled Water Quality Management 2014-15.pdf
- BCR Water Recycling IWES Course.pdf
- BCS0313.01_Recycled Water Agreement Template Industrial.doc
- BCS0313_Recycled Water Agreement Template Irrigation.doc
- BCS0341.pdf
- BCS0342 Recycled Water Use Compliance Inspection Report template.docx
- BCS0342_Recycled Water Use Compliance Insepction Report.docx
- BMIS0207 Recycled Water Notification Process.xlsx
- BMIS0260 Recycled Water Management Manual for NSW Health review.pdf
- Camden Council Backflow Compliance.pdf
- Castle Hill Country Club Annual Declarations.pdf
- Cattai Hub Plan 2014 2015 Q4 Review FINAL.pdf
- DC-TOHQ0015_Treatment Notification and Reporting SAP.docx
- Detailed verification of Liverpool WRP processes_30042015_Final Draft.docx
- Detailed verification of Wollongong WRP processes_Final 24062015.docx
- DOC0040_Conducting SD Component of IPART audit.docx
- DOC0193 Plan for PAM comms and stakeholder engagement.docx
- Draft minutes Recycled Water Forum Q1 2015.docx
- Draft Quakers Hill Interim RWQMP (for Commissioning).docx
- Educational Assistance Policy.pdf
- EM0010_Sydney Water Incident Response Plan.doc
- Email_Comms between SWater and NSW Health in relation to RWQ requirements of OL.pdf
- EMSIMS0016_Incident Management Procedure.doc
- filenames.txt
- Liverpool Golf Course Original and corrected Annual Declaration.pdf
- Minutes Recycled Water Forum Q2 2015.docx
- Minutes JOG 11 August 2015_finaldraft.docx
- Minutes JOG 27 May 2015_final draft.docx
- NEW Connection WATER Large Connection Low Level Individual Metering.pdf
- North Richmond Facility Blueprint Report _ Final.pdf
- Orica 2010 contract Hypo quality plan.pdf
- PAMWP0001_RW Verification Monitoring for Pathogen Reduction.docx
- Paul Kelly Diploma Water Operations.pdf
- Position Description Service Delivery Officer 6.pdf
- Position Description_Plant Mgr 200911-oct13 final.xlsx
- Position Description_Production Officers AB and C Final Dec2014.xls
- Position Description_Production Officers D Final Dec 2014.xls
- PositionDescription V3 06-10 BCR 14Bpev2.xls
- Previous Recommendations
- Q3 Recycled Water Quality Monitoring Report for NSW Health 2014-15_signed.pdf
- Q3 Recycled Water Quality Monitoring Report for NSW Health 2014-15_signed.pdf
- Q4 Recycled Water Quality Monitoring Report for NSW Health 2014-2015 signed.pdf
- Q4 Recycled Water Quality Monitoring Report for NSW Health 2014-2015 signed.pdf
- QEM SWC Audit Report on Recycled Water -full report.docx
- QHTP0066_Product and Equipment workflow.doc
- QMAF0081_Corporate Risk Management Procedure.docx
- Quakers Hill WRP Specifications final draft.docx
- Quakers Hill WRP_Process and equipment monitoring logsheet.pdf
- Quakers Hill Daily Meeting Minutes_28102015.doc
- Quakers Hill Example of staff training & competency sign off.pdf
- REC-15-66_Stonecutters_Ridge_RWMP_Audit_Report.pdf
- Recycled Water and Stonecutters Ridge Audits and Actions.docx
- Recycled Water Management Manual.pdf
- Recycled Water Monitoring Plan 2014-15 Final.pdf
- Recycled Water Quality (including_stormwater)_Folio of Progress 2014-15.pdf
- Responsibilities of Connected Customers.pdf
- RHTP0017 Workflow SOP.docx

- RHTP0059 Recycled Water SIP.docx
- RHTP0060 VI audit trail.pdf
- RHTP0060 V2 audit trail.pdf
- RHTP0060 V3 audit trail.pdf
- RHTP0060 V4 audit trail.pdf
- Ron Dine Reserve 25 Jun 15 Signed Comp Mtg Report.pdf
- Rouse Hill Recycled Water Scheme Monthly Performance Report 2014-15.pdf
- Rouse Hill WRP BMIS documents list.xlsx
- Rouse Hill WRP Specifications_final draft.docx
- Rouse Hill_Monitoring Checksheet RW hi-lighted.xlsx
- Rouse Hill_Monitoring Record High ammonia RW.xlsx
- Rouse Hill_Monitoring Record for ARC calibration 20151008.pdf
- Rouse Hill_Process Meeting 20150316 High ammonia RW.docx
- Rouse Hill_Process Meeting 20151009 ARC calibrated.docx
- Rouse Hill_RW Procedure and training record 20150715.pdf
- Rouse Hill_Work Orders.pdf
- RW Monitoring Plan 2015-16 approved.pdf
- RW0001_Rouse Hill Recycled Water Quality Management Plan.pdf
- Screen Capture_Detail of RW SWIRL Incident_INC-8316.JPG
- Screen Capture_Detail of RW SWIRL Incident_INC-8939.JPG
- Screen Capture_SWIM Records RW Monitoring.JPG
- Screen Capture_Water Supply Code of Australia.JPG
- SCRGC Recycled Water Quality Management Plan Draft v10 (2).docx
- SD Document management progress.pptx
- SD Expired Document Action List.xlsx
- SDIMS Audit Schedule.xlsx
- SDIMS0006 stakeholder Management.docx
- SDIMS0008.docx
- SDIMS0010 Assurance and Monitoring (Audit and Inspections).docx
- SDIMS0011_Non-conformance corrective and preventative action procedure.docx
- SDIMS0013_Incident Prevention and Preparedness.docx
- SDIMS0015_Compliance Reporting Procedure.docx
- SDIMS0017_Records Management procedure.docx
- Section 2 Recycled Water.docx
- ST0031 RWTPS.pdf
- ST0031 UV Disinfection.pdf
- Stonecutters Ridge Audit Feb 15.pdf
- Stonecutters Ridge Golf Course Recycled Water Supply Agreement.pdf
- Stonecutters Ridge Golf Course Recycled Water Supply Agreement.pdf
- SWEMS0003_External Requirements Register.docx
- Training Certificate.pdf
- Verification of Liverpool WRP Process pathogen log reduction values sign off sheet.pdf
- Verification of Rouse Hill WRP processes 30102015.docx
- Water Product Integrated Management System Policy.pdf
- Ways staff can access relevant documents.docx
- Wollongong LRV MP signed.pdf
- WPIMS5015 MoU NSW Health and Sydney Water Final May 2012.pdf
- WPIMS5015_MoU NSW Health and Sydney Water.pdf
- WPIMS5274_Triggers Notifications and Actions for Adverse Water Quality Results SOP.doc
- WQ0005_RWQMP Quakers Hill VI.7-Final.pdf
- WQ0005_RWQMP Quakers Hill VI.7-Final_signed front page.pdf
- WR5271_Recycled Water Quality Event Management SOP.doc
- WSA 201 Manual for Selection and Application of Protective Coatings.pdf

Discussion and Notes

During the audit period Sydney Water was operating under the Five Year Recycled Water Quality Management Plan 2009-2014¹⁷⁶ (5 Yr RWQMP). This document is strategic in nature providing an overarching framework for the management of recycled water quality in Sydney Water. Each scheme is operated under scheme specific recycled water quality management plans¹⁷⁷ (Scheme RWQMPs).

¹⁷⁷For example Recycled Quality Water Management Plan: Rouse Hill Recycled Water Scheme RW0001_Rouse Hill Recycled Water Quality Management Plan.pdf



¹⁷⁶Five Year Recycled Water Quality Management Plan 2009-2014 (AMQ 104)

The 5 Yr RWQMP was not updated since 2009 despite the plan stating it is a live document (p15). As a consequence during the operational audit period, information was out-of-date including agency names and roles, operating licence references and cross references to the underlying Scheme RWQMPs. It was difficult for the auditor to understand how this document could be effectively used as the overarching document during the audit period. Further some of the Scheme RWQMPs (e.g. Rouse Hill) had not been recently updated. The auditor notes that Sydney Water is in the process of a 4 year rolling review of their Scheme RWQMPs. However the lack of currency of these key documents was a factor in defining the audit grade.

Sydney Water utilised a range of systems through the audit period. The auditor notes Sydney Water's evidence that the following systems were used to manage aspects of the 12 Elements in the Framework (the elements to which these systems may apply is shown in brackets):

- Maximo for maintenance (Element 4, 12)
- CMS for customer enquires (Element 4, 5, 8, 11, 12)
- SWRL for incidents (Element 6)
- LIMNOS (Elements 5, 6, 9)

How these systems were used and the interaction between these systems as part of a preventive approach to recycled water quality management was not clearly articulated in the documentation provided.

Sydney Water is currently developing a Recycled Water Management Manual¹⁷⁸ (RWMM) however the schemes were not operating to this manual during the audit period. The auditor acknowledges the progress Sydney Water has made in developing the manual and has not sought to further comment on or to make recommendations or OFIs where progress has already been made through the manual's development.

Element | Commitment to Responsible Use and Management of Recycled Water

This element involves understanding regulatory and formal requirements, the development and implementation of a recycled water quality policy, and understanding and engaging with stakeholders.

Regulatory requirements are documented in the Compliance and Accountability Register (CAR). This is updated yearly and by exception.

At the scheme level, plant plans¹⁷⁹ are used to roll out the operational licence and compliance with the 5 Yr RWQMP.

Sydney Water has a Memorandum of Understanding (MoU) with NSW Health¹⁸⁰ that formally set out the terms of a cooperative relationship between the parties, establishes their respective roles and facilitates fulfilment of each party's function in relation to the protection of public health. The MoU also fulfils the requirements of section 35 of the *Sydney Water Act 1994* (NSW): "*The Corporation is to enter into a separate memorandum of understanding with each of the regulatory agencies*"¹⁸¹. The MoU documents the structure and function of a Strategic Liaison Group (SLG) and Joint Operational Group (JOG). The minutes of these meetings (which are also attended by WaterNSW) is evidence of how Sydney Water meets this component of the Framework.

Scheme specific liaison with end users is undertaken through the management of the recycled water contracts by the Business Customer Representative. Model recycled water supply templates for irrigation¹⁸² and industrial use¹⁸³ were provided as evidence and show that end user responsibilities are identified. Annual audits (which demonstrate implementation of a number of framework actions) are undertaken. Three annual audits were provided as pre-audit evidence and the Castle Hill Country Club inspection checklist (completed 26/2/15) was viewed during the audit interviews.

One of the inspection checklists provided was for Stonecutters Ridge. The checklist noted that supply to Stonecutters Ridge had not commenced. The inspection checklist was provided as evidence of stakeholder engagement, however it was not signed by the end user and therefore could not support the assertion in this case that the inspection checklist was evidence of stakeholder engagement.

A water product policy was in place during the audit period. This was on display at Level 13 Sydney Water Head Office and Rouse Hill. Objectives of this policy include providing exceptional customer service by delivering high quality drinking water and other associated products such as recycled water, protecting public health and the environment and meeting regulator requirements.

Element 2 Assessment of the Recycled Water System

Sydney Water has a four year rolling program¹⁸⁴ to review and update Scheme RWQMPs including risk assessments for these schemes. To inform the risk assessments Sydney Water has decided to undertake detailed verification log reduction sampling for each of the plants with the testing conducted in-house. A procedure for this has been developed¹⁸⁵ and implemented for

¹⁸⁵ PAMWP0001_RW Verification Monitoring for Pathogen Reduction.docx



¹⁷⁸ BMIS0260

¹⁷⁹ e.g. Cattai Hub Plan 2014 2015 - Q4 Review FINAL.pdf

¹⁸⁰ WPIMS5015_MoU NSW Health and Sydney Water.pdf

¹⁸¹ s53(1) Sydney Water Act (1994) NSW

¹⁸² BCS0313_Recycled Water Agreement Template Irrigation.doc

¹⁸³ BCS0313.01_Recycled Water Agreement Template Industrial.doc

¹⁸⁴ Annexure 2 - Four-year schedule for review of Scheme RWQMPs.pdf

Wollongong Stages 1 and 2186, and Liverpool187.

Log reduction values (LRVs) have been documented in the Scheme RWQMPs (see Element 9 for further discussion on validation of LRVs). Due to the laboratories capacity only one plant can be verified at a time. During the audit interviews Sydney Water advised that they had failure of the phage host which has delayed the verification testing program.

A risk assessment for the Rouse Hill Scheme was provided in Appendices C and D of the Recycled Quality Water Management Plan: Rouse Hill Recycled Water Scheme. The details of those involved in the risk assessment and their expertise was not recorded in the Recycled Quality Water Management Plan: Rouse Hill Recycled Water Scheme nor was there a reference to documentation where this was recorded.

