

Sydney Water Corporation Operational Audit 2009/2010

Report to the Minister

Water — Compliance Report
November 2010

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Mr James Cox, Chief Executive Officer and Full Time Member

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Executive Summary

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has completed the audit of Sydney Water Corporation's (Sydney Water) compliance with the requirements of its 2005-2010 Operating Licence (the licence). This audit covers the period from 1 July 2009 to 30 June 2010. IPART engaged t-cAM Consulting (t-cAM) as a consultant to assist with the 2009/10 Operational Audit (the audit) of Sydney Water.

We found that Sydney Water had managed its resources in 2009/10 to achieve Full Compliance with the auditable requirements in the licence except for one subclause where High Compliance was achieved. Specifically, we found that Sydney Water:

- ▼ Achieved **Full Compliance** with requirements related to the *Australian Drinking Water Guidelines*. The auditor was of the opinion that Sydney Water continued to supply treated drinking water of an excellent quality
- ▼ Achieved **Full Compliance** with infrastructure performance requirements including water continuity, water pressure, sewer overflows and response times for leaks and breaks, and **High Compliance** for the methodology adopted for the Ministerial requirement to report on water infrastructure design.
- ▼ Achieved **Full Compliance** with the Water Conservation and Demand Management requirements.
- ▼ Achieved **Full Compliance** with the Sydney Water's oversight of the operations at its Water Filtration Plants.

Table 1 Summary of Sydney Water's 2009/10 compliance

Licence Clause	No of Auditable Clauses	Compliance Grade Awarded		
		Full	High	Moderate
Part 3 – Water quality	16	16		
Part 4 – Infrastructure Performance	6	6		
Part 9 – Water Conservation and Demand Management	13	13		
Part 11 – Liability Issues	1	1		
Ministerial requirement			1	
Total	37	36	1	

Sydney Water has provided us with a Statement of Compliance, shown at Appendix C. This documents Sydney Water's compliance for the period 2009/10 with licence clauses not subject to audit during the 2009/10 year. This document has been signed by Sydney Water's Chairman and Managing Director.

The following parts of the Operating Licence were not audited in 2009/2010:

- ▼ Part 5 – Customer and Consumer Rights
- ▼ Part 6 – Complaint and Dispute Handling
- ▼ Part 7 – Environment – Indicators and Management
- ▼ Part 8 – Pricing
- ▼ Part 10 – Licence Authorisation and Area of Operations.

With one exception, Sydney Water has fully addressed all recommendations arising from the previous 2008/09 operational audit. One recommendation involving water infrastructure design methodology was only partly resolved. The recommendation set out below addresses this matter.

We consider that Sydney Water should be commended for the excellent standard of compliance it achieved in 2009/10.

Sydney Water's compliance with each audited part of the licence is discussed further in subsequent sections of this report.

IPART's recommendations

We have only one recommendation emanating from this audit to address the auditor's concern that the sample size used in the analysis of water infrastructure design is not sufficiently representative of Sydney Water's customer base.

We recommend that Sydney Water

[Presents a report to IPART before 31 March 2011 which outlines information and assumptions that demonstrate the validation of water infrastructure design methodology and assumptions for a range of water supply zones.](#)

The information provided should be sufficient to enable a determination of the suitability of Sydney Water's approach.

We have discussed this recommendation with officers of Sydney Water and they have advised us that they accept this recommendation and agree to address it.

We do not recommend that any additional requirements be imposed on Sydney Water by the Minister as a result of this audit.

The audit report identifies a number of opportunities where compliance with the licence could be enhanced or where Sydney Water's practices and procedures could

be improved. We support the matters raised as recommendations in the auditor's report and recommend that Sydney Water provide us with a report before 31 March 2011 that sets out actions to address these recommendations. We will follow-up on Sydney Water's progress in addressing these matters and we will review the implementation of these recommendations as part of the 2010/11 operational audit.

1 Introduction and Overview

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has completed the audit of Sydney Water Corporation's (Sydney Water) compliance with the requirements of its 2005-2010 Operating Licence (the licence). This audit covers the period from 1 July 2009 to 30 June 2010. IPART engaged the services of t-cAM Consulting (t-cAM) as a consultant to assist with the 2009/10 Operational Audit (the audit) of Sydney Water.

The purpose of this report is to inform the Minister for Water of IPART's findings in relation to Sydney Water's performance against its licence obligations for the audit period and set out IPART's recommendations in response to these findings.

Sydney Water is a State Owned Corporation, wholly owned by the NSW Government. Its primary role is to manage potable water supply and sewage treatment to protect public health and the environment for the benefit of Sydney and surrounding urban areas. These roles and responsibilities are derived from the *Sydney Water Act 1994* (the Act) and the Operating Licence issued to Sydney Water pursuant to Part 5 of the Act.

Section 33 of the Act requires the Minister for Water to table the IPART audit report in both Houses of Parliament within one month of receiving the report.

The licence provides for a risk-based auditing regime. The risk-based auditing process provides that clauses assessed as having high risks associated with non-compliance are usually included in the audit scope. High risk clauses include those relating to water quality, infrastructure, water conservation and demand management. t-cAM assessed Sydney Water's compliance with high risk areas of the licence and submitted an audit report to IPART.

Other clauses, such as those for liability issues and customer contract, are assessed as low risk and therefore audited less frequently. However, all requirements of the licence are audited at least once during the term of the licence. In 2009/10, Sydney Water provided us with a Statement of Compliance, signed by the Managing Director and Chairman of the Board, which details Sydney Water's compliance with the unaudited, low risk clauses of the licence (Appendix C).

1.1 Structure of report

This report presents and discusses the findings and recommendations of the 2009/10 audit of Sydney Water.

Chapter 2 explains the basis for and scope of the audit review, and the process followed in undertaking it.

Chapters 3 to 6 present a summary of the audit findings and recommendations, where applicable, for each part of the licence. In addition, we have provided a commentary and an overall assessment of Sydney Water's performance for the audit period.

Finally, in Chapter 7, we have discussed the actions that we have taken in response to the findings of the 2008/09 audit.

Appendices provide a copy of the consultant's report (Appendix A), set out the audit scope (Appendix B) and provide a copy of Sydney Water's 2009/10 Statement of Compliance (Appendix C).

1.2 Scope

The licence provides for a risk-based approach to the assessment of compliance with the licence requirements. The 2009/10 audit is the fifth and last audit of the 2005-2010 licence.

The adoption of the risk-based approach improves the effectiveness and efficiency of the auditing process without increasing the risks to the community. It allows audit resources to be targeted to areas of higher risk while reducing the overall burden of compliance. Appendix B sets out the scope of the 2009/10 audit and identifies which licence requirements are subject to a comprehensive audit and which are covered by the Statement of Compliance, signed by the Managing Director and the Chairman of the Board.

1.3 Process

We engaged t-cAM to assess Sydney Water's performance against licence requirements that were identified as being higher risk. As part of the audit process, we advertised for public submissions in the Sydney Morning Herald and the Daily Telegraph on 8 September 2010. We did not receive any submissions from the public.

The consultant adopted a methodology consistent with ISO 14011 "Guidelines for Environmental Auditing" for this audit. These guidelines set out a systematic approach to defining the requirements of the audit, which ensure that it is conducted in accordance with an established and recognised audit protocol.

We held an inception meeting with t-cAM and Sydney Water representatives on 9 September 2010. This meeting set out our mutual understanding and expectations of the requirements of the audit and protocols for the conduct of the audit. All parties adhered to the agreed protocols throughout the audit. We attended most meetings between the consultant and Sydney Water.

We provided Sydney Water with drafts of the audit report, and gave it an opportunity to provide comments on these documents. These comments were considered before the audit report was finalised. The audit report is attached as Appendix A.

Sydney Water's compliance with the relevant requirements of the licence was assessed according to the following schedule:

Compliance Grade	Description detail
Full Compliance	All requirements of the condition have been met.
High Compliance	Most requirements of the condition have been met with some minor technical failures or breaches.
Moderate Compliance	The major requirements of the condition have been met.
Low Compliance	Key requirements of the condition have not been met but minor achievements regarding compliance was not available to the auditor.
Non Compliance	The requirements of the condition have not been met.
Insufficient Information	Relevant, suitable or adequate information to make an objective determination regarding compliance was not available to the auditor.
No requirement	The requirement to comply with this condition does not occur within the audit period or there is no requirement for the utility to meet.

2 Water Quality

Part 3 of the licence deals with water quality. It includes requirements relating to planning, monitoring, reporting and incident management. Part 3 also includes requirements relating to the supply of other grades of water.

Under the risk-based auditing framework, IPART considers this section of the licence to be one that poses a high risk in terms of the likelihood and consequence of non-compliance.

2.1 Overview

The auditor reported that Sydney Water continued to supply consumers with water of excellent quality during 2009/10. It has complied with the health and aesthetic related guideline values of the current Australian Drinking Water Guidelines (ADWG 2004) as specified by NSW Health. Sydney Water also maintains a five-year Drinking Water Quality Management Plan, which adopts the approach and framework for management of drinking water quality set out in the ADWG 2004.

In relation to other grades of water, the auditor notes that Sydney Water commenced a program to transition existing recycled water schemes to meet the requirements of the *Australian Guidelines for Recycled Water (AGRW); Managing Health and Environmental Risks (Phase 1) 2006* in the 2008/09 audit year, and the program is continuing. This work is not yet complete and has not been subject to detailed review in this audit.

2.2 Audit Findings

Drinking Water Quality – Standards

Sydney Water achieved **Full Compliance** with respect to the requirements for the supply of treated drinking water to its customers. The water quality supplied complies with the health related requirements of the Australian Drinking Water Guideline and the aesthetic related requirements of NSW Health and the Minister.

Drinking Water Quality – Monitoring

Sydney Water obtained **Full Compliance** with the requirement to provide NSW Health with a comprehensive annual Drinking water quality monitoring report that includes system performance monitoring results.

Drinking Water Quality – Reporting

Sydney Water obtained **Full Compliance** with the requirement to provide NSW Health with quarterly water quality monitoring reports for water from Water Filtration Plants and publish these reports on its website.

Drinking Water – Planning

Sydney Water achieved **Full Compliance** with the requirement to prepare an annual report on the implementation of the five-year Drinking Water Quality Management Plan.

Drinking Water – Incident Management

Sydney Water achieved **Full Compliance** with the requirement to report to NSW Health about any information or event which may have risks for public health.

Other Grades of Water

Sydney Water obtained **Full Compliance** with the audited requirements for “supply of other grades of water” for the Rouse Hill recycled water scheme, the Wollongong Recycled Water Scheme and other schemes.

2.3 IPART’S Recommendations

We have made no recommendation in relation to this section of the Licence.

3 Infrastructure Performance

Part 4 of the licence requires Sydney Water to meet all system performance standards (water continuity, water pressure and sewage overflows), the response time for water main breaks, and asset management obligations.

Under the risk-based auditing framework, IPART considers this section of the licence to be one that poses a high risk in terms of the likelihood and consequence of non-compliance.

3.1 Overview

Sydney Water achieved full to high compliance with the auditable requirements of the Infrastructure Performance Section of the licence in 2009/10. Sydney Water has exceeded the standards specified in the licence.

3.2 Audit Findings

Sydney Water achieved **Full compliance** for meeting the Water Pressure Standard, Water Continuity Standard and Sewage Overflow Standard respectively, and the Asset Management obligation and **High compliance** for the Ministerial requirement to report to IPART on the methodology to design water infrastructure.

Water Pressure Standard

In 2009/10, water pressure performance improved significantly with only 36 properties experiencing a pressure less than 15 metres head compared to 1,093 in 2008/09. The standard that no more than 15,000 properties experience low pressure was comfortably achieved.

It is considered that this result was due to a combination of the progressive and systematic elimination of low pressure areas by Sydney Water and more favourable climatic conditions relative to previous years.

Water Continuity Standard

12,666 properties were affected by planned interruptions in 2009/10. While this figure is higher than the 10,923 properties affected in 2008/09, it is still significantly lower than the 2007/08 result of 16,576 properties and represents only a third of the standard that no more than 32,000 properties experience a planned interruption.

The number of properties that experienced an unplanned interruption decreased from 25,656 in 2008/09 to 21,050 in 2009/10. This was a significant reduction, also, on the 2007/08 figure of 31,982 and is a reflection of the continuing trend in the number of properties experiencing fewer interruptions to their water supply.

Sewage Overflows on Private Property Standard

The number of properties affected by dry weather sewer overflows, rose slightly to 17,263 in 2009/10 from 16,028 in 2008/09. The number of properties affected in 2007/08 was 18,148 which indicate some consistency in results well below the standard. The standard requires that no more than 25,000 properties are affected by dry weather sewer overflows.

This improvement and stabilisation in numbers can be attributed to a combination of more favourable climatic conditions in recent years and pro-active actions by Sydney Water in implementing its Sewer Choke Management Strategy. It is expected that this will lead to a further reduction in the number of affected properties in future years.

Asset Management Obligation

This section of the audit reviewed Sydney Water's asset management planning and associated processes. Sydney Water's performance in these areas was assessed as **Full Compliance**.

In response to a recommendation in last year's audit report, Sydney Water submitted a report providing an up-date on the methodology, validation, sensitivity and risk analysis undertaken for the future design of water infrastructure. Our consultant considered that the design manual was of a high quality and that the risk and sensitivity analysis provided was thorough and comprehensive from a methodological point of view. However, the auditor was of the view that the analysis of customer demand behaviour was too restrictive since it was based on only a small portion of Sydney Water's customer base. This, in turn, meant that it was not possible to extrapolate any viable conclusions from the report which could be applied to the wider customer and asset base. The report was assessed as **High Compliance**.

We have prepared a recommendation to address this matter.

Response Time for Water Main Breaks

Sydney Water achieved **Full Compliance** for response time requirements. The actual number of breaks and leaks that occurred in the Sydney Water system decreased from 14,050 in 2008/09 to 12,790 in 2009/10. We are satisfied that Sydney Water is efficiently and effectively managing leakage from the system and that all explanations for those events reported as being non-compliant were reasonable.

3.3 IPART's Recommendation

We recommend that Sydney Water present a report before 31 March 2011 which outlines information and assumptions that demonstrate the validation of water infrastructure design methodology and assumptions for a range of water supply zones. The information should be sufficient to enable a determination of the suitability of Sydney Water's approach.

We intend to consider this matter at a workshop with Sydney Water and review progress as part of the 2010/11 licence audit and any future audits, as necessary.

4 | Water Conservation and Demand Management

Part 9 of the licence deals with water conservation and demand management. It includes requirements relating to a water conservation target, demand management strategy, reducing discharges, water conservation rating and labelling.