A risk assessment (currently in draft form, not yet finalised) for Stonecutters Ridge Golf Course was included in the Stonecutters Ridge RWQMP¹⁸⁸. This risk assessment considered the process step, hazardous event, consequences and existing control measures. The terms inherent and residual risk were not explained in the documentation. It appears from the risk assessment that the inherent risk sighted was that with the barriers in place and the residual risk was if the additional controls were implemented, maximum risk was not identified.

In reviewing the risk assessment, the auditor is concerned that consequences are sometimes lower than would be expected for the stated hazardous event. For example '*Risk 28: Exposure of customers & their staff/contractors to recycled water results in illness*', specifically mentions illness from recycled water within the hazardous event however the impact is only rated as minor (No increase in illnesses). The auditor considers that this rating is not in step with industry and regulator thinking and should be reviewed. Further, risk assessment inconsistencies were noted through an external review¹⁸⁹ conducted of the Stonecutter's Ridge scheme.

The details of those involved in the risk assessment and their expertise was not recorded in the Stonecutter's Ridge RWQMP¹⁹⁰ nor was there a reference to documentation where this was recorded.

Actions within the AGWR Framework include to "periodically review the recycled water system analysis" and "periodically review and update the hazard identification and risk assessment to incorporate any changes". The risk assessment within the Rouse Hill RWQMP¹⁹¹ has not been updated since 2009. The need for rolling reviews of these components of the recycled water management plan has been encapsulated in the ministerial recommendation 2013-14-1: Recycled Water – Condition 2.2 that Sydney Water should maintain an ongoing commitment to the review and update of its Recycled Water Quality Management Plans via the four-year rolling program agreed with NSW Health.

Element 3 Preventive Measures for Recycled Water Management

Preventive measures are recorded in the Scheme RWQMPs. Sydney Water has implemented multiple barriers (including wastewater source control, primary and secondary treatment, filtration, disinfection) for the production of recycled water. However the auditors did not see evidence to be assured that barriers could and did meet the claimed log reductions. For instance, it was noted that key aspects of UV validation / barrier understanding had not been carried over into operational monitoring for Rouse Hill (lack of UVT data).

Critical control points are defined in the Scheme RWQMPs. Critical limits were cross checked in the SCADA for chlorination, turbidity and UV at Rouse Hill. The automated actions associated with these high alarms were viewed on-screen. The CCP monitoring points were viewed during the site visit.

The critical control points and their associated monitoring points are not highly visible in the field or on the SCADA.

The establishment and monitoring of CCPs is further discussed in Element 9.

Element 4 Operational Procedures and Process Control

The interlink between the 5 Yr RWQMP and the Rouse Hill RWQMP was particularly weak for this element. The 5 Yr RWQMP contains overarching statements about Sydney Water's approach to Element 4. The Rouse Hill RWQMP refers primarily to the QMP-RWS (which the auditor understands is the Five Year Plan) rather than detailing activities, procedures and processes specific to Rouse Hill, such as daily checklists, workflow SOPs and unit process guides. The Stonecutters Ridge RWQMP is similar although it does contain reference to the "*annual recycled water quality monitoring plan*" (which the auditor assumes is the Product Monitoring Plan Recycled Water Quality: Compliance & Operation Monitoring 2014 – 2015¹⁹²) and the Quakers Hill STP Irrigation Scheme compliance and operational monitoring plan in Appendix B 2C.

Operational procedures are managed via a document control system (BMIS) and form part of the Service Delivery Integrated management system (SDIMS). The SDIMS includes routine operation procedures (SOPs), calibration procedures for WQ instrumentation (SOPs), underpinning knowledge documents which provide guidance on controlling the treatment processes, administrative procedures (SAPs), emergency management processes and specific incident procedures (SIPs)¹⁹³, procedures



¹⁸⁶ Detailed verification of Wollongong WRP processes_Final 24062015.docx

¹⁸⁷ Detailed verification of Liverpool WRP processes_30042015_Final Draft.docx

¹⁸⁸ Recycled Water Quality Management Plan for the Stonecutters Ridge Golf Course Scheme

¹⁸⁹ "It is recommended that Sydney Water review the application of risk assessment criteria to ensure the risk assessment methodology is applied consistently." Viridis Consultants.

¹⁹⁰ Recycled Water Quality Management Plan for the Stonecutters Ridge Golf Course Scheme

¹⁹¹ Recycled Quality Water Management Plan: Rouse Hill Recycled Water Scheme

¹⁹² BMIC0045.01

¹⁹³ RHTP0059 - Recycled Water SIP.docx
covering identifying abnormal performance, notifications, and reporting. A list of Rouse Hill BMIS documents was provided¹⁹⁴.

Rouse Hill has detailed check sheets including the field check, process and key points (target). The checklist also include a date and place for the production officer's name. Completed checklists were provided for 22/7/2014¹⁹⁵ and 21/1/2015¹⁹⁶. An example of a completed checklist for a day with high ammonia was provided. Process and Equipment Workflow for Quakers Hill (QHTP0066_Product and Equipment workflow.doc) outlines the production officer's daily duties for process and equipment monitoring for plant effluent production. This evidence demonstrates the procedures Sydney Water undertakes to manage safe production and supply of recycled water.

Routine cross checks of on-line monitoring equipment are undertaken. Sydney Water does not have scheduled servicing of monitoring equipment. Equipment is serviced when the routine checks undertaken by the Production Officers indicate that maintenance is required. This aspect was verified during the field audit as having been satisfactorily undertaken. However the auditor notes the effectiveness of this process relies on the Production Officers to undertake this activity diligently. Internal, second party and third party audits can be utilised to ensure this practice remains appropriate.

Element 5 Verification of Recycled Water Quality and Environmental Performance

Sydney Water's approach to verification monitoring is detailed in the *Product Monitoring Plan Recycled Water Quality: Compliance & Operational Monitoring 2014-2015*. The Product Monitoring Plan: Recycled Water Quality: Compliance & Operational Monitoring 2014-2015 states that the regulatory compliance monitoring requirements are called up from the scheme specific RWQMPs (e.g. "*Recycled water quality monitoring requirements for regulatory compliance are specified in the Rouse Hill Residential RWQMP*". In the Rouse Hill Residential RWQMP (p63) there is a table for the 2009/10 monitoring plan but the auditor did not find a broader reference to an on-going compliance requirement. The auditor also noted differences between the 2009/10 plan and the 2014-15 Product Monitoring Plan. These issues with cross referencing are considered further in Element 10.

Electronic systems are used to assess recycled water data and generate exception reports to key staff. These systems include:

- Online instrumentation databases and alarms systems, such as SCADA, IICATS, BI, and the customer complaint database
- In-plant laboratories and NATA-certified laboratories
- Observational monitoring by operations and maintenance staff

Operators routinely assess operating trends and performances, and make adjustments as required. For example, treatment operators review and record plant performance daily¹⁹⁷, and the System Operations Centre continuously monitors real-time telemetry of water quality and quantity measurements and alarms (using IICATS and SCADA). Records were provided for two daily process meetings of the Cattai Creek Hub (16/3/15, 22/1/15)¹⁹⁸. As well as demonstrating the *Short Term Evaluation of Results* and their associated reporting mechanisms (Element 5), these records serve as evidence of *Operator Awareness and Involvement* (Element 7), *Management of Documentation and Records* and *Establish Procedures for Effective Reporting* (Element 10)

Triggers Notifications and Actions for Adverse Water Quality Results SOP¹⁹⁹ provides a guideline for communicating adverse water results between groups in Sydney Water. The LIMNOS system automatically reviews water quality results on a daily basis. Triggers for each analyte are set in the system, and emails are sent by the system to internal contacts. An exception e-mail was showed during the audit interview.

Sydney Water has a *Non-conformance, Corrective and Preventive Action procedure* (SDIMS0011)²⁰⁰ which sets out a consistent approach to identifying non-conforming products and services, identifying root causes, and taking actions to correct, prevent, or improve.

The SWIRL system is used to record incidents and learnings as well as provide notification to NSW Health according to agreed criteria. The RW Event Management Plan provides guidance on communication during unexpected events (See Element 6).

Sydney Water gauges and manages, on an ongoing basis, recycled water users' satisfaction with irrigation and industrial schemes through the respective Business Customer Representative, Customer Services Division.

Sydney Water's main methods to assess residential customers' satisfaction with recycled water is:

- Customer contacts and complaints handling,
- Customer surveys, and
- Customer contacts made to Energy and Water Ombudsman NSW (EWON).

Element 6 Management of Incidents and Emergencies

Sydney Water has an Incident Management Procedure (EMSIMS0016) with an incident management six stage process. The objective of this procedure is to provide a consistent approach to incident management across Sydney Water and provide an

²⁰⁰ SDIMS0011_Non-conformance corrective and preventative action procedure.docx



¹⁹⁴ Rouse Hill WRP BMIS documents list.xlsx

¹⁹⁵Daily Process Monitoring Checksheet 20140722.pdf

¹⁹⁶ Daily Process Monitoring Checksheet 20150121.pdf

¹⁹⁷ Daily Process Monitoring Checksheet 20140722.pdf and Daily Process Monitoring Checksheet 20150121.pdf

¹⁹⁸ Daily Process Meeting Minutes 20150122.pdf and Rouse Hill_Process Meeting 20150316 - High ammonia RW.docx

¹⁹⁹ WPIMS5274_Triggers Notifications and Actions for Adverse Water Quality Results SOP.doc

interface between the Sydney Water Incident Management Policy and the Sydney Water Incident Response Plan and business procedures.

Sydney Water has an Incident Prevention and Preparedness Procedure as part of the Service Delivery Integrated Management System (SDIMS0013) which details Sydney Water's approach to incident prevention, preparedness, and learning from incidents.

The overarching incident management plan²⁰¹ has a 6 stage incident management quick reference guide with key tasks including notification of internal and external stakeholders at each stage and cross references to relevant tools. The Incident Response Plan calls up the *Recycled Water Quality Event Management SOP* (WR5271).

The Recycled Water Quality Event Management SOP²⁰² and the Scheme Plans describe further specific details for communications to stakeholders relating to water quality incidents and quantity incidents.

The Recycled Water Notification Process²⁰³ details the event and supply interruption notification process for recycled water, including to NSW Health and customers. A sample of information from this document was cross-checked with the scheme plans and no discrepancies were noted.

Sydney Water advised that inter-agency and internal communications protocols are reviewed as part of quality management system audits and in training exercises although evidence was not sighted (nor specifically requested) during the audit. Communication protocols may be discussed through the IOG and SLG.

Element 7 Operator, Contractor and End User Awareness and Training

Sydney Water achieves employee awareness through various means including induction programs, newsletters, noticeboards, seminars, team briefings, divisional updates, meetings, internal forums (including Recycled Water Forum), forums with key stakeholders, Sydney Water's intranet, internal social media, email, and road shows.

Sydney Water holds an internal Recycled Water Forum, which assists the alignment of the recycled water and asset management activities across Sydney Water. The Recycled Water Forum is held at least quarterly²⁰⁴.

Position descriptions were reviewed as a potential evidence source to identify the *appropriate skills and training*²⁰⁵ to operate a recycled water system.

The position description (PD) for a Service Delivery Officer²⁰⁶ was reviewed. Water quality was listed in the Purpose Statement, Capability statement (knowledge and experience). Water quality is not listed as a technical accountability (although it is implicit within the statement "*Comply with relevant Operating License, Customer Contract and other regulatory requirements including EPA & Department of Health*"). While the Plant Manager position description²⁰⁷ does not have recycled water quality explicitly listed, the auditor is satisfied that the following plant operations performance areas do cover this area:

- "Manage the operation of treatment plants to achieve required water, wastewater and recycled water outcomes.
- Ensure all regulatory requirements are met and customers and stakeholders are satisfied.
- Assess and manage risks associated with treatment assets and processes and ensure adequate controls are in place to manage the risks.
- Apply quality systems effectively to achieve required water, wastewater and recycled water outcomes.
- Provide performance reports on treatment for stakeholders and regulators."

Training records are maintained through Compass. An example training record for Quakers Hill was provided²⁰⁸. The example covered IMS training, Workflow Process & Equipment Monitoring SOP, Workflow – Sample and Analysis SOP and UPG training.

Sydney Water uses broad position descriptions to allow staff to be transferred across the ranges of business areas. Personal Development Plans (PDPs) (now CDPs) are used to target specific requirements. PDPs were not provided as evidence for recycled water Production Officers.

The PD for Production Officer A, B and C does contain the purpose of the position which in part is to produce recycled water to agreed Regulatory & Health standards.

As noted in Licence Clause 2.1 a Product Manager (Water & Wastewater) PD was provided as additional evidence. This evidence covered the need to "understand the product requirements and performance across the system" however, it was not possible to verify the evidence date scope as the footer field was tagged to the current date.

Sydney Water has an Education Assistance Policy in place.

Element 8 Community Involvement and Awareness

Sydney Water utilises a range of engagement tools for community involvement including the Customer Council and the Business Council Forum, its website and targeted engagement strategies with recycled water business customers.

²⁰⁵ p66 AGWR

²⁰¹ EM0010_Sydney Water Incident Response Plan.doc

²⁰² WR5271_Recycled Water Quality Event Management SOP.doc

²⁰³ BMIS0207 - Recycled Water Notification Process.xlsx

²⁰⁴ Draft minutes - Recycled Water Forum - Q1 2015.docx and Minutes - Recycled Water Forum - Q2 2015.docx

²⁰⁶ Position Description - Service Delivery Officer 6.pdf

²⁰⁷ Position Description_Plant Mgr 2009 l I-oct I 3 final.xlsx

 $^{^{\}rm 208}$ Quakers Hill_Example of staff training & competency sign off.pdf

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.

The Business Customer Forum is coordinated by Business Customer Services. Customer-specific issues are addressed through other processes, for example, with a customer's Business Customer Representative.

Sydney Water advised that recycled water customers (business) are involved in the risk assessment for the specific scheme, which includes an assessment of unauthorised uses. Sydney Water advised that the attendance of customers at the risk assessment and the details of the assessment of unauthorised use is documented on the risk register, however these registers were not provided as evidence, only the summary included in the Scheme RWQMPs, as such the auditor was unable to verify this.

Information aiming to communicate with and educate the community is published on the Sydney Water website²⁰⁹.

Element 9 Validation, Research and Development

Sydney Water has a validation plan hierarchy in the 5 year plan. For Rouse Hill *in situ* "validation monitoring" was undertaken on primary and secondary treatment of Stage 1 from August 2007 to January 2008. No evidence was sighted for process unit verification/ validation monitoring of Stage 2. Based on the results of the Stage 1 testing LRVs of 2.3 for Protozoa, 3.2 for virus and 3.1 for bacteria were claimed. For protozoa and virus, these numbers are higher than indicated from the indicative values in the AGWR. This is likely attributable to settling in the secondary clarifier. The documented CCP limit for primary and secondary treatment is "at alarm level" for "key physical assets" (e.g. pumps scrapers, mixers & blowers). The associated action is "respond to alarm". Based on this documentation there is no guidance for the production officers for when secondary treated water is not meeting its LRVs and is unsuitable for further treatment through the recycled water system.

"Validation monitoring" was also undertaken in the tertiary filters.

Manufacturer's data was relied upon to validate the UV unit for *Cryptosporidium* and viruses. Of concern to the auditor is that the validated UVT of the unit is 75% - 95% and Sydney Water was unable to provide evidence of the recycled water UVT. The functional design specification²¹⁰ for the Rouse Hill UV unit, noted in Section 27.1 that a UV Transmissivity Analyser was part of the major equipment however beside a track changes deletion note there is no further reference to UVT analysis. Sydney Water further advised that "*Sydney Water does not measure UVT in lab or online at Rouse Hill RWP*"²¹¹. The auditor has been unable to establish whether the UV unit operated within its validation envelope and achieved the validated LRVs.

The auditor also notes that an LRV of 3.0 is claimed for UV for viruses. While this applies to most viruses, Adenovirus is particularly resistant to UV. Depending upon the type of Adenovirus, a dose of 40 mJ/cm² may not be achieving a 1 LRV²¹².

The auditor acknowledges the LRVs recorded in Table 9-2 of the Rouse Hill RWQMP exceed those required for the end use (see further information in Element 3, relating to multiple barriers).

However based on the following issues and information supplied for the Rouse Hill scheme:

- The auditor has not seen evidence that the UV is operating within its validated range.
- The claimed UV dose may not be high enough to achieve 3.0 LRV of Adenovirus.
- High LRVs are claimed for primary and secondary treatment, without being verified for both secondary treatment stages and having no explicit documentation as to when supply to the recycled water plant should be shut down if CCP1 limits are not met.

The auditor is not satisfied that Sydney Water could always demonstrate a preventive risk management approach to the supply of recycled water.

Sydney Water has developed a four year plan²¹³ to conduct detailed verification²¹⁴ at critical barriers across all its systems to inform the RWQMP review. It is also being used to provide correlations between LRV performance and key operational indicators used for these processes. A controlled Sydney Water procedure for LRV testing was substantially reviewed and a model monitoring plan for detailed verification was developed and piloted on the Liverpool recycled water scheme. The detailed verification testing for the Liverpool scheme was completed by June 2015 and the detailed verification testing plan was completed for Wollongong Stage I and 2 within the audit period.²¹⁵.

Sydney Water has a dedicated research function within the Corporate Strategy group. The Research and Development Program (available via the intranet) sets out Sydney Water's current research portfolio.

²¹⁵ Detailed verification of Liverpool WRP processes_30042015_Final Draft.docx



²⁰⁹https://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/recycling-and-reuse/using-recycled-water/index.htm

²¹⁰ ST0031 UV Disinfection.pdf

²¹¹ Section 2 Recycled Water.docx

²¹² Smeets, Rietveld, Hijnen, Medena and Stenstrom (2006) Microrisk: Efficacy of water treatment processes p28

²¹³ Annexure 2 - Four-year schedule for review of Scheme RWQMPs.pdf

²¹⁴ PAMWP0001_RW Verification Monitoring for Pathogen Reduction.docx

Element 10 Documentation and Reporting

BMIS is the overarching management system for RWQ document control and version tracking. The auditors noted that document control information on printed documents was inconsistent across documents and incorrect in some.

For example:

- SDIMS0013 Incident Prevention and Preparedness Procedure had a next review date the same as the issue date on the front page of the procedure.
- SDIMS0013 Incident Prevention and Preparedness Procedure had footers with different version numbers and review dates in different sections of the document (2 different version numbers and 3 different review dates).
- Product Monitoring Plan Recycled Water Quality: Compliance & Operational Monitoring 2014-2015 dated 30/6/2014 had an implementation date of 1/7/2013.

Draft documents also had document control problems and were not clearly identified as drafts. The auditor understands that BMIS has document control, however once information has been removed from this system (e.g. when provided to the auditor) the lack of document control information may cause a problem.

There were also some consistency issues associated with cross referencing. The Scheme RWMPs reviewed²¹⁶ refer to Sydney Water's Quality Management Plan - Recycled Water Scheme (QMP-RWS). During the audit interview the auditor was advised that the QMP-RWS was the 5 Year Recycled Water Quality Management Plan (abbreviated in the document as RWQMP). This link is not clear and makes it difficult to understand the document hierarchy. This could be improved by including a reference either in the Scheme RWQMPs to the overarching document or clarifying that the overarching document (the 5 Yr RWOMP or the RWMM) form the QMP-RWS. Issues with verification monitoring were noted in Element 5.

The Compliance of Regulatory Reports for Service Delivery (SDIMS0015) procedure documents how Service Delivery meets its internal and external reporting requirements for the regulatory reports required by IPART.

Sydney Water maintains folios of progress against key Operating License requirements under the Online Compliance Tool. There is a folio for Recycled Water Quality ²¹⁷ which lists all requirements of the Operating Licence, a summary of compliance, and mitigation measures if there are issues with compliance. Reporting obligations are further discussed in the licence clause (2.2(c))

No evidence was provided for how the preventive risk management approach to the guidelines was reported to the CEO and Board during the audit period.

Element II Evaluation and audit

During the IPART audit period Sydney Water's internal audits program was designed on business structure. Two recycled water sites had an internal QES audited in 2014-15 period²¹⁸. The completed internal audit checklists were reviewed²¹⁹²²⁰. As integrated checklists they do not provide strong evidence for auditing of the RW QMS in line with the AWGR which states:

"Internal audits will involve trained staff, and should include review of the management system and associated operational procedures and monitoring programs." (p79)

Sydney Water advised that in mid-2015 process audits were introduced in the SDIMS audit program. These audits are on 'end to end' processes with a focus on process performance and risks covering a number of business areas. Evidence of this recycled water process audit²²¹ outside the audit period was provided. While outside the audit period, this audit provides much stronger evidence of the Evaluation and Audit actions within Element 11. The operational audit noted similar findings to the above-noted process audit and this is reflected in the compliance grade. As Sydney Water has provided evidence that these findings have been recorded and are either completed or in the process of being actioned, the findings are not generally repeated in the operational audit report.

Sydney Water advised it had undertaken inspection of all its ends users.

Element 12 Review and continual improvement

While the Scheme RWQMPs had improvements plans, these had not been maintained since the 5 Yr RWQMP was developed. During the audit period evidence for recycled water quality improvement plans could not be established. Sydney Water reported to IPART in their Annual Report²²² that:

"identifying, and progressing the implementation of, improvement actions in the Recycled Water Improvement Plan (in development)" was part of their recycled water management activities and programs proposed for 2015–16.

At the plant level, operational teams track improvements through a range of system including the plant plan²²³, Maximo for

²¹⁶ RW0001_Rouse Hill Recycled Water Quality Management Plan.pdf and SCRGC Recycled Water Quality Management Plan Draft v10 (2).docx ²¹⁷ Recycled Water Quality (including_stormwater)_Folio of Progress 2014-15.pdf

²¹⁸ 14-15 Divisional level audits.xlsx

²¹⁹ SDIMS0008 - Quakers Hill Audit Report.docx

²²⁰ SDIMS0011 - St Marys SDIMS Audit Report.docx

²²¹ QEM SWC Audit Report on Recycled Water -full report.docx

²²² Annual Report on Recycled Water Quality Management 2014-15.pdf

²²³ E.g. Cattai Hub Plan 2014 2015 - Q4 Review FINAL.pdf

breakdowns, CMS for customer enquiries and SWIRL²²⁴ for incidents.

Sydney Water advised that the Management Review process (SDIMS0012) sets out the method and accountabilities for the annual Service Delivery Division management review and performance reviews, which report performance against key compliance measures, progress against key divisional initiatives, findings from audits and inspections, incidents and significant complaints. This document was not provided as evidence to the auditor and as such was unable to confirm alignment with the AGWR Framework. This document was supplied as part of the evidence for assessing compliance in the Drinking Water section.

The Recycled Water Forums and leadership group meetings provide opportunities to communicate details about the recycled water improvements.

Sydney Water is currently developing its new RWMM and this serves as evidence of continual improvement of the recycled water management system. The draft Water Recycling Plant Specifications²²⁵ detail the critical limits for recycled water for each plant. However, the auditor notes that the clarity of the specification could be improved including clearly articulating what the CCP is i.e. the activity, procedure or process where control is applied and linking the CCP monitoring parameter to the associated CCP (e.g. the disinfection CCP may incorporate pH, free chlorine and flow).

²²⁵ Quakers Hill WRP Specifications_final draft.docx and Rouse Hill WRP Specifications_final draft.docx



²²⁴ Screen Capture_Detail of RW SWIRL Incident_INC-8316.JPG and Screen Capture_Detail of RW SWIRL Incident_INC-8939.JPG