Under the risk-based auditing framework, IPART considers this part of the licence to be one that poses a moderate to high risk in terms of the likelihood and consequence of non-compliance. However, given the importance of ensuring a reduction in the growth of total demand for potable water, the demand management clause of Part 7 has been audited again in 2009/10.

4.1 Overview

Sydney Water achieved full compliance with the audited demand management requirements in 2009/10, by demonstrating that it has a well developed and implemented demand management strategy in place, which includes a continuous improvement planning cycle.

Sydney's water use increased by less than 3% the last year, despite the unusually hot and dry summer of 2009/10 and the replacement of drought restrictions with Water Wise Rules in June 2009. This is evidence of Sydney Water's efforts to address the water conservation and demand management requirements of the licence.

4.2 Audit Findings

Sydney Water achieved **Full compliance** with the auditable demand management requirements in the licence.

Sydney Water achieved **Full Compliance** for considering demand management in the planning of future service provision, and for providing the Water Conservation and Recycling Implementation Report 2009/10 to us in accordance with the licence requirements. **Full Compliance** was also awarded for the required content of the Water Conservation and Recycling Implementation Report.

4.3 IPART'S Recommendations

We do not have any recommendations for this part of the licence.

5 Liability Issues

Part 11 of the licence requires Sydney Water to comply with specific objectives regarding liability issues.

We have assessed Part 11 of the licence as mainly low risk for the purposes of risk-based auditing and, as such, not warranting audit every year. However, under our risk-based audit program, we spread the audit of low risk clauses across the entire term of the licence. Accordingly, in 2008/09 we determined that Clause 11, which enables Sydney Water to contract out the provision of services for which it is responsible for under the licence, should be audited in 2009/10. The basis of the review was the contract for the Prospect Water Filtration Plant.

5.1 Overview

The processes employed by Sydney Water to manage the operational performance of the operators of the Prospect Water Filtration Plant are considered to be sound.

5.2 Audit Findings

Sydney Water achieved **Full compliance** for requirements related to contracting of its services. However, to maintain full compliance, we suggest that Sydney Water should address the opportunities for improvement identified by the auditor in the contracts entered into by Sydney Water with the operators of its Water Filtration Plants.

5.3 IPART's Recommendations

We do not have any recommendations for this part of the licence. However, the auditor has identified a number of opportunities for improvement relating to the contracts for these operations. We will continue to monitor Sydney Water's performance in these areas.

6 Response to previous audit recommendations and compliance history

This section of our report presents the outcomes of our follow up on recommendations in the 2008/09 audit report and summarises Sydney Water's historical compliance with licence requirements.

6.1 Follow-up on the 2009 audit recommendations

The 2008/2009 audit report identified some licence areas where Sydney Water's performance could be improved. We made recommendations to address these issues.

Sydney Water has cooperated in this work and has considered and responded to these recommendations. During 2009/10, we reviewed Sydney Water's responses and monitored progress in addressing these matters. The following section is a report on the status of these investigations.

In the case of improvement suggestions where compliance was not the central issue, Sydney Water considered these and responded to us. We will continue to work towards settling all outstanding or partly resolved matters.

We have reviewed Sydney Water's progress in addressing these recommendations. Table 6.1 details the progress that we have made in resolving these with Sydney Water.

Table 6.1 Follow up on 2008/09 audit recommendations

Infrastructure Performance	
Sydney Water is to provide IPART with a report by 1 September 2010, which provides an up-date on the methodology, validation, sensitivity and risk analyses undertaken for design of water infrastructure and how this may impact on future licence compliance and expenditure.	Partly resolved - Sydney Water satisfactorily complied with the reporting requirement in March 2010. The report submitted by Sydney Water was evaluated during the 2009/10 audit process and while a thorough report was provided, it included a limited sample size for verification. We have made a recommendation to address this matter which we will follow up.

Customer and Consumer Rights	
R5.1 Consider extending the contract duration for water meter reading to 3 years to improve meter reading performance.	Resolved - The current water reading contract which commenced in October 2007 has been extended to September 2011. Sydney Water has advised that it is actively pursuing contracts with a minimum of three years duration in the future.
R5.2 Maintain appropriate odour management capability by seeking alternative suppliers of odour treatment chemicals and put in place tested contingency/business continuity plans for chemical supply.	Resolved - Sydney Water has advised that where alternative suppliers exist for such chemicals, it has entered into contracts with such suppliers. Where there are only single suppliers of chemicals, Sydney Water is negotiating with such suppliers to reduce supply risks. Residual risks will be managed through contingency plans.
Environment - Indicators and Management	
R7.1 Amend the content of letters sent to Stakeholders (under Clause 7.2.7) to more clearly invite consultation on the review of the Environmental Plan.	Resolved - Amended letters were sent to Sydney Water's Stakeholders in November 2009.
R7.2 Revise internal procedures to compile data on water use at its Sewage Treatment Plants to ensure that the full annual total is compiled for reports.	Resolved - Sydney Water has revised such procedures.

6.2 Compliance history

Table 6.2 displays Sydney Water's performance in audits since the commencement of the current licence. In this table, historical clauses and asset management audit requirements are not included. Asset management is subject to a separate audit.

Table 6.2 Historical performance of Sydney Water

(Full = Full Compliance; High = High Compliance; Mod = Moderate Compliance; Low = Low Compliance; NC = Non Compliance; Insuff = Insufficient Information; - = No requirement/ not audited)

Clause	Summary of requirement	2005/06	2006/07	2007/08	2008/09	2009/10
3	Water Quality					
3.1	Drinking Water Quality - Standards	Full	Full	Full	Full	Full
3.2	Drinking Water Quality - Monitoring	Full	-	-	Full	Full
3.3	Drinking Water Quality - Reporting	Full	Full	Full	Full	Full
3.4	Drinking Water - Planning	Full	Full	Full	Full	Full
3.5	Drinking Water – Incident Management	Full	-	-	Full	
3.6	Other Grades of Water	Full	Full	Full	Full	Full
4	Infrastructure Performance					
4.1	Water Pressure Standard	-	-	-	-	-
4.2	Water Continuity Performance	-	-	-	-	-
4.3	Sewage Overflows on Private Property Standard	-	-	-	-	-
4.4	Compliance with Performance Standards	Full	Full	Full	Full	Full
4.5	Reporting on system performance standards	Full	-	-	-	-
4.6	Review of system performance standards	-	-	-	-	-
4.7	Service quality and system performance indicators	Full	-	-	Full	-
4.8	Asset Management Obligation	-	-	-	Full	Full
4.9	Reporting on Asset Management System	-	-	-	Full	-
4.10	Auditing the Asset Management System	-	-	-	-	-
4.11	Water Leakage	Full	Full	-	Full	-
4.12	Reports related to water leakage	Full	Full	-	Full	-
4.13	Response time for water mains breaks	Mod-Full	Full	Full	Full	-
4.14	Priority Sewerage	Full	-	-	Full	-
5	Customer and Consumer Rights					
5.1	Customer Contract	High-Full	-	-	-	-
5.2	Consumers	Full	-	-	-	-
5.3	Code of Practice and Procedure on Debt and Disconnections	Full	-	-	-	-
5.4	Customer Councils	High-Full	-	-	-	-

Clause	Summary of requirement	2005/06	2006/07	2007/08	2008/09	2009/10
5.5	Customer Service Indicators	High-Full	-	-	Full	-
6	Complaints and Dispute Handling					
6.1	Internal Dispute and Resolution Process	High-Full	-	-	Full	-
6.2	External Dispute Resolution Scheme	Full	-	-	-	-
6.3	Complaints to other bodies	High-Full	-	-	-	-
7	Environment – Indicators and Management					
7.1	Environmental Indicators	High-Full	-	-	Full	-
7.2	Environmental Management	High-Full	-	-	Full	-
7.3	Potable Water Use	Full	-	-	Full	-
7.4	Metering of Individual Units	Full	Full	-	-	-
9	Water Conservation and Demand Management					
9.1	Water Conservation Target					-
9.2	Demand Management Strategy	Full	Full	Full	Full	Full
9.3	Reducing Discharges	Full	-	-	Full	-
9.4	Water Conservation Rating and Labelling	Full	-	-	-	-
9.5	Review of Part 9 of Licence	-	-	-		-
11	Liability Issues					
11.1	Contracting Out	-	-	-	-	Full
11.2	Damage and Compensation to persons	-	-	-	Full	-
11.3	Competitive neutrality	-	-	-	-	-
12	Operational Audits of this Licence					
12.1	What the Audit Report is on	Mod	-	-	-	-
	Ministerial requirements					
05/06	Flowmeter installation	Full				
05/06	Creation of Pressure Zones	High				
09/10	Design of Water Infrastructure					High

6 Response to previous audit recommendations and compliance history



Appendices

A Final Audit Report – t-CAM Consulting



t-cAM Consulting

in association with



Final Report

Sydney Water Corporation Operational Audit Report 2009/10

prepared for the

Independent Pricing & Regulatory Tribunal

November 2010

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Glossary

Abbreviations

Acronym	Description
ADWG (1996)	Australian Drinking Water Guidelines (1996), National Health and Medical Research Council and Agriculture and Resource Management Council
ADWG (2004)	Australian Drinking Water Guidelines (2004), National Health and Medical Research Council and Agriculture and Resource Management Council
ACCESS	Automated Corporate Customer Enquiry Service System
Act	Sydney Water Act, 1994.
ANZECC	Australia and New Zealand Environment and Conservation Council
AS	Australian Standard
AWQC	Australian Water Quality Centre
ARMCANZ	Agriculture and Resource Management Council of Australia and NZ
CEO	Chief Executive Officer
CCTV	Closed Circuit Television
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DA	Development Application
DAL	Department of Analytical Laboratories (Lidcombe)
DBT	Di Butyl Tin
DEC	Department of Environment and Conservation – now DECCW
DECC	Department of Environment and Climate Change– now DECCW
DECCW	Department of Environment, Climate Change and Water
DEUS	Department of Energy, Utilities and Sustainability
DLWC	Former Department of Land and Water Conservation (NSW) – now NSW Office of Water
DIPNR	Former Department of Infrastructure, Planning and Natural Resources (NSW)
DWE	Department of Water and Energy – now NSW Office of Water

Acronym	Description
DWOS	Dry Weather Overflow Strategy
<i>E.Coli</i>	Escherichia coli
EDC	Every Drop Counts
EMP	Environmental Management Plan
EPA	Environment Protection Authority (NSW) – Now part of the DECC
ESD	Ecologically Sustainable Development
EUM	End Use Model
EWON	Energy and Water Ombudsman NSW
GEMP	Government Energy Management Plan
GIS	Geographical Information Systems
GIS	Geographical Information Systems
GL	Gigalitre
GWh	Gigawatt hour(s)
HACCP	Hazard Analysis and Critical Control Points
IICATS	Integrated Instrumentation, Control, Automation and Telemetry System
IPART	Independent Pricing and Regulatory Tribunal (NSW)
ISF	Institute for Sustainable Futures
ISO	International Standards Organisation
IT	Information Technology
Lcd	Litres per capita per day
kL	Kilolitre
km	Kilometre
KPI	Key Performance Indicator
ML	Megalitre (1 million litres)
MOU	Memorandum of Understanding
MNF	Minimum Night Flows
M&R	Monitoring and Reporting
MSDS	Material Safety Data Sheet

t-cAM Consulting

Acronym	Description
NATA	National Analytical Testing Authority
NPR	National Performance Report (published by the National Water Commission/Water Services Association of Australia)
NSW Health	NSW Department of Health
NTU	Nephelometric turbidity unit
pa	Per annum
PAC	Powdered Activated Carbon
pH	A measure of the acidity of a solution in terms of activity of hydrogen
QA	Quality Assurance
OLCR	Operating Licence Compliance Report
RFQ	Request for Quote
RIAMP	Reliability Improvement and Modernisation Program
SCA	Sydney Catchment Authority
SCADA	Supervisory Control and Data Acquisition
SLG	Strategic Liaison Group
SOP	Standard Operating Procedure
SPS	System Performance Standard
STP	Sewage Treatment Plant
SWC	Sydney Water Corporation
SWEMS2004	Sydney Water Environmental Management System 2004
Sydney Water	Sydney Water Corporation
TBA	To Be Advised
TBT	Tri Butyl Tin
WAMC	Water Administration Ministerial Corporation
WAMS	Water Asset Management System
WELS	Water Efficiency Labelling Scheme
WCRI	Water Conservation and Recycling Implementation Report
WFP	Water Filtration Plant

Acronym	Description
WSAA	Water Services Association <i>of Australia</i>
WTP	Water Treatment Plant

General Terms and Definitions

Term	Meaning
the Act	Sydney Water Act, 1994.
Area of Operations	As specified in section 10(1) of the Act and described in Part 10 of the Operating Licence.
Audit period	1 July 2009 to 30 June 2010.
Auditor	t-cAM Consulting Pty Ltd, in association with iConneXX Pty Ltd
Bulk Water	Water supplied by the SCA to Sydney Water (under the Bulk Water Supply Agreement) and to customers other than Sydney Water.
Bulk Water Supply Agreement	The Bulk Water Supply Agreement between the SCA and Sydney Water signed on 13 April 2006.
Commencement Date of Operating Licence	1 July 2005
End of Term Review	A review of the Operating Licence to be commenced on or about 1 January 2009.
Function	Means a power, authority or duty.
Minister	The Minister responsible for administering the provisions of the <i>Sydney Water Act, 1994</i> .
Operating Licence	The Licence issued by IPART to Sydney Water for provision of services between 1 July 2005 and 30 June 2010.
Water Management Licence	A Water Management Licence granted under the <i>Water Act, 1912</i> and issued by the DNR on 26 August 2005.

Compliance Assessment Grades

Term	Meaning
Grading of compliance	The following ratings are used to grade achievement of compliance with a Licence condition.
Full Compliance	All requirements of the condition have been met.
High Compliance	Most requirements of the condition have been met with some minor technical failures or breaches.
Moderate compliance	The major requirements of the condition have been met.
Low compliance	Key requirements of the condition have not been met but minor achievements regarding compliance have been demonstrated.
Non compliance	The requirements of the condition have not been met.
Insufficient information	Relevant, suitable or adequate information to make an objective determination regarding compliance was not available to the auditor.
No requirement	The requirement to comply with this condition does not occur within the audit period or there is no requirement for the utility to meet.
Statement of Compliance (SoC)	Self-audit by Sydney Water, where a Statement of Compliance signed by the Chief Executive and the Chairman of the Board of Sydney Water is submitted to IPART as evidence, clause is not subject to independent audit this year.