A.3 Section 3: Infrastructure Performance

A.3.1 Sub-clause 3.1 Managing Assets

Sub-clause Sydney Water must ensure that its assets are managed consistently with the asset management framework described in clause 3.1.2. The primary focus of the audit was on implementation of the framework, via site inspections. Compliance Grade Risk Target for Full Compliance High Assets are poorly managed leading to higher costs and failure to meet required service levels. An effective asset management system is in place and implementation of the framework, via site arcoss all asset classes. Evidence Sighted Strategic asset management framework Build value service into decision_AMPEAK_Conference_2014_Paper_1833 2015 Compliance Accountability Register Licence Clause 3.1.2 (a) -BC in 2014-15 Strategic Asset Management Framework - Final 17Sept15 PDF Procurement Policy - iconn_ud_ct_007369 Procurement example – folder (CWM9 & WPN0186) Maximo demonstration during review interview Asset Capitalisation Revaluation Policy Manual QMAF0030 - Risk Management Framework Delegations Manual AMQ0562 - water system planning guideline Sustainability Planning Manual 201503_Growth Servicing Strategy Appin Water Supply Zone Signed SWGC Oran Park WW Servicing Strategy Report FINAL Licence Clause 3.1.2(2) Planning report Work Order Systems KPI Trend summary 2014/15 Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines SW0238_Strategic System Integrated Pla	Requirement				
3.1.1 The primary focus of the audit was on implementation of the framework, via site inspections. High Risk Target for Full Compliance Assets are poorly managed leading to higher costs and failure to meet required service levels. An effective asset management system is in place and implementation of the framework, via site across all asset classes. Evidence Sighted Strategic asset management framework An effective asset management system is in place and implementation of the framework across all asset classes. Evidence Clause 3.1.2 (a) -BC in 2014-15 Strategic Asset Management Framework - Final 17Sept15 PDF Procurement Policy - iconn_ud_ct_007369 Procurement Policy - iconn_ud_ct_007369 Procurement example - folder (CWM9 & WPN0186) Maximo demonstration during review interview Asset Capitalisation Revaluation Policy Manual QMAF0080 - Corporate Risk Management Framework Delegations Manual AMQ0562 - water system planning guideline Sustainability Planning Manual 201503_Growth Servicing Strategy Appin Water Supply Zone Signed SWGC Oran Park WW Servicing Strategy Report FINAL Licence Clause 3.1.2(2) Planning report Work Order Systems KPI Trend summary 2014/15 Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines	Sub-clause	Sydney Water must ensure that its assets are managed consistently with the asset management framework described in clause 3.1.2.			
Risk Target for Full Compliance Assets are poorly managed leading to higher costs and failure to meet required service levels. An effective asset management system is in place and implemente across all asset classes. Evidence Sighted Strategic asset management framework Build value service into decision_AMPEAK_Conference_2014_Paper_1833 2015 Compliance Accountability Register Licence Clause 3.1.2 (a) -BC in 2014-15 Strategic Asset Management Framework - Final 17Sept15 PDF Procurement Policy - iconn_ud_ct_007369 Procurement Policy - iconn_ud_ct (CWM9 & WPN0186) Maximo demonstration during review interview Asset Capitalisation Revaluation Policy Manual QMAF0003 - Risk Management Framework Delegations Manual AMQ0562 - water system planning guideline Sustainability Planning Manual 201503_Growth Servicing Strategy Appin Water Supply Zone Signed SWGC Oran Park WW Servicing Strategy Report FINAL Licence Clause 3.1.2(2) Planning report Work Order Systems KP1 Trend summary 2014/15 Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines SW0238_Strategic System Integrated Planning Pilot Study Hornsby Distribution System Blueprint 2015 to	3.1.1	The primary focus of the audit was on implementation of the framework, via site inspections.			
Assets are poorly managed leading to higher costs and failure to meet required service levels. Evidence Sighted • Strategic asset management framework • Build value service into decision_AMPEAK_Conference_2014_Paper_1833 • 2015 Compliance Accountability Register • Licence Clause 3.1.2 (a) -BC in 2014-15 • Strategic Asset Management Framework - Final 17Sept15 PDF • Procurement Policy - iconn_ud_ct_007369 • Procurement example – folder (CWM9 & WPN0186) • Maximo demonstration during review interview • Asset Capitalisation Revaluation Policy Manual • QMAF0003 - Risk Management Framework • Delegations Manual • AMQ0562 - water system planning guideline Sustainability Planning Manual • 201503_Growth Servicing Strategy Appin Water Supply Zone Signed • SWGC Oran Park WW Servicing Strategy Report FINAL • Licence Clause 3.1.2(2) Planning report • Work Order Systems • KPI Trend summary 2014/15 • Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines • SW0238_Strategic System Integrated Planning Pilot Study Hornsby Distribution System Blueprint 2015 to	Risk	-	Target for Full Compliance		
Evidence Sighted Strategic asset management framework Build value service into decision_AMPEAK_Conference_2014_Paper_1833 2015 Compliance Accountability Register Licence Clause 3.1.2 (a) -BC in 2014-15 Strategic Asset Management Framework - Final 17Sept15 PDF Procurement Policy - iconn_ud_ct_007369 Procurement example – folder (CWM9 & WPN0186) Maximo demonstration during review interview Asset Capitalisation Revaluation Policy Manual QMAF0003 - Risk Management Policy QMAF0080 - Corporate Risk Management Framework Delegations Manual AMQ0562 - water system planning guideline Sustainability Planning Manual 201503_Growth Servicing Strategy Appin Water Supply Zone Signed SWGC Oran Park WW Servicing Strategy Report FINAL Licence Clause 3.1.2(2) Planning report Work Order Systems KPI Trend summary 2014/15 Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines SW0238_Strategic System Integrated Planning Pilot Study Hornsby Distribution System Blueprint 2015 to 	Assets are poorly managed leading to higher costs and failure to meet required service levels. An effective asset management system is in place and implem across all asset classes.				
 Strategic asset management framework Build value service into decision_AMPEAK_Conference_2014_Paper_1833 2015 Compliance Accountability Register Licence Clause 3.1.2 (a) -BC in 2014-15 Strategic Asset Management Framework - Final 17Sept15 PDF Procurement Policy - iconn_ud_ct_007369 Procurement example – folder (CWM9 & WPN0186) Maximo demonstration during review interview Asset Capitalisation Revaluation Policy Manual QMAF0003 - Risk Management Framework Delegations Manual AMQ0562 - water system planning guideline Sustainability Planning Manual 201503_Growth Servicing Strategy Appin Water Supply Zone Signed SWGC Oran Park WW Servicing Strategy Report FINAL Licence Clause 3.1.2(2) Planning report Work Order Systems KPI Trend summary 2014/15 Moore Park Rd - non asset solutions – folder Strategic System Integrated Planning Framework and Guidelines SW0238_Strategic System Integrated Planning Pilot Study Hornsby Distribution System Blueprint 2015 to 	Evidence Sighted				
 2045_Final_Rev2 with - SNIP folder State of the assets report_2015 Final signed KPI Trend summary 2014/15. (May/June results highlighted in yellow) OMFM Risk Register Sept 15 Licence Clause 3.1.2 (6) - Condition assessment reports Licence Clause 3.1.2 (6) Renewal forecast and BC Box Hill WPS Schedule and Parklea Reservoir Schedule PM schedule report and job plans for WP0187 KPI Trend summary 2014/15 KPI 2, 3 (PM compliance) and 4 results from May/June 2015 Extract of contract requirements for training and competency from Vol. 1 and Vol. 2 Ventia training database SW Business Impact Analysis procedure ref- RR0003 SW Incident Management Procedure, EMSIMS0016 EM0010 - Incident Response Plan WVS5162V5 - Continuity of operations plan Water product BCM0059 - Networks bushfire response plan SW Business Impact Analysis procedure ref- RR0003 ISO22301 Societal Security – Business Continuity Management Systems – Requirements ISO22301 Societal Security – Business Continuity Management Systems – Guidance ECC Training ECC Training Ocurse Outline Oct 2015 ECC Awareness Training Oct 2015 v3 Debrief and Post Incident Review Guide EM0002 EM00040 - Asset_Process_Service Failure Contingency Plan WNN0040 - Asset_Protable Water Supply Failure Contingency Plan EMSIMS0013 - Australian Water Sector Mutual Aid Guidelines WWNN5008 - Communication Protocol – SWC & Ports Authority 	nd Guidelines It 2015 to VP0187				
Page 82 of 99	PACE 82 OF 00				

- Asset Capitalisation Revaluation Policy Manual IPART disposals WPS & CWM
- IMS0056 Management of Decommissioned Assets
- CEPUserGuide_2012 version
- Info sheet I _ Operations and Maintenance Costs_October 2012
- Info sheet 2 _ Contingency and Indirect allowances_August 2012
- Asset Class Strategies 2015 signed
- AM in SWC presentation to Pricing Review
- WSAA 2012 Aquamark report for SWC
- Folio of Evidence AM Obligation
- 3b Proposal of Critical pipe R and D now in 4th year VI3 100914
- 3c Proposal of water main deterioration curves PARMS former CSIRO signed 20150521
- 3d Proposal of improvements of likelihood of failure by NICTA
- 5a Integrated System Planning Rookwood Rd Renewals_201400415 Final
- 5b Rookwood Rd Acquire Business Case v2 20121024
- Alarm Help WP0193 MW181115
- Assets Number.
- BI Report Workorder Cost by Station
- CBAV WP0187 20-08-2015
- Condition Assessment | 10912
- Infrastructure (afternoon session_12112015) additional evidence
- IPART AM in SW Preso
- LL Improvement-presentation to SD Exec-170215
- LL project charter- measure-Analyse Signoff_121214
- LV Starter PM Work Instruction
- Problem Cause Remedy Training Presentation Final
- Pump Run Hours
- Starter containing asbestos 01
- Starter containing asbestos 02
- Work Order certification report
- WP0187 Asset & WO information
- WP0187 Condition Assessment
- I SWC AM presentation 30Sept15
- 2 Sample risk assessment of quantified risk model
- 3a CWM consequence improvement initiatives meeting minutes 12Nov2015

Summary of Reasons for Grade

Sydney Water has a robust asset management system in place and has demonstrated that it implements this system in the areas reviewed. However, we identified two minor shortcomings in the application of the asset management framework, being the quality of data being received by the M&E service contractor and the asset hierarchy for the one site reviewed. Sydney Water also notes in its State of the Assets Report that "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning." We consider that in the overall context of Sydney Water's asset management approach that these issues constitute a number of minor shortcomings. We also consider that these shortcomings do not compromise the ability of Sydney Water to achieve its defined objectives or assure controlled processes, products or outcomes.

Discussion and Notes

Operating Licence requirement

The audit scope makes reference to Clause 3.1.1 which requires that "Sydney Water must ensure that its Assets are managed consistently with the asset management framework described in clause 3.1.2." Therefore, it is not possible to audit Clause 3.1.1 without reference to Clause 3.1.2. Clause 3.1.2 states:

Sydney Water's asset management framework must demonstrate:

- (a) robust and transparent methodologies for determining and prioritising licensing and other regulatory requirements and current and future service levels as well as identifying the infrastructure needed to achieve those service levels and requirements
- (b) robust, transparent and consistent processes, practices and programs to ensure sustainable delivery of service levels and regulatory requirements, based on sound risk management, including:
 - o (1) asset inventory
 - o (2) asset planning incorporating both business and technical risk assessments
 - o (3) maintenance of adequate records and robust and reliable data
 - o (4) asset replacement, rehabilitation, augmentation, creation/acquisition and/or substitution (asset and non asset

substitutions)

- o (5) management of service provision, including contracts
- o (6) monitoring and condition assessment
- o (7) proactive and reactive maintenance
- o (8) operations
- o (9) training and resourcing
- o (10) contingency planning covering both emergency management and business continuity
- o (11) asset rationalisation and disposal
- (c) robust and transparent decision making processes that balance acceptable risk with cost and service provision to achieve prudent, efficient and effective operating and capital investment
- (d) an approach that achieves the lowest cost of service delivery through the effective life cycle management of the asset base

The auditors approached auditing this clause by considering the following areas:

Asset management framework, compliance and service levels

- Lifecycle management strategies:
 - o Asset planning
 - o Monitoring, condition assessment, asset replacement, rehabilitation and augmentation
 - o Operation and maintenance
 - o Asset rationalisation and disposal
- Support systems and processes:
 - o Training and resources
 - o Contingency planning
- Continual improvement

Discussion is structured using the above framework and findings in each area are set out as follows.

Asset management framework, compliance and service levels

The asset management framework has not changed during the audit period 2014/15 compared with that described in previous reviews. The framework is set out in the document 'Strategic Framework for Asset Management'. (Note that a major review of this document was completed just outside the audit period – September 2015).

The auditors requested Sydney Water to provide its current compliance register. This document, the '2015 Compliance Accountability Register' is stated to be 'the mechanism by which Sydney Water documents accountability for developing and maintaining the tools used to comply with its legislative obligations. The register it lists all known applicable legislation, the division responsible for compliance with that legislation, the individual who is they key contact, and compliance results. Importantly, General Managers also have to sign an undertaking to demonstrate their awareness of and commitment to meet the compliance requirements. The auditors believe that the structure and governance of this compliance register demonstrate sound implementation in this area.

Sydney Water advised that it uses Assets Renewal, Reliability & Business Efficiency Decision Frameworks for making strategic decisions for each relevant asset class. These frameworks have all the requirements set out so that selection, evaluation and approval of assets for renewals and/or reliability works can be done consistently, effectively and efficiently.

To demonstrate implementation of the policy and the framework, the following were reviewed:

- Critical Water main program 2015-20 PS Final 150714
- Decision Framework Facility Assets
- Asset Capitalisation Revaluation Policy Manual
- Critical Water Main renewal Audit Summary Decision Framework 09-06-15 Final

Sydney Water's Operating Licence includes system performance standards that specify the required level of service to be provided by Sydney Water in relation to water pressure, water continuity and sewage overflows. These system performance standards are included within the scope of this audit.

Based on the evidence provided, the auditors are satisfied that Sydney Water has in place an appropriate asset management framework that it applies when making asset management decisions.

Lifecycle management strategies

Asset planning

The Growth Servicing Strategy and the Asset Management Plans are the basis for growth planning for Sydney Water. Area plans are developed for new areas and Service Plans are created for existing areas. Options reports are developed to service the growth identified and the outcomes of these reports are added to the investment program. The Detail Planning procedure, Growth Servicing Strategy Guidelines (water, wastewater) and Sustainability Planning Guidelines provide a robust framework for Sydney Water's asset planning.