Executive Summary

Introduction

In 2009/10, Sydney Water has been subject to detailed audit of compliance against nominated Clauses in the following Parts of its Operating Licence (see Appendix B Audit Scope):

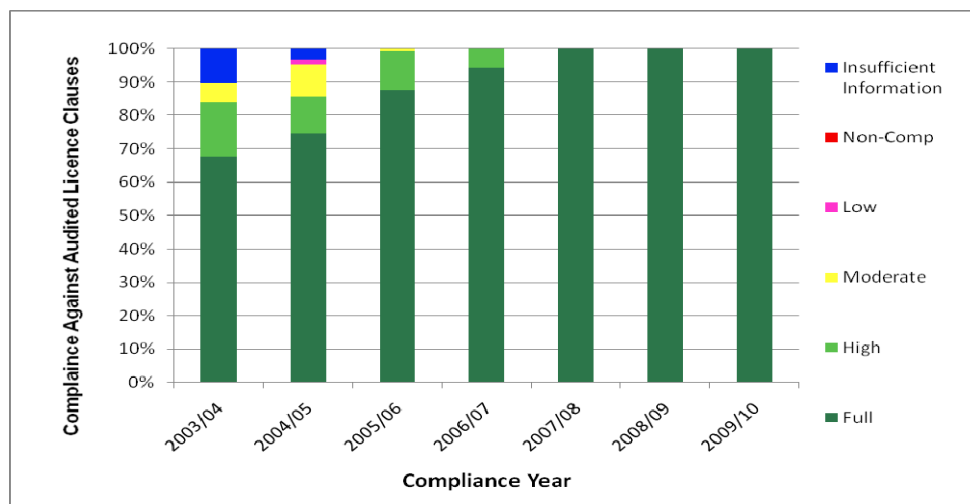
- Water Quality (Part 3)
- Infrastructure Performance (Part 4)
- Water Conservation and Demand Management (Part 9)
- Liability Issues (Part 11)

The choice of the specific Clauses subjected to audit was based on IPART's risk based selection methodology.

Overarching Performance

Sydney Water Corporation has managed its resources in 2009/10 to achieve **Full Compliance** with the Operating Licence. As shown in Figure ES-1, Sydney Water's overarching performance in 2009/10 is the third year in a row where it has achieved full compliance with its Licence. The progressive improvement over time leading up to this period is worthy of note¹

Figure ES-1 Sydney Water's Overarching Compliance History



Sydney Water achieved **High Compliance** with the 2009/10 Ministerial Requirement for Infrastructure Performance under 4.8(a) - Asset Management Obligation.

Sydney Water's notable improvement in compliance with its Licence Obligations is linked not only to the efficiency and effectiveness of its staff and management, but to its disciplined quality management approach to meeting its obligations.

¹ see Appendix A Historical Performance Comparison, for the methodology and assumptions associated with generation of this Figure

Key Findings and Recommendations by Licence Part

The Key Findings and the Key Recommendations against each Licence Part are as follows:

Water Quality (Part 3)

Sydney Water was assigned **Full Compliance** with respect to the requirements for the supply of treated drinking water to its customers. The water quality supplied is generally of an excellent standard and complies with the health related requirements of the Australian Drinking Water Guidelines (ADWG) and the aesthetic related requirements of NSW Health and the Minister. Sydney Water also received **Full Compliance** for other grades of water (recycled water).

Water Quality Key Recommendations

There are no separate key recommendations relating to this Licence Part.

Infrastructure Performance (Part 4)

Sydney Water achieved **Full Compliance** for all infrastructure performance requirements, such as water pressure, water continuity, sewerage overflows, system performance and water leakage. **Full Compliance** was also assigned in the requirements for response time for water leakage (subject to interpretation of realistic performance potential in 4.13.1 (c)).

Infrastructure Performance Key Recommendations

There are no key recommendations relating to this Licence Part.

Ministerial Requirement – Infrastructure Performance

High Compliance was achieved for the Ministerial Requirement involving demand analysis for system design and planning purposes under 4.8(a) - Asset Management Obligation.

Ministerial Requirement – Infrastructure Performance Key Recommendations

- R4.1 Sydney Water should convene a workshop with IPART by 31 March 2011, to present information and assumptions demonstrating validation of water infrastructure design methodology and assumptions for a range of water supply zones, sufficient to enable IPART to determine the suitability of Sydney Water's approach.

Water Conservation and Demand Management (Part 9)

Sydney Water demonstrated a high level of commitment to water conservation and demand management, and achieved **Full Compliance** for all clauses.

Water Conservation and Demand Management Key Recommendations

There are no key recommendations relating to this Licence Part.

Liability Issues (Part 11)

Sydney Water exhibited **Full Compliance** with Clause 11.1.1.

Liability Issues Key Recommendations

- R11.1 **Clause 11.1.1:** In Schedule 10 it is noted that faecal coliforms are listed as a parameter however, while a value of '0' is given for the finished water quality, there is no indication of what '0' pertains to (is it CFU, MPN etc) or the volume. This issue needs to be clarified either within the revised contract or within the amending deeds.
- R11.2 **Clause 11.1.1:** While it is understood that the current mode of amending the contract is through amending deeds, a consolidation of these amendments in to a new contract should be initiated to coincide with the completion of current capital works at the Prospect Treatment Plant, currently estimated to be completed in 2012.

Recommendations for IPART

Evaluation criteria for classifying recommendations

IPART has stipulated that key recommendations are only appropriate to address matters of other than full compliance identified in the audit and that any suggested performance improvement should be treated as a secondary recommendation. Since an audit is inherently backward looking, under this stipulation the decision making process on whether a key recommendation should be made is also backward looking. The auditor has encountered situations in this audit where we feel that a recommendation is warranted to address the risk of future non-compliance, even though the audited utility is currently achieving full compliance. We feel this is more forward-looking and pro-active and provides good due diligence for both IPART and the audited utility.

It is therefore recommended that IPART:

- Redefine the criteria for key recommendations to include key recommendations that address the risk of future compliance issues.

Structure of this Report

Chapter 1 provides some background and information on Sydney Water, Chapter 2 describes the scope of this audit. Chapter 3 provides a discussion of audit methodology. Chapter 4 contains details of the reported activities undertaken by Sydney Water to address both Key and Secondary Recommendations from last year's audit. Chapter's 5 to 8 contain the auditor's reporting on compliance for each of the Licence Parts assessed. Historical performance comparisons for Sydney Water and the detailed audit scope are presented in the Appendices.

Licence Part Compliance Reporting

The compliance reports for each licence part are structured as follows:

Statement of requirement Overarching objective of Licence Part.

Licence Part compliance Summary of compliance against the Licence Part.

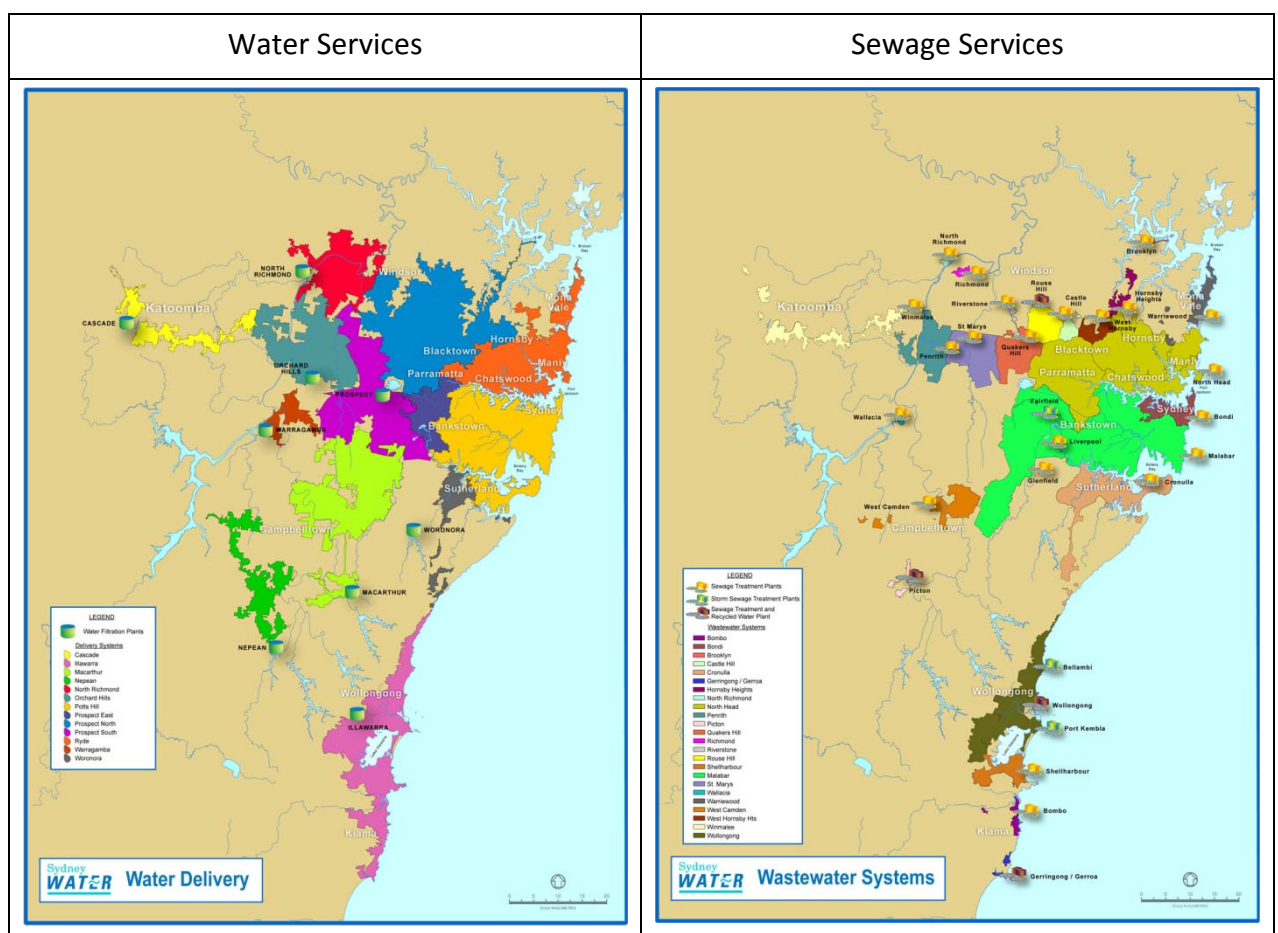
Factors affecting compliance	Any factor that may have impacted compliance but was not within the control or influence of Sydney Water. The nature of these issues may be any of political, regulatory, social, financial/commercial, environmental or a combination of the above. The factor may be ongoing (i.e. it affects performance over multiple years), or be a sudden event resulting in a discontinuity between historical or normal performance and the performance reported in this audit period.
Discussion	Where appropriate, a detailed discussion of key sources of evidence, conclusions drawn or other information that provides insight into the reasoning for the level of compliance assigned by the auditor or where this cannot be appropriately documented in a single specific Licence Clause.
Key Recommendations	Key Recommendations that address improvements that can assist Hunter Water in achieving full compliance with the conditions specified in the Licence Part or where the auditor is of the view that the risk of future compliance is threatened. Where key recommendations are taken up by IPART and endorsed by the Minister, IPART includes performance against these recommendations in future audit scopes.
Secondary Recommendations	Secondary Recommendations addressing alternative or improved methodologies, processes or practices that could lead to Sydney Water achieving gains in efficiency or effectiveness in achieving or maintaining its compliance with the conditions specified in this Licence Part. Sydney Water is expected to give due consideration to those recommendations and facilitate improved performance and compliance for subsequent audit periods.
<i>Table of Detailed Audit Findings</i>	
Clause	The number of the clause in the Licence Part being audited.
Requirement	The wording of the clause and (where relevant) any specific aspect that was the subject of audit.
Risk	An indication of the possible consequence (in grade and nature) if the requirements of the clause were not met.
Target for Full Compliance	An indication, or target, of the performance or information required for Full Compliance.
Compliance Rating	The auditor's assessment of the level of compliance
Findings	Supporting commentary with respect to the reported level of compliance.

1 Introduction

Sydney Water Corporation

Sydney Water is a State Owned Corporation, which is wholly owned by the NSW Government. Its roles and responsibilities include providing drinking water, recycled water, wastewater services and some stormwater services to more than four million people in Sydney, Illawarra and the Blue Mountains (as shown in Figure 1-1). These roles are derived from the *Sydney Water Act, 1994* (the Act) and the Operating Licence issued to Sydney Water pursuant to Section 5 of the Act.

Figure 1-1 Sydney Water's Areas of Operation



Source: Sydney Water Corporation

Regulatory Structure

Sydney Water's water supply and wastewater service operations are variously regulated by State Government agencies as outlined below:

- The NSW Government, which grants Sydney Water's Operating Licence under the *Sydney Water Act 1994*

- The Independent Pricing and Regulatory Tribunal (IPART), which recommends the conditions of Sydney Water's Operating Licence to the NSW Government, conducts periodic audits of performance against the Operating Licence and establishes Sydney Water's prices for providing services
- Regulation of Sydney Water's water management and wastewater systems and discharges have undergone administrative changes that came in to effect in the first few weeks of the audit period. On 27 July 2009 the NSW government issued Administrative Orders abolishing the Department of Water and Energy (DWE) and establishing two new agencies to manage the functions of the former Department.

The water responsibilities of the former Department are now managed by the NSW Office of Water, which is a separate office within the new Department of Environment, Climate Change and Water (DECCW), the successor body to the Department of Environment and Climate Change (DECC).

Between 1 July and 27 July 2009, these elements of Sydney Water's regulation fell under the former administrative arrangements noted below:

- the DWE administered Sydney Water's Water Management Licence granted under the *Water Act 1912*.
- the Department of Environment and Climate Change (DECC), licensed Sydney Water's wastewater systems and discharges under the *Protection of the Environment Operations Act 1997*.
- Protection of the Environment Operations (General) Regulation 2009 came into effect on 30 June 2009.
- NSW Health, who regulate Water Quality in the State. Sydney Water has entered into a Memorandum of Understanding with NSW Health to facilitate effective interaction.

Operating Licence

Sydney Water's first Operating Licence was issued in 1992 for a period of five years. The current licence was issued in 2005 and applies until 30 June 2010. The Operating Licence specifies the minimum standards of service or performance that must be met by Sydney Water in relation to its operations. This includes:

- Water quality
- Infrastructure performance in delivery of service to customers
- Customer and consumer rights
- Complaint and dispute handling
- Environmental management
- Pricing
- Managing supply and demand for water
- Area and extent of operations
- Relationships with other agencies and regulatory bodies.

A copy of the licence is available from Sydney Water's website.

<http://www.sydneywater.com.au/Publications/LegislationActs/OperatingLicence.pdf>

Part 12 of the Licence provides that IPART (or its appointee) undertake an Operational audit of Sydney Water's performance against the requirements of the Licence each year, and report its findings to the Minister.