To test the implementation of this planning framework, the following asset planning documents were reviewed:

- Waste Water servicing strategy review for Oran Park and South Catherine Fields
- Growth Servicing Strategy Appin water supply zones
- Water mains 2015-2020 AMP Final Version signed

At audit, focus was placed on implementation of planning for critical water mains. Sydney Water has in place an economic model which evaluates the potential cost of failure of a critical water main including social costs such as traffic congestion. The auditors discussed the improvements that Sydney Water has made to planning for critical water mains, or has identified to investigate. The improvements made or identified for investigation in recent years include:

- Changing the calculation of traffic congestion costs when the break occurs at an intersection to account for multiple roads and multiple directions being impacted (See Minutes from Critical Water Main Strategy review).
- Ongoing involvement in and support of research into water main condition assessment and deterioration modelling.
- Use of data analytics to prioritise condition assessment of critical water mains.

The auditors found that these documents demonstrate that Sydney Water is implementing its asset management framework in planning for new assets. The review of critical water mains planning demonstrates that Sydney Water is learning from the implementation of its planning approach and acting on these lessons learned to improve its management of these assets.

Inventory, monitoring, condition assessment, asset replacement, rehabilitation and augmentation

Sydney Water manages the monitoring, condition assessment and rehabilitation/replacement of assets based on asset criticality, in line with good practice.

Sydney Water provided to us the following examples of condition assessment/performance monitoring for the asset classes subject to this audit:

- T-15 CWM Package renewal Define Approval 20130808
- T-15 CWM Package renewal Design Acquire Approval 20140226
- 20027052 CBC 2262 BC WP22 ME Renewal Acquire stage
- SWC 2006-2008 Long term condition assessment contract MAIN 7- MT Prichard to Morrison Park Main WMMM3
- Parklea Reservoir WS0337 Level 2 Inspection GHD 2014
- WP0217 signed condition assessment 260914.

The auditors also received and reviewed the asset management plans prepared by Sydney Water for water mains and water treatment plants. These AMPs contain summary information on asset condition and performance. During a live demonstration of Maximo, we also interrogated the condition assessment information held in that system.

The auditors found that Sydney Water undertakes condition assessment and performance monitoring targeted at its critical assets and we found reasonable information on these assets for the small scope of assets reviewed by us. In the demonstration of Maximo we found that for planned maintenance work orders WO72057490 for Box Hill WPS did not have the current condition assessment data recorded against the work orders (condition assessment being an activity that was needed to be undertaken in the PM). This work order was scheduled for completion in June 2015. Sydney Water was also queried as to whether the asset condition data should have been recorded in Maximo. Sydney Water replied that the condition assessment may have been completed but the results not yet been entered into Maximo.

Sydney Water disclosed that its service contractor for M&E assets is not meeting its contractual KPIs for data collection. Its performance for 2014/15 date against the data KPIs is: Work Order data Quality (Comprehensiveness and Accuracy) – 66%, Accuracy of data on assets – 3.7%. The expected performance for these KPIs is 85% and the "fail level" is 75%. Sydney Water advised that the main reason for the contractor not meetings its KPIs is the time being taken to have work order data entered into Maximo following completion of works and hence why the condition assessment results for the work order reviewed may not have been in the system. Sydney Water stated that it expects to be able to recover data of sufficient quality by working with the service contractor. If data of sufficient quality is unable to be recovered it may lead to some uncertainty over the condition and performance of affected assets and the status of planned maintenance. This may lead to sub-optimal asset management decisions being made while data quality is improved. The auditors note that Sydney Water has available to it contractual means to recover quality data and to minimise the cost to Sydney Water of recovering this data.

In reviewing the Maximo records for the Box Hill WPS the auditors noted that a Chlorine Residual Analyser is recorded as being on this site and allocated to the pump station asset. At our audit meetings, we queried whether there was also chlorine dosing at this site (as suggested by a chlorine analyser being recorded in Maximo). Time was spent searching the Maximo hierarchy at the audit interview but it was unable to be established if chlorine dosing facilities were on this site. Our site visit the following day confirmed that chlorine dosing is undertaken at the site. The chlorine dosing is undertaken in a building separate to the building that accommodates the pumps. The chlorine dosing facilities include sodium hypochlorite storage, dosing pumps, valves and pipework and control panels. Sydney Water advised following the audit meetings and site visit that the chlorine dosing facilities are recorded in Maximo under a different facility code (WX0049). Sydney Water provided a schedule of all assets on this site which are recorded against three facilities – the pump station (WP0187), water flowmeter (WF0577) and chlorine dosing (WX0049). There is another asset for the site itself (FM2845),

The auditors also note that following regarding the Maximo asset register:

- Motors and low voltage starters are listed as maintainable assets that support an asset at a higher level, i.e. a pump. But the pump itself is not identified at this level, only at the level above. This is inconsistent.
- No pipework is included in the asset register.

These observations are consistent with the 2015 State of the Assets report which states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning." The State of the Assets report also notes that Sydney Water is continuing its data integrity program which is "now verifying the assets in the network facilities and also assessing their condition".

The auditors requested that Sydney Water provide work orders for planned maintenance activities being undertaken on the chlorine re-dosing assets in 2014/15. Sydney Water provided work orders for mechanical and electrical planned maintenance and inspection of the RPZ valve. These work orders confirm that Sydney Water is undertaking planned maintenance for these assets.

The auditors consider that Sydney Water has in place appropriate systems and processes to record the extent of its assets, their condition and forecast requirements for renewal of these assets. However, the audit identified two shortcomings, namely:

- Work order data received by Sydney Water's service contractor is currently not meeting two performance KPIs.
- The asset hierarchy in Maximo for the Box Hill WPS has some inconsistencies.

These observations are reinforced by Sydney Water's statement in its State of the Assets report that "asset information is problematic".

Operation and maintenance

As noted, Sydney Water uses an external service contractor for operations and maintenance of its mechanical and electrical assets. The contractor is required to use Sydney Water's CMMS (Maximo) to ensure that asset data is kept current and available to Sydney Water for planning and asset management. The performance of the contractor in providing data is audited on a monthly basis and reported monthly as part of the contract management process.

We requested and reviewed the following documents to test implementation of Sydney Water's asset management framework with regards to operation and maintenance of its assets:

- WP0187 Box Hill PM Schedule
- WS0337 Parklea PM Schedule
- Job Plans for PM activities at Box Hill WPS
- KPI Trend summary 2014/15 KPI 2, 3 (PM compliance) and 4 results from May/June 2015

While we note above that the service contractor is not meeting KPIs relating to data quality, its performance is above the minimum level required for completion of breakdown maintenance and preventative maintenance.

Asset rationalisation and disposal

To test the implementation of Sydney Water's asset disposal procedures, the auditors requested, and were provided with, a Standard Operating Procedure for Management of Decommissioning of Assets and a schedule of all water pump station and critical water main assets that were disposed of during 2014/15 including the accumulated depreciation and written down value. In the auditor's review of Maximo, it was noted that this system is used to record decommissioned assets.

Support systems and processes:

Training and resources

Sydney Water advised that contractors are required to provide trained and competent staff and sub- contractors to perform the required task. Sydney Water monitors this requirement as a part of the contract management process. Sydney Water provided us with registers for tracking the training undertaken and competence of its M&E service contractor staff. These documents demonstrate that Sydney Water has facilitated its contractor to undertake training to implement its asset management framework.

Contingency planning

Sydney Water has advised that Business Resilience (BR) team provide services and advice to the organisation across the five performance areas of Incident Management (IM), Emergency Management (EM), Crisis Management (CM), Business Continuity (BC) and Critical Infrastructure Resilience (CIR).

Risks to the business are identified via the Corporate Risk Management Framework, which is managed by the Corporate Risk team as part of the Risk and Resilience Department. The BR team provides the necessary controls and contingencies to identified risks that are within the performance areas listed above. Contingency plans are in place for all WPSs based on their operational requirements i.e.: storage in the supply network.

Incidents are managed in Sydney Water's SWIRLs (Sydney Water Incident Recording and Learning system). Incident debrief reports feed information into the lessons learnt process via SWIRLs. In addition, SWRILs provide a technical investigation or root cause analysis capability which is used on a case by case basis by the relevant business unit. Lessons learned during exercises and training are also identified by the BR team and plant owners who ensure that appropriate changes are made and are recorded in SWIRLs.

The auditors reviewed Sydney Water's contingency planning framework which is set out in the following documents provided to us:

- SW Business Impact Analysis procedure ref- RR0003
- SW Incident Management Procedure, EMSIMS0016
- EM0010 Incident Response Plan
- WS5162V5 Continuity of operations plan water products
- BCM0059 Networks bushfire response plan
- EM0006 EMSIMS Emergency Management Training SOP
- WNN0040 Asset Process Service Failure Contingency Plan
- WNN0082 WS0337 Parklea Potable Water Supply Failure Contingency Plan

The auditors then sought to test the implementation of this framework by requesting and reviewing evidence of where activation exercises had been undertaken and opportunities for improvement identified. Sydney Water provided to us the following:

- Asset/Process/Service Failure Contingency Plan for Oakville WS0297 and Box Hill WP0187
- Asset/Process/Service Failure Contingency Plan for WS0337 Parklea Potable Water Supply
- Overview of scenario for business continuity training for exercise involving bushfire at Galston Gorge including attendee list

On the basis of the above evidence, the auditors are satisfied that Sydney Water is implementing its framework for contingency planning.

Document Management

The auditors have reviewed various Asset Management related corporate documents and system procedures. While those documents have been developed and being internally reviewed by Sydney Water, the auditors found that in some instances, document attributes related to the revisions and updates were inconsistent. When we tested this requirement, samples of following documents were assessed:

- Strategic Asset Management Framework
- Compliance Accountability Register
- The Design and Acquire Stage of the CWM BC
- The Procurement Policy
- Asset Capitalisation & Revaluation Policy Manual
- Corporate Risk Management Framework and Policy

Recommendations

There are 3 recommendations for this clause.

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2014- 2015 R-5	Clause 3.1	Sydney Water's M&E service contractor is currently not meeting contractual KPIs relating to asset	 Ensure that measures are put in place to ensure that data of sufficient quality and coverage is obtained from 	By end September 2016.

Sydney Water Corporation: 2014/15 Operational Licence Audit (RFQ 15 703) Risk Edge™ Project # 167 (with Atom Consulting and Cardno) for IPART, February 2016

data works completed by Sydney Water's M&E service contractor (Auditor Note: Sydney Water has already been working with the service contractor to improve data quality and coverage and the resolution under the service contract will likely fulfil the requirements of this recommendation). 1. Ensure that the technical asset register in Maximo is reviewed (for active assets) to identify: a) If the existing asset hierarchy across all asset classes meets business needs	Recommendation # and Operating Licence Context		Background to Recommendation Action/s		Timeframe
I. Ensure that the technical asset register in Maximo is reviewed (for active assets) to identify: a) If the existing asset hierarchy across all asset classes meets business needs			data	works completed by Sydney Water's M&E service contractor (Auditor Note: Sydney Water has already been working with the service contractor to improve data quality and coverage and the resolution under the service contract will likely fulfil the requirements of this recommendation).	
2014- 2015 Clause 3.1	2014- 2015 R-6	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	I. Ensure that the technical asset register in Maximo is reviewed (for active assets) to identify: a) If the existing asset hierarchy across all asset classes meets business needs b) Where the existing asset hierarchy does meet business needs, the extent to which asset data conforms to this hierarchy (structure, coverage and quality) (Auditor Note: The review should be fit for purpose and a sample approach may be appropriate in the first instance. This recommendation is not intended to duplicate the data integrity program Sydney Water is currently undertaking, it is expected that the scope of this project would largely address this recommendation).	By end September 2016.
2014- 2015 R-7Clause 3.1Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."I. If the review detailed in 2014-2015 R-6 identifies areas that require improvement, Sydney Water should undertake a program of work to improve the asset register so that it meets business needs.Sydney Water should propose appropriate program based the scope of works and risk achieving busin objectives pose by any issues identified	2014- 2015 R-7	Clause 3.1	Some inconsistencies in Sydney Water's technical asset register were identified. Further, Sydney Water's State of the Assets report states "currently, the quality of asset information is problematic and in some instances creates difficulty in use for operations, decision-making and planning."	1. If the review detailed in 2014-2015 R-6 identifies areas that require improvement, Sydney Water should undertake a program of work to improve the asset register so that it meets business needs.	Sydney Water should propose an appropriate program based on the scope of works and risk to achieving business objectives posed by any issues identified
Opportunities for Improvement OFI 3.1-1: There is an opportunity for Sydney Water to continue to improve its document control.					

A.3.2 Sub-clause 3.3 System Performance Standards

The IPART indicators audited as part of this clause are outlined below in Appendix Table 5.

Appendix Table 5. IPART indicators audited under Clause 3.3.