The performance of Sydney Water for 2009/10 was audited against the specific requirements of the Licence identified by IPART in its audit scope, in accordance with Part 12.

2 Audit Scope

IPART operates a risk based approach to licence auditing. This approach tailors the verification processes applied to assessing Sydney Water's compliance with the different Parts, Sections or Clauses in the Licence ('Licence Conditions' to the level of risk (likelihood and consequence) of a potential breach of the specific Licence Condition. This audit report encompasses those Licence Conditions requiring independent auditing as identified under IPARTS approach.

For efficiency purposes, IPART also included auditing of Sydney Water's National Water Initiative(NWI) reporting into the Request for Quote (RFQ) audit scope, as the indicators reported in that reporting framework overlap with (and are being progressively integrated with) Operating Licence compliance and performance reporting. The outcomes of the NWI audit are the subject of a separate report.

Operational Licence Audit Scope

IPART's RFQ for the 2010 Operational Audits of Sydney Water, Hunter Water, SCA and State Water, Attachment 1 Audit Scope for Water Utilities, itemises the risk based auditing scope by Licence Part, Section, and Clause, the relevant scope for the Sydney Water audit is shown at Appendix B of this report and summarised below. In conducting the audit of the utility's compliance with the relevant Part, Section or Clause of its Licence, the auditor was required to:

- a) conduct a detailed examination of those activities of the utility that are regulated by the Operating Licence, subject to IPART's risk-based audit scope, where applicable.
- b) assess the level of compliance achieved by the utility against each of the requirements of the Operating Licence, set out in IPART's risk-based audit scope, providing detailed supporting evidence for this assessment and reporting compliance according to IPART's established compliance scoring methodology.
- c) assess and report on progress by the utility in addressing any comments made by the relevant portfolio Minister pertaining to previous audits, providing supporting evidence for these assessments.
- d) for each section of the Operating Licence that is to be audited, identify factors (if any) that have affected the utility's performance for the audit period (1 July 2009 to 30 June 2010). This includes verifying the calculation of performance indicators associated with relevant requirements of the operating licences and undertaking an assessment of any underlying trends in performance arising from these indicators. Make recommendations to IPART on how the utility can improve its performance in the future, based on the audit assessment.
- e) provide a formal briefing to the Tribunal comprising an overview of the utility's overall performance against the requirements of the Operating Licence and the key findings of the audit.
- f) prepare a full report on the findings of the assignment, including a summary of the utility's overall performance against the audited obligations of the Operating Licence and detail of its compliance with each audited obligation of the Operating Licence.

The auditor will be responsible for assessing and interpreting the audit requirements in the relevant Operating Licence and the Act and ensuring that the audit process satisfies all statutory requirements subject to the detailed audit scope.

IPART advertised the audit processes and sought submissions from the public. The auditor was required to take account of any public submissions received and the views of relevant regulators (Department of Environment, Climate Change and Water, NSW Health and the NSW Office of Water) and other stakeholders including environment, social welfare and public interest groups.

Key issues to be addressed

Additionally, IPART identified some key issues to be addressed in the 2009/10 Sydney Water audit:

<i>Utility</i>	<i>Issue</i>
<i>Sydney Water Corporation</i>	<ul style="list-style-type: none"> <i>The appropriateness of changes to future demand forecasting for infrastructure planning and design purposes.</i> <i>The reporting, evaluation and, where appropriate, retiring of strategies for demand management.</i> <i>The effectiveness of Contract Management processes and practices for Water Treatment for managing operations.</i>

Summary of Auditable Clauses

<i>Licence Part</i>	<i>Description</i>	<i>Section/Clauses</i>
3	Water Quality	3.1.1 & 3.1.3 3.2.1 3.3.1 – 3.3.3 3.4.4 3.5.1 3.6.1
4	Infrastructure performance	4.4 4.8(a) 4.13.1 4.13.4
9	Managing Supply and Demand	9.2.1-9.2.3
11	Liability Issues	11.1.1

Ministerial Requirements

‘Report to IPART on the design of water infrastructure by 1 September 2010. The report should provide an update on methodology, validation, sensitivity and risk analyses undertaken for water infrastructure design as well as an analysis of the compliance and expenditure impacts of this work.’

3 Audit Methodology

The audit methodology applied is summarised below.

Audit Preparation

To meet the specific requirements of IPART, the operational audit was undertaken adopting a methodology consistent with ISO 14011 'Guidelines for Environmental Auditing'. This guideline provides a systematic approach to defining the requirements of the audit, planning, interpreting Licence Conditions, collecting audit evidence, objectively assessing the evidence, and reporting in a clear and accurate manner. It also ensures that the audit has been conducted in accordance with an established and recognised audit protocol.

Draft Audit Plan

A draft audit plan was prepared to ensure that the audit requirements were met and this plan was confirmed with IPART and Sydney Water.

Inception Meetings

Following the preparation and confirmation of the audit plan, an inception meeting was held with IPART and Sydney Water. This meeting, which included Sydney Water's Project Manager, Measurement and Reporting, and Corporate Compliance Manager, IPART representatives and the auditors, was held on 9th September, 2010.

The primary objective of this latter meeting was to develop working relationships, mutual understandings and expectations relating to the requirements and process of the audit. The meetings also provided an opportunity for Sydney Water to present an overview of compliance and progress since the previous audit period.

Audit Questionnaires

Specific audit questionnaires were developed for all clauses to be audited within the scope of the risk-based approach adopted by IPART for 2009/10. These questionnaires sought to determine compliance with the Licence requirements, identify any factors that may have impacted on performance (and the likely magnitude of that impact) and the systems in place to deliver or pursue '*best appropriate practice*' performance.

Audit questionnaires were provided prior to the audit interviews, to allow Sydney Water the opportunity to prepare for the interview.

Provision of Preliminary Information and Draft Responses

It was agreed by IPART, Sydney Water and the auditors, that the audit questionnaires include indicative lists of evidence that might be required, and that Sydney Water would make every endeavour to provide this evidence in sufficient time to allow the auditors to inform themselves with respect to Sydney Water's performance prior to interview. This allowed for more effective targeting of issues or factors during the interview process. This year Sydney Water again provided information in a timely fashion.

Conduct of the Audit

Audit protocols were agreed and confirmed between the auditors, IPART and Sydney Water at the Sydney Water inception meeting to ensure an open and efficient flow of information and to resolve any identified or potential audit issues.

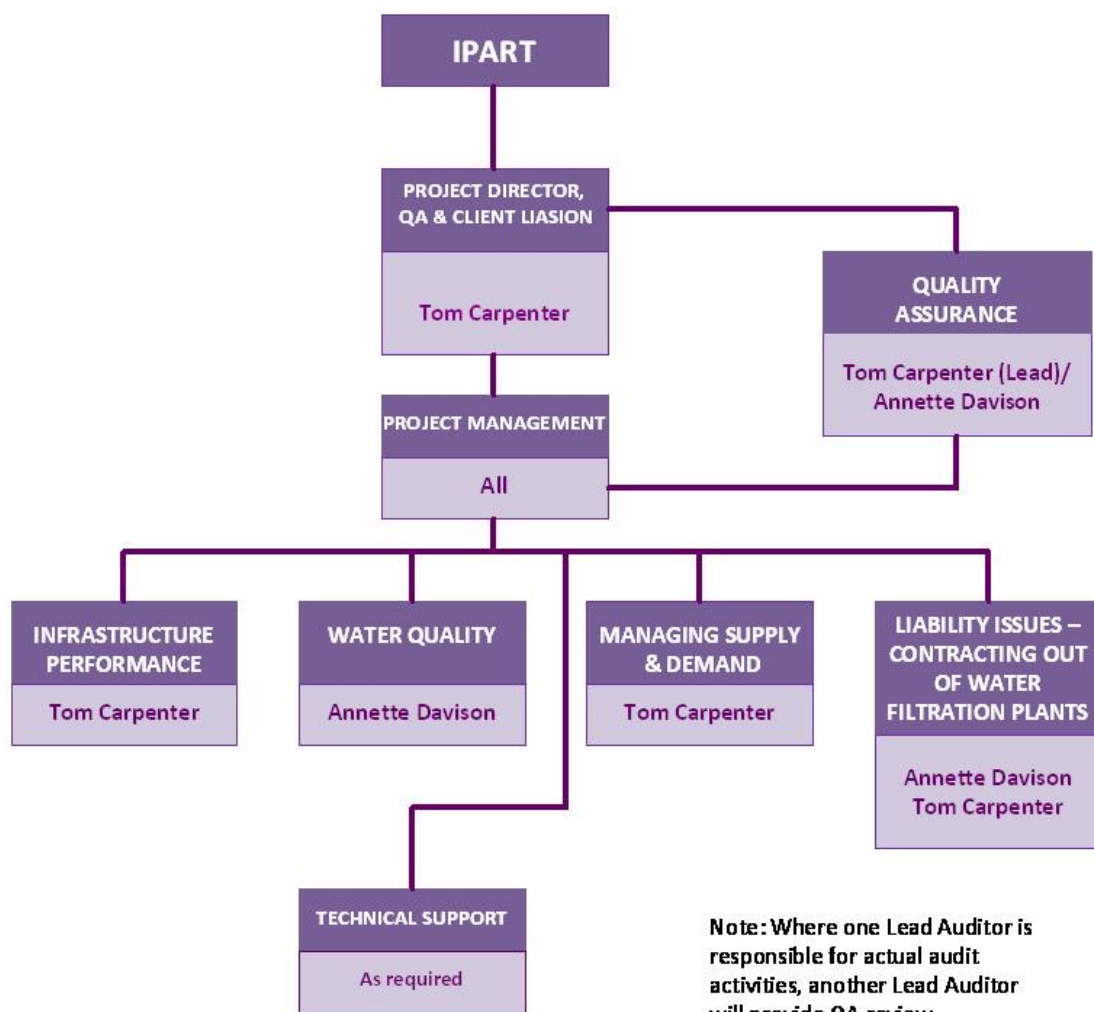
Audit Interviews

Nominated auditors (see Figure 3-1) led interviews over September 2010. The interviews permitted the auditors to explore factors or issues not readily addressed in the written response to the auditor's questionnaires or in the evidence previously provided by Sydney Water. The provision of the written responses and evidence prior to the interviews maximised the benefit of the interview process by allowing the auditors to better target key factors and issues not fully or readily addressed in the provided information.

Audit Team

The audit team consisted of IPART accredited auditors drawn from **t-cAM Consulting**, and **iConneXX Pty Ltd** as shown in Figure 3-1.

Figure 3-1 Structure and Responsibilities of the Audit Team



4 Response to Previous Audit Recommendations

Table 4-1 outlines Sydney Water’s responses, approach and progress for recommendations made in last year’s audit report.

Table 4-1 Sydney Water Response to Previous Audit Recommendations

Audit Recommendation		Evaluation (AGREE/ DISAGREE + STRATEGY/REASON)	Planned Completion Date
(Ref #)	Details		
LICENCE PART 3 - WATER QUALITY – Key recommendations			
	There were no key recommendations		
WATER QUALITY – Suggested Improvements			
	There were no suggested improvements		
LICENCE PART 4 - INFRASTRUCTURE PERFORMANCE – Key Recommendations			
R4.1	Report to IPART by 30 June 2010 its validation, sensitivity and risk analyses undertaken in support of the new design demands and how these changes are impacting on future Licence compliance and expenditure. This should be undertaken annually for a period of 5 years and then at 5 yearly intervals for a further 10 year period.	MANDATORY – subject to Minister’s requirement below: ‘Report to IPART on the design of water infrastructure by 1 September 2010. The report should provide an update on methodology, validation, sensitivity and risk analyses undertaken for water infrastructure design as well as an analysis of the compliance and expenditure impacts of this work.’	1 September 2010
IPART	Report to IPART prior to 30 March 2010 on its assessment of each of the other recommendations and opportunities for improvement, identified by the auditor in its audit report, and what action, if any, should be taken to address them.	AGREE – Assessment conducted and reported to IPART.	Completed March 2010
INFRASTRUCTURE PERFORMANCE – Suggested Improvements			
	There were no suggested improvements		
LICENCE PART 5 – CUSTOMER AND CONSUMER RIGHTS – Key Recommendations			
	There were no key recommendations		
LICENCE PART 5 – CUSTOMER AND CONSUMER RIGHTS – Suggested Improvements			
SR6.1	Consider extending the contract duration for water meter reading to three years to improve meter reading performance.	AGREE - The current contract commenced in Oct 2007 and has been extended to September 2011. Sydney Water will strongly consider having a minimum contract term of three years in the future.	September 2011
SR6.2	Maintain appropriate odour management capability by seeking alternative suppliers of odour treatment chemicals and put in place tested contingency/business continuity plans for chemical supply.	AGREE - A number of alternative suppliers for ferric salts identified and tendering process is progressing for conclusion in April 2010. However there are chemicals (ferrous chloride and calcium nitrate) with only single supplier and negotiations are progressing to reduce supply risks. Residual risks will be managed through contingency plans.	July 2010
LICENCE PART 7 – ENVIRONMENT – INDICATORS AND MANAGEMENT – Key Recommendations			
	There were no key recommendations		

Audit Recommendation		Evaluation (AGREE/ DISAGREE + STRATEGY/REASON)	Planned Completion Date
(Ref #)	Details		
LICENCE PART 7 – ENVIRONMENT – INDICATORS AND MANAGEMENT – Suggested Improvements			
SR7.1	Amend the content of letters sent to stakeholders (under Clause 7.2.7) to more clearly invite consultation on the review of the Environmental Plan.	AGREE – Recommendation implemented November 2009. Amended content of letters sent to stakeholders to clearly invite feedback within timeframe for feedback on the Environment Plan Progress Report 2008–09.	Completed November 2009
SR7.2	Revise internal procedures to compile data on water use at STPs to ensure that the full annual total is compiled for reports.	AGREE - Internal procedures to compile data on water use at STPs have been revised to ensure that the full annual total is compiled for reports. A quality procedure will be in place before the time of the next review.	September 2010
LICENCE PART 9 – Water Conservation & Demand Management – Key Recommendations			
	There were no key recommendations		
LICENCE PART 9 – MANAGING SUPPLY AND DEMAND – Suggested Improvements			
SR9.2	Maintain its research to define when a less beneficial water conservation program should be either dropped off the strategy or only retained on Sydney Water’s website and that progress should be followed up in next year’s audit.	AGREE - Include as part of the 2009-10 WC&RIR	September 2010
SR9.3	Report totals for water savings in a litres per capita per day (lcd) format (in addition to ML/yr) to allow for comparison against the Operating Licence target.	AGREE - Include as part of the 2009-10 WC&RIR	September 2010
SR9.4	Provide a discussion on the key differences in results of the planned and actual water savings in the water conservation reporting schedule.	AGREE - Include as part of the 2009-10 WC&RIR	September 2010

5 Licence Part 3 - Water Quality

Summary of Requirements

Part 3 of the Operating Licence requires Sydney Water to provide its customers and consumers with water of an adequate quality and is, therefore, safe to use and consume.