IPART INDICATOR NO. AND INDICATOR		Definitions	Subject Area / Licence Clause
	The number of properties affected by an unplanned water interruption duration of more than I hour and less than or equal to 5 hours.	Property means any real property to which either or both of the following conditions apply: Does this phrase make sense? (a) the real property is connected to the water utility's drinking water supply system, to the water utility's sewerage system or to the water utility's recycled water system and a charge for the services provided by	
12	Occurrence of water interruptions to affected properties (i.e. the number of properties experiencing 3 or more Planned and Unplanned water interruptions) of more than one hour duration).	 b) the feat more of those systems is levied on the owner of the real property (b) the real property is within a declared stormwater drainage area for which the utility imposes a stormwater charge upon the owner of real property in that area. Water Interruption means any event causing a total loss of water supply due to any cause. Water interruption excludes those caused by bursts or leaks in the service connection to internal plumbing or planned meter replacements. All interruptions not subject to notification caused by 	
13	Events leading to planned or unplanned water interruption where 250 or more properties experience an interruption of over 5hrs duration.	third parties or a power failure should be included. Exclude instances of reduced service levels due to, for example, low pressure. If a property experiences more than one interruption then it should be counted for each event. A water supply interruption, which causes loss of supply to 100 customers, is counted as 100 customer interruptions. Planned water interruption - water interruption initiated by the water utility for which at least 24 hours notice has been given to the customer. Unplanned water interruption means an interruption in which an occupier of a property has not received at least 24 hours notification of the interruption or an interruption that has occurred prior to the expiry of any notice provided to an occupier advising of an interruption. It also includes outages where the duration exceeds that originally notified. In this case the entire outage is classed as unplanned.	Unplanned Interruptions / 3.3.2
14(S)	The number of residential properties affected by planned water supply interruptions in peak hours (5am-9am and 5pm-11pm)	Property as per II. Planned water interruption as per II Notes: I. For the purpose of this indicator, property refers to only residential properties. 2 . Interruptions spanning any part of the peak period are to be included.	
15	The number of properties in the water utility's drinking water supply network experiencing a water pressure failure which is occasional or recurrent, but not permanent	Property as per II. A property experiences a water pressure failure if a pressure of less than 15 metres head is experienced for a continuous period of 15 minutes or more measured at the point of connection of the Property and the water utility's water supply system, usually at the point of connection known as the "main tap". For the purpose of this indicator: (a) where connected properties are in multiple occupancy, each separately billed or occupied part shall be counted as one connected property. Connected properties currently unoccupied shall be included. (b) a Property is taken to have experienced a water pressure failure at each of the following times: (i) when a person notifies the water utility that the Property has experienced a water pressure failure and that water pressure failure is confirmed by the water utility; or (ii) when the water utility's systems identifies that the Property has experienced a water pressure failure; and (c) a Property will not be taken to have experienced a water pressure failure only because of a short term operational problem (such as a main break), which is remedied within four days of its occurrence or from abnormal demand (such as demand during fire fighting).	Water Pressure / 3.3.1

IPART INDICATOR NO. AND INDICATOR		Definitions	Subject Area / Licence Clause
16	Number of High Priority sewage overflows per 100 km of sewer main responded to in a year	High Priority sewage overflow is an event assessed by the water utility as: (a) a public health concern (b) likely to amount to significant damage to property (c) likely to have a significant environmental impact	
17	Number of Medium Priority sewage overflows per 100 km of sewer main responded to in a year	 (d) an interruption of the sewerage service. Medium Priority sewage overflow is an event assessed by the water utility as likely to amount to: (a) minor property damage (b) minor environmental impact (including unpleasant odours) not posing a significant health risk. The utility has defined problem codes of 'sewerage surcharge', 'plumber confirmed choke' or 'internal surcharge'. The number of events to be used is the number recorded under these codes determined to be priority High or Medium jobs. Note: High Priority is equivalent to a Priority 6 for Sydney Water or Priority I for Hunter Water. Medium Priority is equivalent to a Priority 5 for Sydney Water or Priority 2 for Hunter Water. 	Sewage Overflows / 3.3.3
18	Number of residential customers' dwellings affected by sewer spills not contained within I hour of notification	Residential customer means a customer who: owns real property which is used as a principal place of residence. Property as per II. Sewer spills refers to a sewer spill caused by a fault in the water utility's sewerage system that discharges to a customer's dwelling. It does not include spills caused by faults in the service connection or house connection branch and the house service line. Contained means the sewage spill has ceased or has been alleviated. It does not include sewer spills caused by faults or blockages in the customer's pipes.	

Sub-clause Requirement					
3.3.1 – 3.3.3 Given the volume of information in this requirement, this requirement is summarised as the following with full information provided in Table 1-1, p17:		Compliance Grade			
Sydney Water must meet the water pressure and continuity, and sewage overflow standards with regards to its Operating Licence.			Full		
Risk	I	Target for Full Compliance			
Failure to deliver water continuously at the required pressure, and uncontrolled overflow of the sewage would lead to increased customer complaints, and public health and environmental risks. To achieve full compliance, Sydney Water needs to de that the minimum standards for the water pressure an and sewage overflow standards with regards to its Op Licence have been met during the audit period 2014/					
Evidence Sighted					
 3.3.1 - Water Pressure Standard - PI Sheet 3.3.2 (a) - Water Continuity Standard - 40000 properties - PI Sheet 3.3.2 (b) - Water Continuity Standard - 3 or more interruptions - PI Sheet 3.3.2 - Folio of Progress 3.3.a - Sewage Overflows Standard - PI Sheet 3.3.a - Sewage Overflows Standard - PI Sheet 3.3.a - Sewage Overflows Standard - PI Sheet 3.3.a - Property Compliance Sewage - BI Download Process Maps for Overflows, Continuity, Pressure reporting Water Networks reports for 3.3.1, 3.3.2, 11, 12, 13, 15, A8' for schedule of water pressure incidents and an example of monthly report DOC0333.0 - Investigation & Reporting Water Pressure Failure DOC0333.01 - Analysis of Water Pressure Failure Data in Table 2 DOC0333.03 Water Pressure Customer Complaint Management Process DOC0333.04 Compiling Water Pressure Failure Data in Table 2 3.3.1-2014-15 Unplanned Interruptions Details Manual Rebate Debits 2014-15.xls S but no overflow ceased time.xls Wasterwater - A14 Chokes & Breaks.xls Wasterwater - A14 Chokes & Breaks.xls Water_Connection_Point_Auto_Rules.doc 3.3.1 - Pressure Report back up 3 Aug 2015.xlsm 2014-11-06 Email response from Geoff Sigal re WG2312.pdf 20150329 Workorder Quality Audit Report.xls copy of email-summer monitoring.pdf Copy of Table 1 16-11-15.xlsx Training manual extract-wastewater surcharge.pdf CDP opl Rebates WIP (ii).pptx Customer Referse Process notes.docx 					
Summary of Reasons for Grade					
Sydney Water has provided sufficient evidence that the water pressure and continuity, and sewage overflow standards with regards to its Operating Licence have been met during the audit period. Discussion and Notes					
3.3.1 Water pressure standard					
Sydney Water primarily assess its compliance with the water pressure standard through monitoring data collected by its network of around 770 pressure loggers. A secondary check is to investigate customer complaints relating to water pressure. All pressure loggers are telemetered and the monitoring data is stored in its data warehouse. From here, a monthly report is generated by the Business Intelligence system that shows pressure reading relating to low pressure alarms from the previous month. The low pressure alarms are generated when the pressure is lower than the desired set-point for more than 15minutes. The elevation difference between the pressure logger and the 'most (pressure) disadvantaged' property in the network is known and used to calculate the pressure at this most disadvantaged property in the network. We requested from Sydney Water and reviewed the spreadsheet which records the offsets to the most disadvantaged properties. There is also a small number of networks where no permanent pressure logger is in place and so Sydney Water installs a temporary pressure logger in summer (when demand should be highest and pressure lowest). Sydney Water provided to us an email confirming 38 locations for temporary pressure monitoring over summer.					

This extract of low pressure events is reviewed by Sydney Water's Network Teams to determine the circumstances of the event and the reporting requirements. The Network Teams identify if there was any equipment failure (e.g. battery failure on

the logger) or events in the network that led to the observed reading. The observations of the Network Team are recorded in consecutive columns in the reporting spreadsheet. The work order number for network events are recorded and a short description of the event provided. The reviewer's name and date of the analysis are also recorded in the spreadsheet.

At audit, time was spent reviewing the reporting spreadsheet to correlate the data with pressure logger readings in SCADA and to review the investigation undertaken by Sydney Water. We also reviewed work orders where a network event had been identified as the cause of the low pressure. We identified an instances where it appeared that the investigation into a low pressure event had yet to be closed out (pressure gauge WG2132). Sydney Water provided evidence that this low pressure reading had been subject to ongoing investigation from September 2014 to November 2014 which identified that the low pressure resulted from a planned network outage coinciding with unusually high demand. Therefore the investigation had been completed but the reporting spreadsheet had not been updated. We agree with Sydney Water's assessment that this is a housekeeping issue and we note that it does not impact on the reported figure.

The auditors also observed that for a number of low pressure readings for gauge WG2178 it was noted that "no obvious reason found". Sydney Water explained that for this gauge eight low pressure events were observed between October to December 2014. On investigation, five of the eight instances were found to be due to identifiable operational reasons but no explanation could be found for the other three instances. We challenged as to why Sydney Water did not include these unexplained events in its reported figure. Sydney Water considers that it is most likely that these three instances were due to an abnormal operational event that did not last greater than four days and therefore should not be reported. On reviewing the data we agree that this is the most likely explanation. We note that there is no evidence of any systemic low pressure problems at this location.

Customer complaints relating to low pressure are managed through the Water Pressure Customer Complaint Management process. The original pressure management process was reviewed in order to further streamline the process and therefore a new electronic form (WR8) has been developed to manage this process and the interface among Sydney Water teams. Water pressure complaints related work orders are created in Maximo with relevant task code and times of water on/off.

The auditors reviewed how Sydney Water calculates its reported figure based on the raw data and analysis of this data and consider that the calculation is performed correctly and that the data analysis supporting the reported figure is sufficiently robust.

3.3.2 Water continuity standard

This data is reported from Sydney Water's Business Intelligence system which uses a reporting query that interrogates work order data in Maximo. Sydney Water identified an error in its calculation of this standard following the 2013/14 Operating Licence audit. It reviewed its reporting query at this time.

As part of the audit, 75 work orders were reviewed to test the quality and coverage of the data recorded. The auditors found that the work orders were completed to a high standard, i.e. activity times (on site, off site, water off, water on) were consistent and that work activities and labour, plant and materials were logical. We identified one work order where it appeared that the water had been turned off when no one was on site. Sydney Water investigated and found that a second work order was created for the staff that turned the water off.

The number of properties affected by a shutdown is determined through a tracing routine in GIS. Sydney Water advised that individual property meters are not digitised in its GIS. Instead, the location of the connection of the property to the main is inferred through a GIS routine. This would typically be a straightforward process where there is one main in the street/verge outside a property. There is less certainty in situations such as where a property is located on a corner of where a street/verge has more than one main located in it. We questioned Sydney Water as to the accuracy of the tracing routine and it responded that the accuracy was tested at the time of its implementation and it was satisfied that the results were sufficiently accurate. Sydney Water noted that the results are verified through operational practices when shutdowns occur.

The auditors consider that Sydney Water has an appropriate calculation in place for this standard and that the work order data on which the calculations are based is sufficiently reliable for reporting purposes.

3.3.3 Sewage overflow standard

As for the water continuity standard, Sydney Water reports this data from its Business Intelligence system which uses a reporting query that interrogates work order data in Maximo. We reviewed the reporting query and note that it uses as a filter that a rebate has been paid to the customer. This rebate is associated with Clause 7.2 of the Customer Contract which states that a customer will be paid a rebate if they "experience a wastewater overflow on your property due to a failure of our wastewater system". By filtering the reported data on where it has paid a rebate, Sydney Water is ensuring that the reported data is subject to review to ensure that its infrastructure was at fault.

The auditors reviewed the reporting data and the flags used for filtering the data in Maximo and trailed these fields to work orders. We queried Sydney Water regarding events where an event code of "SS" (sewer surcharge) had been recorded on the work order (i.e. an overflow was reported at the time the work order was generated) but there was no time recorded on the work order for when the overflow ceased. Sydney Water responded that this can occur in a number of circumstances such as when the 'overflow' is found to be something other than sewage, e.g. potable water or when the overflow is found to be on private infrastructure. We requested that Sydney Water provide us a schedule of events where an overflow had been initially reported but no overflow ceased time was recorded. There are 4,039 events that meet these criteria. The auditors interrogated



this list and followed up on queries with Sydney Water. Sydney Water was able to provide justification for the exclusion of all work orders queried from the reported figure. The reasons included that the work order queried was the child of a parent work order that had been included and that the work order related to a wet weather event. For one work order (71695684) Sydney Water advised that the crew was unable to identify the cause as being the fault of Sydney Water so it was not included in the reported figures. The comments field of this work order states that "PROBLEM HAD CLEARED NEEDS 2 BAGS TOP SOIL AND DISO NEXT DAY". The auditors accept that there will inevitably be some subjectivity over the cause of an overflow and that the crew is best placed to determine the most likely source of the problem.

As part of our audit, we reviewed 40 work orders to test the quality and coverage of the data recorded. We found that the work orders were completed to a high standard, i.e. activity times (on site, off site, service restored) were consistent and that work activities and labour, plant and materials were logical.

The auditors consider that Sydney Water has an appropriate reporting query in place for this standard and that the work order data on which the calculations are based is sufficiently reliable for reporting purposes.

Recommendations

There are no recommendations in relation to this sub-clause.

Opportunities for Improvement

No opportunities for improvement have been identified in relation to this sub-clause.

A.4 Section 5: Complaint and Dispute Handling

Sub-clause Requirement						
5.1 Internal Dispute Resolution Process	.1 Internal Dispute esolution Process (a) Sydney Water must establish and maintain internal complaint handling procedures for receiving, responding to and resolving Complaints by Customers and Consumers against Sydney Water.					
	(b)	The internal complaints I based on the Australian Satisfaction - Guidelines from time to time.	handling procedures of Sydney Water must be Standard AS/ISO 10002: 2004 MOD Customer for Complaint Handling, as amended or replaced	Compliance Grade		
	(c)	Sydney Water must mak information concerning i explains how to make a procedure works.	e available to Customers and Consumers ts internal complaints handling procedures which Complaint and how the complaint handling	Full		
	(d)	Sydney Water must pro- condition 5.1 (c) to Cust least once annually.	vide information of the nature described in tomers through their quarterly, or other, bills at			
Risk	Risk Target for Full Compliance					
Appropriate complaint handling processes are important elements of managing customer service. If these processes are not in place, complaints may remain unresolved and potentially lead to amplified consequences overall. That Sydney Water has adequate customer and consumer complaint handling and response management procedures/systems in place and that staff members are trained in how to implement the procedures.						
Evidence Sighted						
 Manager Customer Accounts and Billing, Manager Customer Interaction, Customer Team Leader Customer Care, Business and Regulatory Compliance Specialist, Senior Compliance Analyst Responses to audit questionnaire questions. Certification Certificate from Customer Service Institute of Australia August 2013 (to standard AS ISO 10002-2006 Customer satisfaction - Guidelines for complaints handling in organizations) Customer Complaint Procedure BMIS No. SWEMS0152v2 (Attachment 2 - Customer Complaint Procedure 						
 .pdf (Customer Contract as viewed on website, 30/10/2015) http://www.sydneywater.com.au/SW/Contactus/index.htm (Attachment 5 - Contact us - Complaints.pdf) CSIA (2013) System Assessment and Certification Report Complaint Management System AS ISO 10002-2006 for Sydney Water August 2013 (Atachment (<i>sic</i>) CSIA certification report.pdf) Customer Management System viewed at interview EWON membership evidence (Attachment 6 - EWON Membership.pdf) Customer Management System viewed at interview (Attachment 13 - Traceability.pdf): New starter training records for 3 staff members, 7 September 2015 (while outside audit date scope, information was accepted as evidence of a process being followed that was in audit date scope). Confirmation email from Fuji Xerox to Sydney Water (11 November 2015) confirming the annual distribution of the Customer Contract within the audit period (Attachment 7 - Confirmation.email.pdf) Performance Indicators Report 2014-5 (customer indicator information) (Attachment 11 - Performance.pdf) Social media complaints received for the period 1 July 2014 – 30 June 2015 were viewed. 5 records were noted, one record (1-7FLDOF) was followed for audit trail of it being addressed and closed out. Telephone complaints received for the period 1 December 2014 – 31 December 2014 were viewed Customer complaints policy 01 June Complaints Policy 2015 (Attachment 1 - Customer 2015.pdf) Waterwrap May-June 2015 (Attachment 4 - Waterwrap June 2015.pdf) Our contract with you SW323 06/15 (Attachment 3 - Our contract with you pdf) 						
 Our contract with you SVV323 06/15 (Attachment 3 - Our contract with you.pdf) I4 records were noted, one water quality complaint (1-7PHSWO) was followed for audit trail of it being addressed and closed out. Waterwrap August – November 2014 SW27 7/14 (Attachment 8 - Waterwrap_AugOct_2014_FNL_LoRes.pdf) Minutes and actions for TCX Steering Group Meeting 05 November 2015 (while outside audit date scope, information was accepted as evidence of a continuous improvement being followed) TCX Meeting Experience Canvas 3 September 2015 (Attachment 10 - Cx experience canvas.pdf) (while outside audit date scope, information was accepted as evidence of a continuous improvement being followed) Details of 'scripting' for wastewater surcharge complaint and Telephone etiquette 'warm transfer to supervisor' including escalation process to managers (Attachment 12 - Process.pdf) 						

Summary of Reasons for Grade

During the audit period, the standard in place was AS ISO 10002-2006, which was then superseded by AS/NZS 10002:2014 (Guidelines for complaint management in organizations) published on 29 October 2014. The overarching components of AS ISO 10002-2006 are largely included in AS/NZS 10002:2014, these being:

- Enhancing customer satisfaction by creating a customer focused environment that is open to feedback (including complaints), resolving any complaints received, and enhancing the organisation's ability to improve its product and customer service
- Top management involvement and commitment through adequate acquisition and deployment of resources, including personnel training
- Recognising and addressing the needs and expectations of complainants
- Providing complainants with an open, effective and easy-to-use complaints process
- Analysing and evaluating complaints in order to improve the product and customer service quality
- Assessment of the complaints management process
- Reviewing the effectiveness and efficiency of the complaints handling process.

Sydney Water has various documents and systems in place, to satisfy the intent of this clause, including a Customer Complaints Policy, a Customer Complaint Procedure and a Customer Management System which houses core customer information including customer complaints. Sydney Water has attained certification to AS ISO 10002-2006. Sydney Water is a member of EWON. Sydney Water publishes two brochures which satisfy clause 5.1 (c) and (d), these being 'Waterwrap' and 'Our contract with you SW323 06/15' (noting that both the summary and the full contract were sighted). Both documents were confirmed as being made available to customers annually with customers' quarterly accounts. In addition, Sydney Water's website contains information for customers through links such as the 'Contact Us' page which demonstrates how customers can lodge complaint information. Some discrepancies with document control were noted and opportunities for improvement have been captured to address these issues including incorrect referencing of the standard, incorrect footer information and reference to filepath of previous document i.e. field had not been updated and incorrect referencing of regulators (out of date departments were still cited). Further, while Sydney Water operationally includes social media as a mode of contact, this is not yet stated specifically in the Customer Complaints Procedure. An opportunity for improvement has therefore been included that at the next review of the Customer Complaints Procedure, social media should be specifically included as a mode of contact from customers. While document control is noted as an issue for this clause, it is recommended that document control is rolled up under Clause 9. Therefore based on the findings, a grade of full compliance has been awarded to this clause.

Discussion and Notes

5.1(a) Internal Complaint Handling Procedures: Sydney Water has various documents and systems in place, to satisfy the intent of this clause, these being:

- Customer Complaints Policy
- Customer Complaint Procedure BMIS No. SWEMS0152v2
- Customer Management System which houses core customer information including customer complaints

Sydney Water is a member of and has access to an external dispute resolution process through EWON. The EWON website shows evidence of Sydney Water's membership currency. Clause 12.4 of the full customer contract²²⁶ states that customers have the right to have their complaints heard by EWON²²⁷ and NCAT²²⁸. Sydney Water provides contact details for EWON:

- Via customer bills
- On debt recovery notices
- At least once per year in the 'Waterwrap' account enclosure²²⁹
- On its website

While the details for EWON do not come up as 'front and centre' when searching for EWON using Sydney Water's website search function, they are available at a lower level from the 'Contact Us' page. Sydney Water explained at interview that the priority for Sydney Water is only to have customers contact EWON if Sydney Water is unable to address their issues and therefore, the EWON information is not elevated, but is available. Given that the EWON contact information is included with the bill, in Waterwrap and in the Customer Contract, the reason given by Sydney Water for the EWON information on its website was considered acceptable. The EWON contact details were sighted on the August – November 2014 Waterwrap document provided.

5.1(b) Requirement to Meet Standard AS/ISO 10002 (as amended): During the audit period, the standard in place

²²⁷ Sub-clause 12.4.1. ²²⁸ Sub-clause 12.4.2.

²²⁹ Waterwrap August – November 2014 SW27 7/14 (Attachment 8 - Waterwrap_AugOct_2014_FNL_LoRes.pdf), EWON details sighted on second page.



²²⁶ <u>http://www.sydneywater.com.au/web/groups/publicwebcontent/documents/webasset/zgrf/mdc0/%7Eedisp/dd_074203.pdf</u>, p28.

was AS ISO 10002-2006 which was then superseded by AS/NZS 10002:2014 (Guidelines for complaint management in organizations) published on 29 October 2014. As noted in the CSIA Report,²³⁰ the overarching components covered by AS ISO 10002-2006 are:

- Enhancing customer satisfaction by creating a customer focused environment that is open to feedback (including complaints), resolving any complaints received, and enhancing the organisation's ability to improve its product and customer service
- Top management involvement and commitment through adequate acquisition and deployment of resources, including personnel training
- Recognising and addressing the needs and expectations of complainants
- Providing complainants with an open, effective and easy-to-use complaints process
- Analysing and evaluating complaints in order to improve the product and customer service quality
- Assessment of the complaints management process
- Reviewing the effectiveness and efficiency of the complaints handling process.

These same components are largely kept in the new standard (AS/NZS 10002:2014) with the recognition of new channels of communication including social media. At its 2013 assessment, CSIA noted that Sydney Water had a sophisticated Customer Management System (CMS) in place and that organization awarded Sydney Water certification to AS ISO 10002-2006 in August 2013.²³¹ Since that time, Sydney Water documents that have reached their review cycle post the certification to the old standard, now include reference to AS/NZS 10002:2014 (with some minor shortcomings in correct referencing of the standard which are covered below).

Sydney Water provided the Customer Complaints Policy (CC Policy) and the Customer Complaints Procedure (CC Procedure) as part of its evidence. Both these documents are based on the standard. The CC Procedure has a currency and review date (August 2014 which are identical. The review cycle for the procedure should be 2 years – therefore, the review date in the footer should have been August 2016 not August 2014.

This new standard should be incorporated into the CC Policy and CC Procedure²³². The CC Policy and the CC Procedure use a modified definition of 'complaint' taken from the cited standard: AS ISO 10002 – 2014. This definition meets that cited in the standard AS/NZS 10002:2014 but it appears that AS ISO 10002 – 2014, as noted²³³ in the CC Policy, does not exist²³⁴. The correct standard is: "AS/NZS 10002:2014 Guidelines for complaint management in organizations". Sydney Water has just subscribed to 'Standards Watch' from a corporate perspective, so the issue of keeping up to date with standards should be managed for the future.

Methods of customer contact are noted in the CC Procedure²³⁵ however, social media is not noted as a contact channel. AS/NZS 10002:2014 specifically notes that social media should be included in a procedure. Although it is noted that during the audit period, Sydney Water was not required to meet AS/NZS 10002:2014, it would be beneficial to ensure that reviewed documentation includes social media as a mode of contact. The auditor notes that Sydney Water does in fact manage social media requests through the CMS and this was verified at interview through live viewing and querying of the CMS database. For the records viewed, Sydney Water had managed and closed out the customer complaints including where necessary, checking information with NSW Health.²³⁶ The evidence provided for closing out customer complaints also accorded with the procedure.²³⁷

Sydney Water's questionnaire evidence stated that the CC Policy and CC Procedure are based on AS/ISO 10002 in accordance with the Operating Licence and that compliance is periodically tested via Internal and External audit²³⁸. However, some anomalies were noted with document control and referencing of key regulators²³⁹ and the standard. Further, information in process flow charts in the CCP Procedure included people's names rather than position titles.²⁴⁰ When these issues were discussed at interview, Sydney Water noted that the person named in the flow charts had in fact moved on from that position and was no longer the correct person to be cited in the procedure. Footer information was incorrect²⁴¹ and the filepath had not been updated from the previous document version.

²³³ "Australian Standard for Complaint Handling – AS ISO 10002 – 2014"

²³⁰ CSIA (2013) System Assessment and Certification Report Complaint Management System AS ISO 10002-2006 for Sydney Water August 2013, p8.

²³¹ Certificate sighted at interview.

²³² See page 2 of procedure which references the 2006 standard.