For the purpose of the risk-based Audit, **t-cAM's** detailed audit included clauses under:

Drinking Water Quality-Standards	Drinking Water Quality Planning
Drinking Water Quality-Monitoring	Drinking Water Incident Management
Drinking Water Quality-Reporting	Other Grades of Water

Water Quality – Compliance

Overall, **t-cAM** assessed Sydney Water to have demonstrated **Full Compliance** with the requirements of this Part of the Licence.

Compliance and supporting commentary for specific Clauses in this Licence Part are shown in Table 5-1.

Factors Affecting Compliance

There were no known external issues that may have substantially impacted on Sydney Water's performance with respect to this Licence Part. The auditors note that Sydney Water is cognisant of the draft 2010 Australian Drinking Water Guidelines and the need to assess the implications on its operations.

Discussion

Overall, Sydney Water continues to provide water of an excellent quality with full compliance to the Operating Licence clauses relevant to this section. As a greater body of water quality evidence will have been gathered by the next operational audit, it is recommended that a focus be placed on the monitoring results associated with the Kurnell source. Assuming the RWQMPs receive endorsement from NSW Health, ensure that the plans relating to Bombo, Castle Hill, Liverpool, Penrith, Picton, Quakers Hill, Richmond, St Mary's, West Camden schemes receive focus in the next operational audit.

Recommendations

Key Recommendations

There are no key recommendations for this Licence Part.

Secondary Recommendations

It is recommended that Sydney Water

- SR3.1 **Clause 3.6.1:** Correct the reference to Tables 10 and 11 in the SOP Recycled Water Quality Specifications for Treatment Operations WRHQ5186_R3 10/08/09 to Tables 11 and 12. Noting that the specifications' document is currently under review to accommodate the implementation of new guidelines.
- SR3.2 In the catchment to tap risk assessment process, Sydney Water must ensure that where it is relying on other parties to effect control, that it has its own controls in place to assure Sydney Water that those controls are being managed properly. For instance, catchment management is not under the control of Sydney Water but if not managed properly by the responsible party, could present a high treatment risk for Sydney Water. In such cases, a high priority needs to be placed on controls such as monitoring (e.g. shared SCADA data), review and instruments such as MoU and other agreements to ensure compliance with stated controls.

Table of Detailed Audit Findings

Table 5-1 Licence Part 3 – Water Quality

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
3.1	Drinking Water Quality – Standards				
3.1.1 (a)	Sydney Water must comply with: The Australian Drinking Water Guidelines 1996 relating to Health guideline values and the Aesthetic guideline values for pH, true colour, turbidity, aluminium, iron and zinc.	This presents a high risk to human health. Failure would imply that health guidelines may not be met and this could give rise to serious and widespread health effects.	Full compliance with targets.	Full Compliance	<p>This section has been audited not only from the perspective of water quality but also in terms of risk assessment and the implementation of the Framework for Management of Drinking Water Quality.</p> <p>SWC works to the 2004 guidelines (<i>Sydney Water - NSW Health Memorandum of Understanding (MoU) February 2006</i>) with a move towards adopting and implementing the Framework for Management of Drinking Water Quality within the ADWG (2004). SWC's 2005 – 2010 Five-Year DWQMP and draft 2010-2015 Five-Year DWQMP follow the 12 elements of the Framework'.</p> <p>SWC has Joint Operational Group and Strategic Liaison Group forums with NSW Health where the current performance and expectations are discussed with Health. There is a focus on catchments and <i>Cryptosporidium</i> and cyanobacteria. The 2007 algal bloom in Burragorang has previously been raised as an issue and this has resulted in the development of the Algal Action Plan.</p> <p>Risk assessment is a fundamental component of the Framework and SWC has undertaken a series of catchment to tap risk assessment workshops for all of its supplies as part of the preparation of the 2010 – 2015 Five-Year DWQMP. The risk assessment process and methodology witnessed (<i>Catchment to tap risk assessment information (risk workshop from October</i></p>

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
					<p>2009, Risk Matrices September/October 2009, risk register for water quality) appeared to be sound and also included key stakeholders including representatives from the BOO contractor (Mark Lautre), SCA (several) and Health (Dr Hopi Yip-Richardson) (<i>Witnessed attendance sheet for Cascade/Prospect workshop</i>). SWC produces a Stakeholder Management Plan (<i>Stakeholder Management Plan for the Department of Health (DOH) 30th June 2009</i> which was current for the period of the audit)</p> <p>NSW Health also reviews and endorses the Annual Monitoring Plan (cross reference with Clause 3.2.1).</p> <p>While water quality provided by SWC is generally of an excellent quality, an incident last year (August 2009) in Glenmore Park resulted in an increase in complaints. SWC has an online data system which reports exceedances directly through to Health. One of the gaps arising from this incident was understanding what constitutes an important cluster of complaints. As a result, a change was made whereby 4 complaints per hour is now set up as a trigger to inform staff of a potential dirty water incident. This happens approximately once a month.</p> <p>No regulatory changes resulted out of the O’Keefe Review - all of the operating licence requirements remain the same. Other water quality issues such as opportunistic pathogens and chemicals such as chlorate and NDMA are considered (<i>3 November 2009 JOG agenda; JOG Minutes - 4 meetings a year. Meeting minutes witnessed in folder; Wed 3 May 2010 agenda viewed - item 7 was for discussion on progress against McClellan Inquiry - Chair for this meeting was Kaye Power (Health) - chair is rotated every quarter</i>).</p>

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
					<p>In setting water quality compliance for future years, SWC will have to have regard to the revised ADWG (currently 2010, awaiting finalisation) and ensure that agreed limits and targets are formalised with NSW Health.</p> <p>A review of the drinking water quality reports clearly shows how exceptions have been addressed and followed up including additional check monitoring (even of non-compliance samples). Overall, SWC has achieved full compliance with this clause.</p>
3.1.1 (b)	The fluoridation plant operating targets set out in the Fluoridation Code.	This presents a moderate risk to human health. Some short term exceedences or shortfalls in dosing would not necessarily have health significance.	Full compliance with targets.	Full Compliance	<p>Two Fluoride exceptions were noted for the Nepean WTP within the Quarterly Monitoring Report (cited in evidence at page 6; <i>Quarterly Monitoring Report on Drinking Water Quality for NSW Health 2009 – 2010 version 1 Second Quarter 2009-10 1 October 2009 to 31 December 2009</i>). Notes at page 11 state that the problem has now been fixed with repairs to the dosing system and that fluoride levels had returned to normal ranges.</p> <p>An audit checklist has been developed for auditing of the Sydney Water and BOO Water filtration plants (draft sighted). The date while outside of the audit scope shows that SWC is following a path of continual improvement relating to management of fluoride addition (<i>Sydney Water and BOO Water Filtration Plants Audit Checklist Compliance to NSW Health Fluoridation Code of Practice</i>).</p>
3.1.2				SoC	
3.1.3	In delivering the Services, Sydney Water must have regard to the concepts of good practice set out in the Australian Drinking Water Guidelines 1996 and must apply these concepts in the manner, form	This presents a high risk to human health. Failure would imply that the water supply	Review of systems to confirm that concepts are applied.	Full Compliance	SWC has adopted the Framework for Management of Drinking Water Quality as noted above (cross reference with Clause 3.1.1 (a)) and is working towards its implementation. The Framework represents an industry best practice standard. SWC now undertakes work and operations centred around each of the 12 elements of the

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
	and timeframes specified by NSW Health	system is not well managed and this could give rise to incidents and potentially serious and widespread health effects.			<p>Framework. For instance, element 9 covers Research and Development. SWC has a number of processes in place, which demonstrate implementation of element 9 including the JOG and SLG at which NSW Health is a key participant. The R&D Group keeps up to date with issues emerging in the water industry with Dr Peter Cox presenting on updates to the JOG and Dr Judi Hansen presenting on updates to the SLG. SWC is also a member of AWWARF/WERF associations which allow for international checks of industry best practice and emerging water quality issues. SWC staff also attends international and domestic conferences.</p> <p>The Framework also covers the need to include contractors in water quality decision-making. Scientific placements are included in the BOO contracts for transfer of knowledge to SWC. Further information on this issue is covered under Clause 11.1.1.</p> <p>While particular elements of good practice have been discussed above in relation to the Framework, it is considered that overall, SWC not only has regard to the concepts of good practice, but also helps to set industry practice.</p> <p>Compliance was also cross referenced against comments within the <i>Folio of Progress for Water Quality</i>.</p>
3.2	Drinking Water Quality – Monitoring				
3.2.1	Sydney Water must prepare, to the satisfaction of NSW Health, a comprehensive annual Drinking water quality monitoring plan for	This presents a moderate risk. It relates to the preparation of a	Evidence that plan has been prepared in accordance with	Full Compliance	Verified that the date of provision of reports to NSW Health in both the 2009-2010 and 2010-2011 Drinking Water Quality Monitoring Plan was before the 31st March 2009 and 2010. Confirmed that the census data changes

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
	the water supply system by 31 March each year, for the duration of the Licence and must:	Plan, and does not relate directly to water quality.	the requirements.		<p>required by NSW Health for the 2009-2010 Plan were added to the Plan (document control table page i) (<i>Annual Drinking Water Quality Monitoring Plan 2009-2010 WOQ5171 Version 2; Correspondence (letter) from Paul Byleveld to Lynn Tamsitt dated 26/03/09 - attachment to this letter stating key recommendations of NSW Health including update of census data requirement; Annual Drinking Water Quality Monitoring Plan 2010-2011 Version 1 WOQ5171</i>). Confirmed that NSW Health accepted the contents of the Plan as meeting the licence requirements of sub-clause (a) to (f). Overall, SWC undertakes more water quality sampling for microbiological (<i>E. coli</i>) parameters than required as best practice under the ADWG (2004). Further, other key characteristics are agreed with NSW Health and also included in the monitoring plan. The monitoring plan is developed from a risk-basis, which is considered good practice in the industry and within the ADWG (2004). One of the key changes for the 2010-2011 monitoring plan is the inclusion of Kurnell (online as of January 2010). The plan notes that the operators of the plant (Veolia Water) are required to monitor the raw and finished water for compliance and report any issues to SWC and then to NSW Health via the normal reporting mechanisms. As part of its own due diligence, SWC has developed an operational monitoring plan to include risks from supplying drinking water from a seawater source.</p> <p>Recommendation Clause 3.2.1: As a greater body of water quality evidence will have been gathered by the next operational audit, it is recommended that a focus be placed on the monitoring results associated with this source.</p>

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
3.2.1 (a)	Include system performance monitoring and regular sampling, laboratory testing and processes to ensure quality control.	As for 3.2.1.	As for 3.2.1.	Full Compliance	See above.
3.2.1 (b)	Have regard to the concepts of good practice set out in the Australian Drinking Water Guidelines 1996 and must apply those concepts in the manner, form and timeframes specified by NSW Health.	As for 3.2.1.	As for 3.2.1.	Full Compliance	See above.
3.2.1 (c)	Include the monitoring of Health guidelines values.	As for 3.2.1.	As for 3.2.1.	Full Compliance	See above.
3.2.1 (d)	include the monitoring of Aesthetic guidelines values	As for 3.2.1.	As for 3.2.1.	Full Compliance	See above.
3.2.1 (e)	assess the quality of water in Sydney Water's water supply system	As for 3.2.1.	As for 3.2.1.	Full Compliance	While not strictly an element of this clause, SWC also works with other stakeholders (from a risk-based perspective) which have inputs into its system (e.g. SCA, Veolia Water) and mechanisms are in place to ensure that water quality is monitored and appropriately addressed. This approach is considered best practice and is in keeping with the requirements of element 1 of the Framework pertaining to stakeholder engagement as well as involvement in risk assessments – element 2.
3.2.1 (f)	Be undertaken for the period from the Commencement Date to 30 June 2006 and after that for each subsequent financial year.	As for 3.2.1.	As for 3.2.1.	Full Compliance	See above.
3.2.2				SoC	

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
3.3	Drinking Water Quality – Reporting				
3.3.1	Sydney Water must produce a quarterly report that includes the water quality monitoring test results undertaken in accordance with clause 3.2. The quarterly report must be placed on its website on the internet and also made available for access by any person, free of any charges imposed by Sydney Water.	As for 3.2.1.	Evidence that the report has been prepared and disseminated as required, including a detailed review of selected datasets verifying that the reported results accord with those reported by the laboratory.	Full Compliance	Quarterly monitoring reports for the audit period were viewed and are in accordance with Clause 3.2. Further, additional evidence was gathered by cross checking the information in one of the monitoring reports (<i>Quarterly Monitoring Report on Drinking Water Quality for NSW Health 2009-10 Fourth Quarter 2009-10 (Draft) 1 April 2010 to 30 June 2010</i> (page 30)) with the monitoring plan (<i>Table 4 and 5 in 2009/10 Monitoring Plan</i>). 17 samples were scheduled for the North Richmond delivery system – this figure tallied with the 51 <i>E. coli</i> samples noted in the Quarterly Monitoring Report for North Richmond i.e. 3 x 17 (which concurs with Table 5 of the monitoring report). The Quarterly Monitoring Reports are located on the website, previous quarter reports archived and are very easy to find.
3.3.2	Sydney Water must provide to NSW Health a copy of the report compiled to comply with clause 3.3.1. If the results do not comply with the Health guideline values or the Aesthetic guideline values for pH, true colour, turbidity, aluminium, iron and zinc, Sydney Water must provide NSW Health with an appraisal of the inconsistency, and indicate action to be taken to resolve any non compliance. <i>[Note: The requirement for quarterly</i>	As for 3.2.1.	Evidence that the report has been provided to NSW Health as required, including a detailed review of selected datasets to confirm that exceedences are reported to NSW Health as required.	Full Compliance	Sydney Water provided a copy of the reports compiled under Clause 3.3.1 to NSW Health as agreed in the Memorandum of Understanding (MOU) between NSW Health and Sydney Water, November 2000 as evidenced in the hard copy receipt register sighted (Controlled Hard Copy Register #SA-M&R0005-1 signed by Dr Kaye Power on behalf of Health) and cross checked within the <i>Department of Health Correspondence Register as at 30 June 2010</i> (details correspondence between SWC and Department of Health on a financial year basis) – hard copy sighted. The reports included an evaluation of the results on an exception basis as required in the MOU. A cross check of an <i>E. coli</i> incident (24/02/10) sighted in the monitoring report was followed up. The event

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
	<i>reporting of monitoring results is also found in the Memorandum of understanding between NSW Health and Sydney Water, November 2000.]</i>				occurred at 24 George Road, Wilberforce (North Richmond System) and was recorded within the Drinking Water Quality Data System (hard copy sighted). A note was made in the incident system that Hopi Richardson from Health had been notified verbally as well as the notifier from SWC. A followup investigation report was sighted and included good details of how the incident had been pursued and recorded including photographs of the site and free chlorine readings as well as up and downstream tests (E. coli <i>Investigation Report WPIMS 100224.doc</i>).
3.3.3	<p>Sydney Water must comply with requests by NSW Health to provide additional information on water quality. The additional information provided under this clause is to conform to the manner and form specified by NSW Health.</p> <p><i>[Note: Under section 10H of the Public Health Act 1991 the Director General of NSW Health may require Sydney Water to produce certain information.]</i></p>	As for 3.2.1.	Evidence that any NSW Health requests have been complied with.	Full Compliance	<p>SWC advised that information had been sought from Health (22/01/10) regarding information on <i>Helicobacter pylori</i>. This bacterium has been implicated as a waterborne pathogen being found in surface and well waters as well as within biofilms. Evidence of the correspondence and the reply timeliness (within 3 days) was sighted within the <i>Department of Health Correspondence Register as at 30 June 2010</i>.</p> <p>The Stakeholder Management Plan (<i>Stakeholder Management Plan for the Department of Health Dated 30 June 2009</i>) has a process for communication with Health and the registered people who are authorised to communicate with Health (page 4) currently being Peter Cox, Greg Cawston, Anil Jaiswal and Emma Cooper.</p> <p>Hard copy correspondence log and folder sighted (<i>Correspondence Register 2009/06162F for all correspondence with Health. Copy of DoH Correspondence provided in hard copy for 1 July 2009 - 30 June 2010</i>).</p>

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
3.4	Drinking Water Quality – Planning				
3.4.1				SoC	
3.4.2				SoC	
3.4.3				SoC	
3.4.4	Sydney Water must prepare, and make available to NSW Health by 1 October each year, an annual report on the implementation of the Five Year Plan. The report must include details of:	This presents a high risk. Failure to implement the Plan could lead to failures in water quality and serious and widespread health effects.	Existence of an annual report on the implementation of the Plan.	Full Compliance	A report compliant with the requirements of this clause and accepted by NSW Health was sighted (<i>Implementation of the five-year drinking water quality management plan 2005-2010 2008-2009 Annual Report 2009 29/09/2009 (WPMIS5150); Letter from Lynn Tamsitt to Paul Byleveld 29/09/2009 for transmission of the report to NSW Health; Controlled Hard Copy Register with Dr Paul Byleveld's signature dated 30/09/09</i>).
3.4.4 (a)	Any proposed amendments to the Five Year Plan needed to protect public health or to ensure the effective operation of the Plan.	As for 3.4.4.	Evidence that the recommendations of previous implementation reports and incidents are included in the Plan.	Full Compliance	There are no changes to the Plan as such although continual improvement actions are captured against the Framework elements. The Plan has been prepared against each Framework element. Improvement actions are captured under each Framework element with each action having a specific nomenclature against the element number e.g. A122002.
3.4.4 (b)	Any additional water quality improvement actions identified in the preceding year through the Drinking water quality monitoring data or by NSW Health and action taken to implement them.	As for 3.4.4.	As 3.4.4 (a)	Full Compliance	As above noting that the body of evidence shows that SWC is identifying and implementing improvement actions on an ongoing basis.

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
3.5	Drinking Water – Incident Management				
3.5.1	Sydney Water must immediately report to NSW Health any information or event in the delivery of the Services or in its systems or operations which may have risks for public health	This presents a high risk. Failure to report to and involve NSW Health could lead to a serious concern and possibly serious and widespread health effects.	Evidence that incidents and events are reported as soon as practicable to NSW Health.	Full Compliance	<p>The auditor's knowledge of this system forms part of the evidence of the good exchange of information which occurs between Health and SWC (follow up contact with NSW Health confirmed this aspect). In addition, comments cited above (Clause 3.3.2) attest to SWC advising Health when incidents have occurred and how they are followed up.</p> <p>Emergency scenarios on water quality are also conducted periodically jointly with SCA and NSW Health. Reporting on this is within the 5 Year Plan report (page 88). Incidents are dealt with in a formalised SOP (<i>Emergency Response Management - Drinking Water Quality Event Management SOP WPIMS5228_V4 14/05/09 current for the audit period</i>).</p> <p>The Online Incident Notification System (cross-reference with clause 3.3.2)) is also used to capture and notify Health of incidents.</p>
3.5.2 - 3.5.4				SoC	
3.6	Other Grades of Water				
3.6.1	Other grades of water supplied by Sydney Water must be supplied according to relevant guidelines specified by NSW Health, DEC, DIPNR and the Department of Primary Industries.	This presents a high risk. Failure to comply with the relevant guidelines could lead to serious health effects.	Reports on the results of sampling and analysis that verify that the guideline requirements	Full Compliance	<p>A SOP (<i>SOP Recycled Water Quality Specifications for Treatment Operations WRHQ5186_R3 10/08/09</i>) contains the tables for current specifications for the various types of recycled water supplied within different schemes. Recycled water is the overarching water product group and then the three sub-groups are residential, industrial and irrigation.</p>

Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
			have been met.		<p>Note mistake on page 3 where note states that Tables 10 and 11 are stated as applying to all irrigation schemes when it should be Tables 10 and 11 and 12. SOP tables state relevant guidance and other documents for product quality and use including DEC licence, Customer Agreement, Customer Recycled Water Management Plan and NWQMS and DEC 2004 Recycled Water Guidelines as specifications.</p> <p>Recycled water is discussed at the JOG with Health (<i>JOG Agenda Item 17 10/02/09 stating that Sydney Water has commenced a program to transition existing schemes to the AGWR 2006 guidelines in 2008 09</i>). Exceptions and event notifications are dealt with through the Online Incident Notification System (noted at clause 3.5.1). Note that even though the JOG item is outside of scope for this audit, it sets the context for the transitioning of SWC to the AGWR (2006).</p> <p>Both of the RWQMPs sighted (<i>Recycled Water Quality Management Plan Wollongong Stage 1 Version 1 30 July 2009; Recycled Water Quality Management Plan Rouse Hill Version 1 29 July 2009</i>) have been developed to the AGWR (2006) Framework and have been endorsed by NSW Health (Wollongong Stage 1 29/10/2009 and Rouse Hill 29/10/09). SWC's other systems (Bombo, Castle Hill, Liverpool, Penrith, Picton, Quakers Hill, Richmond, St Mary's, West Camden) have had RWQMPs developed which are currently before Health for consideration and endorsement - these will need to be audited in detail at the next operational audit.</p> <p>SWC manages changes in recycled water thinking (guidelines R&D etc) as the same manner as drinking water (see above).</p>

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Clause	Requirement	Risk	Target for Full Compliance	Compliance Rating	Findings
					<p><i>Recycled Water (Residential) Rouse Hill Scheme Compliance Monitoring Annual Report to NSW Health 1 July 2009 to 30 June 2010</i> was sighted.</p> <p>Recommendation Clause 3.6.1: Correct the reference to Tables 10 and 11 in the <i>SOP Recycled Water Quality Specifications for Treatment Operations WRHQ5186_R3 10/08/09</i> to Tables 11 and 12.</p> <p>Recommendation Clause 3.6.1: Assuming endorsement from Health, ensure that the plans relating to Bombo, Castle Hill, Liverpool, Penrith, Picton, Quakers Hill, Richmond, St Mary's, West Camden schemes receive focus in the next operational audit.</p>
3.6.2				NR	Definitional clause
3.6.3				SoC	

6 Licence Part 4 - Infrastructure Performance

Summary of Requirements

Part 4 of the Operating Licence requires Sydney Water to achieve specific standards of service delivery to customers from its water and sewerage service infrastructure. The Part also requires Sydney Water to demonstrate that it is planning, designing, operating and maintaining the infrastructure to ensure ongoing achievement of its required performance into the future.

For the purpose of the risk-based Audit, **t-cAM's** detailed audit included clauses under:

Compliance with System Performance Standards

Asset Management Obligations

Response Time for Water Main Breaks

Infrastructure Performance – Compliance

Compliance and supporting commentary for specific Sections and Clauses in Part 4, Infrastructure Performance, are outlined in Table 6-1.

Overall, **t-cAM's** assessed Sydney Water to have demonstrated **Full Compliance** with all clauses in this Section of the Licence. **Full Compliance** was given for 4.13.1 (c) 100% of Priority 4 breaks/leaks repaired in 5 days as the intent of the Clause 'achieving efficient and effective management of leakage from the system' was met.

Sydney Water received **High Compliance** for their response to the Ministerial Requirement of 11 January 2010:

'I support the recommendation that Sydney Water reports to IPART on the design of water infrastructure by 1 September 2010. This report should provide an update on the methodology, validation, sensitivity and risk analyses undertaken for water infrastructure design as well as an analysis of the compliance and expenditure impacts of this work.'

Factors Affecting Compliance

Sydney Water has advised that climatic conditions have been favourable in 2009/10 with respect to its ability to meet the performance requirements of this Licence Part. In particular improved rainfall and lower summer temperatures have led to lower demand peaks for water (and hence a minimisation of pressure problems) and a reduction in the potential for tree root intrusion into sewer mains. Additionally, while 'restrictions' on water usage finished at the end of 2008/09 these have been replaced by permanent 'Water Wise Rules' for 2009/10 onwards.

Discussion

Sydney Water achieved excellent results in meeting compliance with the System Performance Standards for Pressure, Water Continuity and Sewerage Overflows. There is significant trend evidence that Sydney Water's improvement programs are proving successful in improving services to its customers.

Under 4.8 (a), last year's recommendation was for Sydney Water to analyse and report on whether actual customer demand behaviour was in alignment with its revised design and planning assumptions and to conduct a sensitivity analysis to determine the consequences of these assumptions proving to be in error. While substantial information was provided, the verification provided was not substantially representative of the Sydney Water customer base or service delivery infrastructure.

Recommendations

Key Recommendations

It is recommended that Sydney Water:

- R4.1 Sydney Water should establish and report to IPART by 30 June 2011 on the empirical evidence of trends and changes in customer demand levels across a representative sample of its demand base, with the objective of confirming the ongoing impacts (if any) of the various demand management strategies on future infrastructure planning and design.

Secondary Recommendations

There are no secondary recommendations for this Licence Part.

Table of Detailed Audit Findings

Table 6-1 Licence Part 4 – Infrastructure Performance

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
4.1	Water Pressure Standard				
4.1.1 - 4.1.3				SoC	
4.2	Water Continuity Standard				
4.2.1 - 4.2.2				SoC	
4.3	Sewage Overflows Standard				
4.3.1				SoC	

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
4.4	Compliance with System Performance Standards				
	Sydney Water must comply with the water pressure standard in clause 4.1.1	<p>High: as poor pressure can:</p> <ul style="list-style-type: none"> • Pose a public health hazard • Damage customer property • Pose loss of amenity to domestic customers • Disrupt industrial and commercial customer operations • Pose a public health risk for customers dependant on a secure water supply, such as dialysis and other medical activities • Lead to claims for compensation • Damage customer's water dependant machinery and equipment • Increase fire hazard due to inability of fire services to extract sufficient water • Limit site development or building location/size options for developers or other builders of structures • Cause customer dissatisfaction. 	No more than 15,000 Properties experience a water pressure failure in a financial year.	Full Compliance	<p>Sydney Water had 36 properties experience a water pressure failure in 2009/10.</p> <p>No properties were affected by abnormal operations.</p> <p>This result is considered to be a combination of the progressive and systematic elimination of low pressure areas by Sydney Water combined with highly favourable climatic conditions. It should be noted that this result has also occurred at the point that restrictions were lifted and replaced by the start of 'Water Wise Rules'.</p> <p>Sydney Water have the view that while the Licence Standard is a requirement from a regulatory perspective, long term or 'permanent' low pressure problems for individual customers are unacceptable.</p> <p>Sydney Water has a sound long term strategy for the elimination of systemic low pressure supply to customers and has in place sound processes and practices for managing operational problems.</p>

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	Sydney Water must comply with the water continuity standard in clause 4.2.1	<p>High: as disruption to customer supply can:</p> <ul style="list-style-type: none"> • Pose a public health hazard • Damage customer property • Pose loss of amenity to domestic customers • Disrupt industrial and commercial customer operations • Pose a public health risk for customers dependant on a secure water supply, such as dialysis and other medical activities • Lead to claims for compensation • Damage customer's water dependant machinery and equipment • Cause customer dissatisfaction. 	(a) Sydney Water must ensure that no more than 32,000 properties experience a Planned Water Interruption exceeding 5 hours in a financial year.	Full Compliance	Sydney Water had 12,666 properties experience a planned interruption exceeding 5 hours in 2009/10, a substantial increase on 2008/09 but still significantly lower than the 2007/08 result of 16,576 and only a third of the required standard.