²³⁴ Checked with SAI Global 30/10/2015.

²³⁵ Customer Complaint Procedure BMIS No. SWEMS0152v2 (Attachment 2 - Customer Complaint Procedure 2014.pdf), Section 3, p6.

²³⁶ Telephone complaints received for the period 1 December 2014 – 31 December 2014 (14 records noted, one water quality complaint (1-7PHSWO) followed for audit trail). Social media complaints received for the period 1 July 2014 – 30 June 2015 (5 records noted, one record (1-7FLDOF) for water quality followed for audit trail).

²³⁷ Customer Complaint Procedure BMIS No. SWEMS0152v2 (Attachment 2 - Customer Complaint Procedure 2014.pdf), Section 7.1, p15.

²³⁸ E.g. CSIA (2013) System Assessment and Certification Report Complaint Management System AS ISO 10002-2006 for Sydney Water August 2013; NWI customer indicator reporting etc.

²³⁹ Out of date reference to Department of Environment, Climate Change and Water (DECCW). Customer Complaint Procedure BMIS No. SWEMS0152v2 (Attachment 2 - Customer Complaint Procedure 2014.pdf), Section 4.5, p8.

 ²⁴⁰ Customer Complaint Procedure BMIS No. SWEMS0152v2 (Attachment 2 - Customer Complaint Procedure 2014.pdf), Section 4.11, p11.
 ²⁴¹ Page X of Y information not correct.

Sydney Water uses various methods of training including mentoring to ensure currency of information and the internal social media tool Yammer. Sydney Water takes the view that a complaint is the responsibility of all staff and therefore, all new starters are trained in complaints handling. While outside the audit date scope,²⁴² Sydney Water provided evidence of training of new starters to show that 'complaints handling' was one of the components included in training.

As part of its continuous improvement process, Sydney Water has just (September 2015) formed the Tactical Customer Experience (TCX) Steering Group and implemented the Tactical Customer Experience Steering Group Experience Canvas process. The information provided was outside of the audit date scope however, it was accepted as evidence of following continuous improvement processes.²⁴³

5.1(c) Availability of Information: Sydney Water publishes two brochures which satisfy this licence clause, these being:

- Waterwrap²⁴⁴
- Our contract with you SW323 06/15 (noting that both the summary and the full contract were sighted).

Both documents are made available to customers annually with their quarterly accounts. An email confirming distribution of the Customer Contract (August to October 2014 period) was provided from Fuji-Xerox.²⁴⁵

In addition, Sydney Water's website contains information for customers through links such as the 'Contact Us'²⁴⁶ page which demonstrates how customers can lodge complaint information.

5.1(d) Provision of Information Through Bills: Information above for 5.1(c), also applies to this clause.

Recommendations

There are no recommendations for this clause.

Opportunities for Improvement

OFI 5.1-1: Document Control: Several document control issues were noted including incorrect referencing of the standard, incorrect footer information and reference to filepath of previous document i.e. field had not been updated. Ensure that a hard review of documentation is undertaken to avoid document control issues for the future.

OFI 5.1-2: Incorrect or Out of Date Referencing: Several incorrect referencing issues were noted during the audit (DECCW not OEH/EPA and AS ISO 10002 2014 not AS/NZS 10002:2014). Ensure that in future, key regulators and references to standards (especially where those standards are specifically referred to in Operating Licence clauses), are referenced correctly. Noting that Sydney Water has recently subscribed to 'Standards Watch' from a corporate perspective, so the issue of keeping up to date with standards should be managed for the future.

OFI 5.1-3: Social Media: Ensure that at the next review of the Customer Complaints Procedure, that social media is specifically covered as a mode of contact from customers e.g. in Section 3 and 7.1 of the Customer Complaints Procedure.

to Customer Complaints Policy confirmed.



²⁴² New starter training records for 3 staff members, 7 September 2015.

²⁴³ Minutes and actions for TCX Steering Group Meeting 05 November 2015; Attachment 10 - Cx experience canvas.pdf

²⁴⁴ Waterwrap June 2015 was sighted.

²⁴⁵ Attachment 7 - Confirmation.email.pdf

²⁴⁶ http://www.sydneywater.com.au/SW/Contactus/index.htm sighted 2 November 2015. Information for lodging of complaints confirmed, link

A.5 Section 9: Reporting and Maintaining Records

Sub-	Requirement					
clause	(a) Sydney Water must comply with its reporting obligations set out in the Reporting					
9	Manual and must report to IPART in accordance with the Reporting Manual. Compliance Grade					
	(b) Sydney Water must provide to NSW F Reporting Manual relating to water quality i	Full				
	(c) Sydney Water must maintain records the in accordance with condition 9(a).	nat are sufficient to enable it to accurately report				
Risk	Risk Target for Full Compliance					
The performance of Sydney Water is unable to be ascertained if reported data is inaccurate. To achieve full compliance, Sydney Water needs to demonstrate that it maintains record systems that are sufficient to enable it to accurately report data in accordance with the Reporting Manual.						
Evidence Si	Evidence Sighted					
 Agendas and Minutes of Compliance network meetings Compliance Reports QA processes Risk Assessment SDIMS Audit Schedule System Performance Standards Audit Report PI Sheets System Performance Standards Audit Schedule and Audit Report IPART CM003 Error Correction Data Error report Civ-Quality-workorder quality audit report Service Delivery ISO9001 certificate Process Maps for Overflows, Continuity, Pressure reporting DOC0034 SDIMS Compilation of Regulatory Reports Operating Licence Compliance Table, Water continuity folio of progress and GM accountability sign off Ministerial Requirements progress report and Improvement Opportunities table Example audit report and example of action raised in BMIS Screenshot showing actions from 14-15 IPART audit in BMIS QMAF0013 - QMAF Management System Audits Procedure SDIMS0010-Assurance & Monitoring (Audits/Inspections procedure) Service Delivery Regulatory Reporting Specification Response to Clause 9 audit queries 						
Summary of Reasons for Grade Sydney Water has demonstrated that it has been maintaining its record system which has enabled it to accurately report its Operating Licence obligations to IPART and NSW Health in a timely manner.						
Discussion and Notes						
Sydney Water advised that it has established a compliance network that ensures that the Operating Licence reports are accurate and meet the requirements specified in the Reporting Manual. A review of the QA processes for Operating Licence reports was initiated with each divisional area responsible for Operating Licence reporting being consulted and requested to review and update reporting procedures and PI sheets.						
Sydney Water has performed a risk assessment on the QA processes for Operating Licence compliance reports. The risk assessment determined that the reporting procedures and data logic in the IT system queries used to extract the reported numbers for the Operating Licence system performance standards and associated indicators should be audited to assess their adequacy.						
Sydney Water's Business Intelligence (BI) System is programmed to generate reports as required for its Operating Licence key requirements. To ensure alignment of the reports with the Operating Licence definitions, Sydney Water created PI sheets that specify the SQL codes within the report and/or BI objects. The BI code and objects specify the output of the report. An online compliance tool (Folio process) is used to QA process for key Operating Licence requirements.						
Sydney Water has implemented detailed procedures for key Operating Licence reporting requirements, for example the reporting of the Operating Licence System Performance Standards. Although there is currently no organisation wide QMS in place, Sydney Water has implemented multiple levels of validation and QA checks for Operating Licence reports. These include:						
 Various data validation points in the data collection and entry; 						
• Data validation by 'data owners' prior to the release for OL reporting;						

• Report data validation and sign off by GMs at a divisional level and validation at a corporate level by Corporate Compliance prior to submitting the final reports to IPART.

Sydney Water assigns and tracks all Ministerial requirements and IPART recommendations through its Corporate Compliance Program. Where non-compliances are identified via internal system and process audits, Sydney Water tracks actions raised by registering those actions in its Business Management Information System (BMIS).

Service Delivery Division record and track Ministerial requirements and IPART recommendations via the Action Workflow of the BMIS. Progress of addressing Ministerial requirements are tracked and reported to Service Delivery Executive team monthly until they are completed.

Overall, we have found that Sydney Water uses a risk based approach for internal audit of its management systems.

Recommendations

There are no recommendations in relation to this sub-clause.

Opportunities for Improvement

No opportunities for improvement have been identified in relation to this sub-clause.

D Sydney Water Corporation's statement of compliance

D Sydney Water Corporation's statement of compliance



Statement of Compliance 2015 For 2014-15 Submitted by Sydney Water Corporation ABN: 49 776 225 038

The Chief Executive Officer To: Independent Pricing and Regulatory Tribunal of NSW Level 15, 2-24 Rawson Place SYDNEY NSW 2000

Sydney Water reports as follows:

- This statement documents compliance during 2014-15 with all obligations to which Sydney 1. Water is subject by virtue of its Operating Licence.
- This report has been prepared by Sydney Water with all due care and skill to the best of 2. our knowledge of conditions to which it is subject under the Sydney Water Operating Licence and Reporting Manual.
- Schedule A provides information on all obligations with which Sydney Water did not comply 3. during 2014-15.
- 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: 2618/15 Signed: Name: Kevin Young Designation: Managing Director

DATE: Signed:

Name:

Bruce/Morgan

Designation: Chairman

Schedule A Non Compliances 2014-15

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 Licence, the Act and the maximum prices and methodologies for Services determined from time to time by IPART under the IPART Act.

Sydney Water understands that it has not complied with IPART's Determination No.8, 2006 which sets a methodology for fixing the maximum prices that a Water Agency may charge for Recycled Water Developer Charges. As part of this methodology, Sydney Water must register a Development Servicing Plan (DSP) for any recycled water scheme where we wish to levy a developer charge. In previous reporting years, recycled water capital contributions levied by Sydney Water for some recycled water schemes were not based on the methodology stipulated in Determination No. 8. They were very likely less than the maximum price that would have been determined by that methodology. Also, Sydney Water did not obtain approval from the Treasurer to set a price below the amount determined by the methodology. Therefore, Sydney Water is non-compliant with section 18(2) of the IPART Act in respect of these charges.

i Date or period of non-compliance (including whether and how many customers have been affected) There has been an ongoing non-compliance since 2007, which has continued until the 2014-15 reporting period.

ii Nature and extent of non-compliance

The non-compliance occurred as a result of Sydney Water collecting capital contributions for recycled water schemes without a registered Development Servicing Plan (DSP) in place, and without seeking Treasurer approval to charge a price that was very likely less than the maximum price that would have been determined by the methodology.

It relates to:

- a historical breach for both Oran Park/Turner Road and Colebee in 2009 and 2010; and
- an ongoing non-compliance since 2007 for the Hoxton Park recycled water scheme.

iii Results of any monitoring (where applicable)

N/A

iv Reasons for non-compliance

The non-compliance resulted from actions and decisions taken by Sydney Water's previous administration. These decisions and actions resulted in the ongoing non-compliance since 2007 for Hoxton Park and non-compliances in 2009 and 2010 for both the Oran Park/Turner Road and Colebee schemes.

At the time, Sydney Water's view was that we could levy capital contributions without preparing a DSP for these schemes. In March 2015, IPART notified Sydney Water that this view was incorrect and that we had failed to:

- prepare and register a Development Servicing Plan (DSP) before levying developer charges (in accordance with the requirements under the 2006 Determination);
- seek the Treasurer's approval before fixing a price that was very likely below the maximum price that would have been determined by the methodology set out in the 2006

Determination (in accordance with s18(2) of the IPART Act); and

• report on our non-compliance with price determinations in our annual report (in accordance with s18(4) of the IPART Act).

v Remedial action taken

Sydney Water is seeking to rectify the non-compliance.

Sydney Water is preparing a Development Servicing Plan for the Hoxton Park scheme in accordance with IPART's Determination No. 8 and will seek necessary approval from the Treasurer if required. Sydney Water will also notify the Treasurer of the previous non-compliance.

The Hoxton Park DSP will go on public display in accordance with the Determination No. 8 2006, and any interested parties will be able to provide us with a submission on that DSP.

As Sydney Water is no longer collecting developer charges from developers for the Oran Park/Turner Road and Colebee schemes, and we are not planning to prepare a DSP for these schemes.

Sydney Water will report publicly on our compliance with IPART's determinations within Sydney Water's Annual Report each year, as required by the IPART Act.

vi Actual/anticipated date of full compliance

Sydney Water has had discussions with IPART on the non-compliance and will continue to work with IPART on this matter.

Sydney Water anticipates that the Hoxton Park DSP will be registered in early 2016. However, even after the DSP is in place, Sydney Water may have an ongoing non-compliance for a number of years. This is due to the timing between when Sydney Water advises a developer of the charge they will be required to pay and the developer making payment. The non-compliance for Hoxton Park will continue until we prepare a DSP for the scheme and all charges are paid on notices of requirements that have already been issued.

The non-compliance for Oran Park/Turner Road and Colebee was limited to 2009 and 2010 as Sydney Water only levied capital contributions for these schemes in these two years.