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	Sydney Water must comply with the water continuity standard in clause 4.2.1	<p>High: as disruption to customer supply can:</p> <ul style="list-style-type: none"> • Pose a public health hazard • Damage customer property • Pose loss of amenity to domestic customers • Disrupt industrial and commercial customer operations • Pose a public health risk for customers dependant on a secure water supply, such as dialysis and other medical activities • Lead to claims for compensation • Damage customer's water dependant machinery and equipment • Cause customer dissatisfaction. 	(b) Sydney Water must ensure that no more than 35,000 properties experience an Unplanned Water Interruption exceeding 5 hours in a financial year.	Full Compliance	<p>Sydney Water had 21,050 properties experience an unplanned interruption exceeding 5 hours in 2009/10.</p> <p>This compares with 25,656 properties in 2008/09 and a significant reduction from the 31 982 in 2007/08. It is also less than two-thirds of the required standard.</p> <p>Relatively fewer properties were affected by prolonged outages, reflecting the faster response time of Sydney Water to failures.</p>

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	Sydney Water must comply with the sewage overflow standard in clause 4.3.1.	High: as the discharge of raw sewage onto customer property can: <ul style="list-style-type: none"> • Pose a public health hazard • Damage customer property • Create unnecessary cleanup costs • Lead to claims for compensation • Cause customer dissatisfaction 	No more than 25,000 Properties (other than Public Properties) experience an Uncontrolled Sewage Overflow in dry weather in a financial year.	Full Compliance	<p>In 2009/10 Sydney Water had 17 263 properties affected by dry weather sewage overflows, compared with 16 028 properties affected in 2008/09.</p> <p>The results for the last three years are showing some consistency, but at a level well below that previously experienced.</p> <p>The frequency of sewer breaks and blockages for 2009/10 increased slightly, but is still well below that experienced in 2005-2007, attributed by Sydney Water to a combination of its pro-active programs and milder/wetter weather conditions. The percentage of failures caused by tree roots though, is the highest for five years at 62.5%.</p> <p>The trend analysis provided by Sydney Water indicates that the ratio of multiple properties affected to single properties affected is steadily increasing.</p> <p>The supporting indicators show a significant increase in private properties suffering 2 overflow events, but a substantial reduction has occurred in those suffering 3 or more overflows.</p>
4.5	Reporting on System Performance Standards				
4.5.1 – 4.5.4				SoC	
4.6	Review of System Performance Standards				
4.6.1 - 4.6.4				NR	

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
4.7	Service Quality and System Performance Indicators				
4.7.1 - 4.7.4				SoC	
4.8	Assets Management (AM) Obligation				
4.8.1(a)	‘Sydney Water must ensure that its Assets are managed consistent with: (a) the terms and conditions in this Licence, and its obligations under the Customer Contract and all applicable laws with which Sydney Water must comply.’	<p>High: as a lack of sound asset management can:</p> <ul style="list-style-type: none"> • Lead to premature replacement/ renewal or augmentation of assets. • Increased likelihood of asset failure and inability to meet required levels of service. • Increased unscheduled maintenance. • Increased life-cycle cost for service provision. • Misallocation of funds. 	Demonstration of integration of licence requirements and Standards into the planning, management and operation of Sydney Water’s assets.	Full Compliance	The design manual is of high quality and the risk and sensitivity analysis provided was thorough and comprehensive from a methodological perspective. For further discussion please refer to the Findings on Sydney Water’s response to the Ministerial Requirement.
4.8.1 (b)-(c)				SoC	
4.9	Reporting on the Asset Management System				
4.9.1				NR	

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
4.9.2				NR	
4.10	Auditing the Asset Management System				
4.10.1-4.10.5				NR	
4.11	Water Leakage				
4.11.1 - 4.11.3				SoC	
4.12	Reports related to Water Leakage				
4.12.1 - 4.11.4				SoC	
4.13	Response Time for Water Main Breaks				
4.13.1	<p>4.13.1 Sydney Water's response to water main breaks and leaks (in the trunk and reticulation components of Sydney Water's drinking water 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, shall be as follows:</p> <p>(a) Priority 6 breaks/leaks: 70% of jobs within 2 hours 90% of jobs within 3 hours</p> <p>(b) Priority 5 breaks/leaks: 65% of jobs within 3 hours 85% of jobs</p>	<p>Medium: as delays in response to breaks and leaks can lead to:</p> <ul style="list-style-type: none"> • Disruptions to supplies, insufficient supplies • Excessive loss of water • Customer Service Levels not met • Adverse impact on public perception 	Stated response targets met	Full Compliance	<p>There was a decrease in the actual number of breaks and leaks that occurred in the Sydney Water system in 2009/10, (12 790) down from 14 050 in 2008/09. As would be expected, there was a corresponding improvement in performance against this Standard, including against the 100% of Priority 4 jobs completed within 5 days. Again, Sydney Water is considered to have complied with the intent of the Clause (i.e. achieving efficient and effective management of leakage from the system). The explanations for those events that were non compliant are, in the auditors opinion, reasonable.</p>

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	within 6 hours (c) Priority 4 breaks/leaks: 50% of jobs by end of next working day 100% of jobs within 5 days, subject to clause 4.13.4				
4.13.2 – 4.13.3				SoC	
4.13.4	4.13.4 Due to operational, planning and customer impact issues, it is recognised that Sydney Water will not be able to respond to 100% of priority 4 jobs within 5 days. Therefore Sydney Water shall annually submit to IPART a list of all instances of non-compliance with the above target and the reasons for that non-compliance. This will be reviewed as part of the annual operational audit.	Breach of Licence Condition	Stated response target met with analysis of reasons for non-compliance or background/ contextual issues related to the result achieved.	Full Compliance	Compliant. See 4.13.1
4.14	Priority Sewerage				
4.14.1 – 4.14.4				NR	

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
Ministerial Requirement					
4.13.4	I support the recommendation that Sydney Water reports to IPART on the design of water infrastructure by 1 September 2010. This report should provide an update on the methodology, validation, sensitivity and risk analyses undertaken for water infrastructure design as well as an analysis of the compliance and expenditure impacts of this work.'	<p>High: as a lack of sound asset management can:</p> <ul style="list-style-type: none"> • Lead to premature replacement/renewal or augmentation of assets. • Increased likelihood of asset failure and inability to meet required levels of service. • Increased life-cycle cost for service provision. • Misallocation of funds. 	Stated response target met with analysis of reasons for non-compliance or background/ contextual issues related to the result achieved.	High Compliance	<p>The analysis of customer demand behaviour only considered the Rouse Hill supply zone. This system supplies only approximately 1% of Sydney Water's customer base and has a unique reticulated potable and recycled dual supply configuration. It will therefore not be possible to extrapolate any viable conclusions from this assessment to the wider customer and asset base either for new developments without dual reticulated water supplies, nor for asset renewal/ replacement/ incremental augmentation in existing supply areas.</p> <p>It is important from a validation perspective that a clear benchmark or starting point be established for future comparison and the current report is incomplete in this regard.</p>

7 Licence Part 9 – Water Conservation and Demand Management

Summary of Requirements

Part 9 of the Operating Licence requires Sydney Water to comply with specific water conservation and demand management objectives. This is to ensure that Sydney Water achieves appropriate water demand reduction targets and implements water re-use to reduce the growth in total demand for potable water from catchment sources managed by the Sydney Catchment Authority (SCA).

For the purpose of the risk-based Audit, **t-cAM's** detailed audit included clauses under:

Demand Management Strategy

Water Conservation and Demand Management – Compliance

Full Compliance has been assessed for the Clauses audited in this Part. Compliance for specific Clauses are outlined in Table of Detailed Audit Findings

Table 7-1.

Factors Affecting Compliance

Restrictions were terminated at the end of 2008/09 and replaced with a permanent 'Water Wise Rules' program of demand conservation initiatives.

A range of externally managed programs also influence the overall water conservation and demand of the Sydney Water managed resources.

Discussion

Sydney Water's Demand Management Strategy is considered to be well developed and implemented, including a continuous improvement planning cycle. Sydney Water has demonstrated effective adaptive management in its continued adjustment of demand management programs towards its Water Conservation Target.

Sydney Water has developed a detailed program of water conservation activities and initiatives which were implemented/ maintained for 2009/10. Sydney Water has also provided a forward program for 2010/11.

The planning and prioritising for the water conservation strategy is well established and implemented with existing and proposed programs identified and evaluated. Sydney Water indicated that they are currently doing research into defining when a less beneficial program is dropped off the implemented strategy list (rather than just scaled back as is currently the case). The progress towards this should be followed up in next year's audit. The evaluation of water conservation programs is well defined in Sections 1,2, 4 and Appendices 2 and 7 (Water conservation reporting schedule) of the WCRI Report and a good discussion is now provided in Appendix 7 on why key differences have arisen between the planned and actual performance.

Recommendations

Key Recommendations

There are no Key Recommendations for this Section

Secondary Recommendations

There are no Secondary Recommendations for this Section

Table of Detailed Audit Findings

Table 7-1 Licence Part 9 – Water Conservation and Demand Management

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
9.1	Water Conservation Target				
9.1.1 – 9.1.3				SoC	
9.2	Demand Management Strategy				
9.2.1	Sydney Water must give due consideration to demand side management as the basis for planning the future provision of its Services, including addressing Water leakage.	Medium risk: non-compliance may result in insufficient supplies.	Evidence of demand side management programs including leakage reduction program.	Full Compliance	Reported in Sections 1, 2, 3 and 4 of WCRI Report, Sydney Water gives due consideration to demand side management. This includes targeting demand management, leakage reduction and recycling. These programs are fully integrated into its decision making programs and provided with substantial funding on an annual basis (over \$523 million since 1999 and almost \$75 million in 2009/10).
9.2.2	By no later than 1 September each year, Sydney Water must provide a demand management strategy implementation report to IPART that reports on its implementation of its demand management strategy for the previous financial year, to enable IPART to consider and report on the matter as part of the Annual audit.	Medium risk: Provides the framework for managing water demand in its area of operations. Noncompliance may lead to a lack of integration and reduced effectiveness of the plan.	Current and detailed document outlining the plans for managing water demand and the factors that influence these.	Full Compliance	The WCRIR is Sydney Water's demand management strategy implementation report. The WCRIR was submitted to IPART before 1 September 2010 and reported on Sydney Water's implementation of its demand management strategy for 2009/10.

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
9.2.3 (a)	<p>The demand management strategy implementation report must:</p> <p>Contain an estimate of past, current and projected water uses and distinguish between residential, industrial, commercial and government uses.</p>	<p>Medium risk: Noncompliance reduces the ability for Sydney Water to provide a basis for improved water planning for water demand. While comparison with previous years provides useful information it does not significantly impact on the ability of Sydney Water to manage demand. Noncompliance fails to keep stakeholders informed of performance.</p>	<p>Estimates and comparison of data for consecutive years for customer types and explanatory notes for differences.</p>	Full Compliance	Reported in Figure 7 and Appendix 6 of WCRI Report.
9.2.3 (b)	<p>Describe the frequency and magnitude of expected supply deficiencies, including those arising as a result of wastage or loss, drought or emergency.</p> <p>Note Delegated Tribunal decision of 26 May 2009 that all parts are auditable. 9.2.3 (b) requires a description of supply issues based</p>	<p>Low Risk: Allows for identification of risks associated with inconsistencies with supply side management parties</p>	<p>Evidence of consideration of supply deficiencies and interaction with SCA (supply authority).</p>	Full Compliance	<p>Reported in Appendix 2 of the WCRI Report</p> <p>Appendix 2 of the WCRI Report refers the reader to the frameworks which establishes the parameters for Sydney Water's operation within supply deficiencies. In particular, the 2006 Metropolitan Water plan addresses the medium term demand-supply balance and the management of supplies / demand balance in times of drought (through a range of actions such as imposing of restrictions, transfer of supplies, reducing</p>

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	on information available to SWC.				<p>environmental flows, increasing recycling and reviewing / implementing alternative water supplies such as desalination and groundwater).</p> <p>The Metropolitan Water Plan (2006) sets out how the NSW Government will achieve the objective of providing a secure supply of water that can meet the long term needs of Sydney. Achieving this requires collaboration of all the players including Sydney Water (demand side) and the Sydney Catchment Authority (supply side) to validate and inform the process, and to develop and assess options.</p> <p>The demand management strategy implementation report (WCRI Report) does not in itself directly describe the frequency and magnitude of expected supply deficiencies. However, the tribunal decision to include description of supply issues based on information available to SWC is complied with.</p>
9.2.3 (c)	Identify conservation measures currently adopted and being practised.	Medium: Non compliance may lead to water shortages (due to underestimate of water demand).	Evidence that Water conservation measures have been identified and implemented.	Full compliance	<p>Reported in Section 2 of WCRI Report. Sydney Water has adopted and implemented a range of conservation measures including residential water efficiency programs, business water efficiency program, schools programs, hospitals and its leak detection/reduction program.</p> <p>In addition, Sydney Water has furthered community education and pilot programs targeting water efficiency in residential and business use.</p> <p>A tabulated summary of Water Efficiency Programs for 2009/10 was provided in Table 9 which outlines adopted programs and Table 10 which forecasts future work.</p>

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
9.2.3 (d)	Describe, cost and evaluate additional conservation measures.	Low risk: Allows for identification and prioritisation of alternative conservation measures which could be adopted and implemented	Evidence of consideration of a range of conservation measures	Full Compliance	The Water Conservation Strategy is outlined in Section 4 of WCRI Report. The programs are constantly monitored for their performance and to determine the most cost effective use of funds to achieve maximum benefit.
9.2.3 (e)	Describe future plans for water reclamation and strategies to alter water use practices, including those relating to the installation of more efficient water appliances and devices by users.	Low risk: Non-compliance may result in poor planning of strategies and their implementation	Evidence of consideration of a range of water reclamation and water use practices options	Full compliance	Reported in Section 4 of WCRI Report. Sydney Water outlined current ongoing and future plans for water reclamation and water efficiencies.
9.2.3 (f)	Evaluate these plans in terms of their cost and contrast with the cost of alternative water supplies.	Medium Risk: allows for cost effective implementation of Demand management strategy	Evidence of cost comparison of options against alternative water supplies.	Full Compliance	Reported in Sections 3 and 4 and Appendix 2 of WCRI Report As per subclause 9.2.3 (b), this Licence clause was developed when Sydney Water was responsible for demand and supply side planning i.e. before the creation of the Sydney Catchment Authority. IPART agrees that supply side initiatives are not the exclusive responsibility of Sydney Water. However, Clause 9.2.3 (f) (and 9.2.3(g)) should still be complied with and reported on. In evaluating plans and their costs, Sydney Water adopts a levelised cost approach (as part of the MCA discussed further for Clause 9.2.3 (g)). The levelised cost takes into account the capital and operating costs as well a water savings for a 30 year analysis period. The levelised cost = (NPV of cost)/ (NPV of water

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
					conserved). The supply side options are considered in the 2006 Metropolitan Water Plan (Section 7) using a least cost planning approach. The Sustainability Planning Manual also looks at alternative supplies and how they are assessed.
9.2.3 (g)	Prioritise and schedule the implementation of courses of action found to be cost effective.	Low risk: Non-compliance may result in poor planning of strategies and their implementation and low cost-effectiveness	Schedule of activities arising from options evaluation	Full Compliance	Reported in Section 4 of WCRI Report As per subclause 9.2.3 (b), this Licence clause was developed when Sydney Water was responsible for demand and supply side planning i.e. before the creation of the Sydney Catchment Authority. IPART agrees that supply side initiatives are not the exclusive responsibility of Sydney Water. However, Clause 9.2.2 (g) should still be complied with and reported on. Supply side options are considered within the scope of the 2006 Metropolitan Water Plan.
9.2.3 (h)	Identify strategies for reducing Water leakage.	Low Risk: Non-compliance may result in low cost-effectiveness of demand management strategy	Evidence of consideration and selection of appropriate strategy for reducing water leakage	Full Compliance	Reported in Sections 2 & 4, Appendix 9 of WCRI Report. Sydney Water have prepared and implemented a Leak Management Program which consists of active leak detection and repair, pressure management, improved response time to main breaks and improved flow metering. Further, an assessment of the economic level of leakage (ELL) has been undertaken which is defined as the point where the cost of leak reduction activities equals the value of water saved from these activities. The economic level of leakage is used to assist in prioritisation of improvement programs and is regularly reviewed to take into account changes in the operating environment.
9.2.3 (i)	Include components of a water balance table consistent with the	Medium risk: Compilation of the	Data provided for each of the	Full Compliance	Reported in Appendix 9 of WCRI Report. The Water Balance has been prepared by Sydney Water to

Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	format and definitions in the IWA water table.	data ensures that Sydney Water has a good understanding of the water balance for its area of operations. Noncompliance reduces the ability of Sydney Water to provide response and improvement if required.	components in the Water Balance Table		determine the leakage from the drinking water system. The analysis is in alignment with IPART requirements and in the auditors opinion represents current industry best appropriate practice.
9.2.3 (j)	Include consumption of water across sectors in a format and content specified by IPART.	Low Risk: While reporting of data provides useful information it does not significantly impact on the ability of Sydney Water to manage demand. Noncompliance will fail to keep stakeholders informed.	A reporting system that compares performance in format specified by IPART.	Full Compliance	Reported in Appendix 9 of WCRI Report. The consumption of water for the 2009/10 period was reported for the sectoral areas of residential (by general dwelling type), non-residential (industrial, commercial, government, primary producers, others), recycled and Other residential and non-residential (billed unmetered and unbilled metered and unmetered consumption). This data was derived from the water balance calculations (refer to Clause 9.2.3i).
9.2.3 (k)	For each of the demand management activities of Sydney	Low risk: Non-compliance may	Comparison of the water	Full Compliance	Reported in Appendix 7 of WCRI Report. The planned and actual water savings for the 2009/10 period are

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Clause	Requirement	Risk	Target for Compliance	Compliance Rating	Findings
	Water in the preceding financial year, report in a schedule in a format and content agreed between IPART and Sydney Water: (i) The planned and actual water savings and planned and actual expenditure; and (ii) The actual measures of outcomes for performance indicator	result in poor understanding of performance and future poor cost-effectiveness of demand management strategy.	savings achieved against that planned in format agreed with IPART		detailed in Table 9 and forecast in Table 10. Information is also provided on planned and actual expenditure and planned and actual results for the performance indicator nominated for each program. Good discussion is provided on the key differences between the planned and actual parameters.
9.3	Reducing Discharges				
9.3.1 – 9.3.3				SoC	
9.4	Water Conservation Rating and Labelling				
9.4.1 – 9.4.2				SoC	
9.5	Review of Part 9 of Licence				
				NR	

8 Licence Part 11 – Liability Issues

Summary of Requirements

Part 11 of the Operating Licence gives leave to Sydney Water to contract out the provision of its services while ensuring that it retains responsibility for fulfilling under the Licence. It also addresses Sydney Water's obligations to minimise consequential damage (and, if required, compensate persons affected) and requires Sydney Water to adhere to the requirements of the *Trade Practices Act 1974*, the Competition Principles Agreement and other relevant legislation and codes of practice, particularly those relating to competitive neutrality.

Liability Issues – Compliance

Full Compliance has been assessed for Sydney Water's performance with respect to Clause 11.1.1. Details of compliance are outlined in Table 8-1.

Factors Affecting Compliance

There are no external factors, which have substantively impacted on Sydney Water's ability to meet its required obligations under this Licence Part. However, the *'Health-Based Targets for Microbial Safety of Drinking Water Supplies – Draft Discussion Paper'* released with the 2010 revision of the ADWG, may have implications for log10 reduction value targets for the plant which will need to be understood in the context of the contract and water quality objectives.

Discussion

Specifically, the auditors were directed to review the processes employed by Sydney Water to manage the operational (not financial) performance of the operators of the Water Filtration Plants with the audit to also provide comment on the effectiveness and efficiency of these processes. Overall, the contractual process appears to be sound, currently warranting the Full Compliance rating. However, the major issue with the contract itself appears to be the need for a wholesale review to ensure that conflict does not arise between the amending deeds and the contractual clauses as well as considering the recommendations outlined below.

Recommendations

Key Recommendations

It is recommended that Sydney Water:

- R11.1 **Clause 11.1.1:** In Schedule 10 it is noted that faecal coliforms are listed as a parameter however, while a value of '0' is given for the finished water quality, there is no indication of what '0' pertains to (is it CFU, MPN etc) or the volume. This issue needs to be clarified either within the revised contract or within the amending deeds.
- R11.2 **Clause 11.1.1:** While it is understood that the current mode of amending the contract is through amending deeds, a consolidation of these amendments in to a

new contract should be initiated to coincide with the completion of current capital works at the Prospect Treatment Plant, currently estimated to be completed in 2012.

Secondary Recommendations

These are the secondary recommendations for Sydney Water for this Licence part.

- SR11.1 **Clause 11.1.1:** Ensure that a standard operating procedure or checklist or other such formal document is in place to allow for Sydney Water to agree on what constitutes an acceptable auditor for the purposes of Clause 10.12(c) of the contract.
- SR11.2 **Clause 11.1.1:** One of the issues arising where multiple entities are responsible for the provision of various points of the water supply chain is that of 'handover' or water quality 'responsibility delineation' points. The contractual review should also include the addition of a diagram within the contract to clearly elucidate where monitoring and water quality responsibility points exist.

Table of Detailed Audit Findings

Table 8-1 Licence Part 11 Liability Issues

Clause	Requirement	Risk	Target for Compliance	Compliance	Findings
11.1	Contracting Out				
11.1.1	Subject to the Act, the SOC Act and any other applicable law, Sydney Water may contract out the provision, construction, operation, management or maintenance of any of the systems and Services the subject of this Licence.			Full Compliance	<p>The contract reviewed was for the Prospect Water Filtration Plant and is the:</p> <p><i>Restated and Amended Water Filtration Agreement between Sydney Water Corporation, Lyonnaise (Prospect) Pty Ltd, P and O Prospect Pty Ltd and Lend Lease Water Services Pty Ltd (Copy No. 1)</i></p> <p>Contracts are let as 20 year contracts but can be negotiated on a yearly basis to accommodate continual improvements.</p> <p>Issues can be generated within SWC and external to SWC. Clause 17 of the contract permits SWC to make changes to Upgrade/Expansion. A 'Clause 17' proposal letter is sent on to the contractor to initiate the changes.</p> <p>Schedule 10 covers the water quality criteria e.g. NTU <0.3. However there is an amending deed stating what the current water quality criteria are (amending deeds are the mechanism by which the contract is kept up to date rather than periodic wholesale review of the contract itself). A water quality objective of <0.1 NTU is based on combined filter effluent water. The quality of the contractor to be competent would have been assessed internally but no-one on the interview panel was part of that process. The auditors confirmed that</p>

Clause	Requirement	Risk	Target for Compliance	Compliance	Findings
					<p>water quality from the plant for a selection of days (30/11/09 to 2/12/09, 100 min polling) met the <0.1 NTU target with a plant maximum of 0.075, a minimum of 0.027 and an average of 0.046 (<i>NTU 10' Interval Results</i> – hard copy). Further in schedule 10 it is noted that faecal coliforms is listed as a parameter however, while a value of '0' is given for the finished water quality, there is no indication of what '0' pertains to (is it CFU, MPN etc) or the volume.</p> <p>The contractor is required to have a QA process in place for the running and operation of the plant (Clause 10.12). AS 3901 1987 AS/NZS ISO 9001. There is no legal obligation for the contractor to have <i>validated</i> the barriers as such - however, being an output-based contract, meeting the required water quality objectives is an integral component of that. Water quality was stated to have been negotiated at the time. USEPA Log removal guidelines were used to look at the appropriateness of the barrier performance to achieve <0.1 NTU. An amending deed was developed to address the 0.1 NTU and get this into contractual obligations (also sighted: <i>Letter from Malcolm Crabb (Sydney Water) to David Bromell (Australian Water Services) Prospect Water Filtration Plant 0.1 NTU Partnership Response 23 August 2001 : Letter from David Bromell to Malcolm Crabb Re Prospect Water Filtration Plant - 0.1 NTU Partnership Response and accompanying document filename 02-001-24-02-0461.pm-sd</i>). The <i>Drinking Water Quality Operational Monitoring Plan 2009-2010. June 2009</i>. Includes a FINW test list for treated water (Table 4)</p>

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Clause	Requirement	Risk	Target for Compliance	Compliance	Findings
					<p>with this list elucidated in Table 5.</p> <p>R&D obligations under the contract are captured within Schedule 14. BOO Fellowship and Technology Transfer. This occurs through the Science and Technology agreement, R&D Agreement (<i>1 Framework Process 100910 for Auditors.xls</i>; <i>2 Management Process 090807 for auditors.xls</i> – still current for the audit). The S&T Agreement contains fellowships, tech transfer and joint projects. However, R&D outputs are not binding to changes to the process of the plant itself. If SWC believed that the outputs were important, they would be used as drivers to change the contract through the Amending Deeds at SWC's expense. As an example, taste and odour compounds were investigated jointly between SWC and Veolia at the Illawarra plant - this resulted in introducing GAC at the plant at Veolia's cost (<i>3 GAC Taste and Odour Project Report for auditors.pdf – June 2010</i>). Outcomes from the partnerships are published with a <i>Water</i> paper on the use of chlorine upstream to breakdown toxins provided to the auditors as an example (<i>L Ho, K Craig, H Bustamante, G Newcombe (2010) REMOVAL OF CYANOBACTERIAL METABOLITES: LABORATORY EVALUATION OF GRANULAR ACTIVATED CARBON. Water May 2010 pp44-49</i>).</p> <p>Audits are allowed of the plant - clause 10.12(d) - to establish compliance with the quality assurance plan. Clause 10.12(c) provides for the partnership to have an audit of its systems on a yearly basis by an auditor who is JASANZ qualified and who is acceptable to Sydney Water - currently there is no SOP on what constitutes</p>

Clause	Requirement	Risk	Target for Compliance	Compliance	Findings
					<p>'acceptable'.</p> <p>Recommendation Clause 11.1.1: In Schedule 10 it is noted that faecal coliforms are listed as a parameter however, while a value of '0' is given for the finished water quality, there is no indication of what '0' pertains to (is it CFU, MPN etc) or the volume. This issue needs to be clarified either within the revised contract or within the amending deeds.</p> <p>Recommendation Clause 11.1.1: Ensure that a standard operating procedure or checklist or other such formal document is in place to allow for Sydney Water to agree on what constitutes an acceptable auditor for the purposes of Clause 10.12(c) of the contract.</p> <p>Recommendation Clause 11.1.1: While it is understood that the current mode of amending the contract is through amending deeds, it is probably time for Sydney Water to complete a wholesale review of the contract to ensure that the amending deeds and the contract itself still fit with each other.</p> <p>Recommendation Clause 11.1.1: One of the issues arising where multiple entities are responsible for the provision of various points of the water supply chain is that of 'handover' or water quality 'responsibility delineation' points. The contractual review should also include the addition of a diagram within the contract to clearly elucidate where monitoring and water quality responsibility points exist.</p>

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Clause	Requirement	Risk	Target for Compliance	Compliance	Findings
11.1.2				NR	
11.2	Damage and Compensation to Persons				
				SoC	
11.3	Competitive Neutrality				
11.3.1				SoC	
11.3.2				NR	

Appendix A Historical Performance Comparison

Performance Comparison for period 2003/04 to 2009/10

We have reviewed Sydney Water's performance in meeting its Licence Obligations over the period 2003/04 to 2009/10. In considering how to most usefully present this data a number of issues were identified:

- Licence's are upgraded every five years, this includes removal, addition and changes to Clauses.
- The Licence Parts and/or Clauses audited in any specific year change, therefore trends in performance over time against specific Parts or Clauses is unavailable or, when combined with the five yearly modifications, make such data unreliable or meaningless.
- While variations in auditing practice and reporting can vary between auditors, IPART and the agency provide some 'leveling' or consistency over time.
- The number of Clauses to be audited is substantial and information requires summarising to provide meaningful and comprehensible outputs.
- The reporting by auditors over the years, and between subject matter experts reporting against particular Licence Parts in any year, varied between rating of compliance against Clauses, sub-clauses and, on occasion, dot points in Clauses – there is no ready means to categorise the finer reporting against the courser reporting.

Given these issues, it was felt that the best approach was to consider the overarching business performance. Simply, the audit reports were reviewed and all compliances recorded and the results presented as percentages of compliance achieved across all audited items where a compliance grade was recorded. The number of Key Recommendations made was also considered as a measure of performance.

In addition to the Figure provided in the Executive Summary, the following two Figures are presented for information:

Figure A-1 SWC Aggregate Compliance against Licence – Alternative View

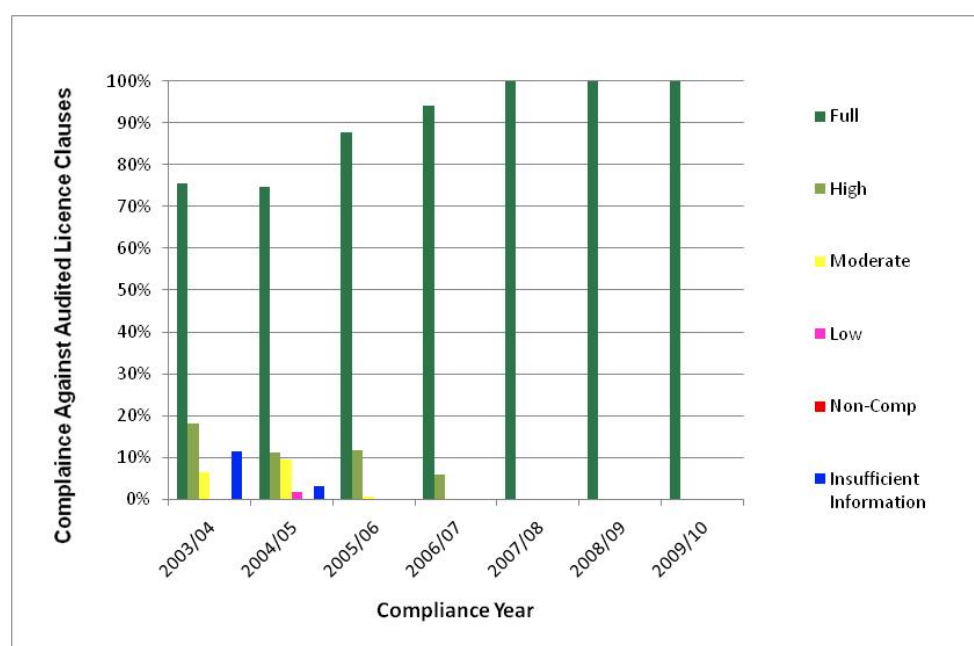
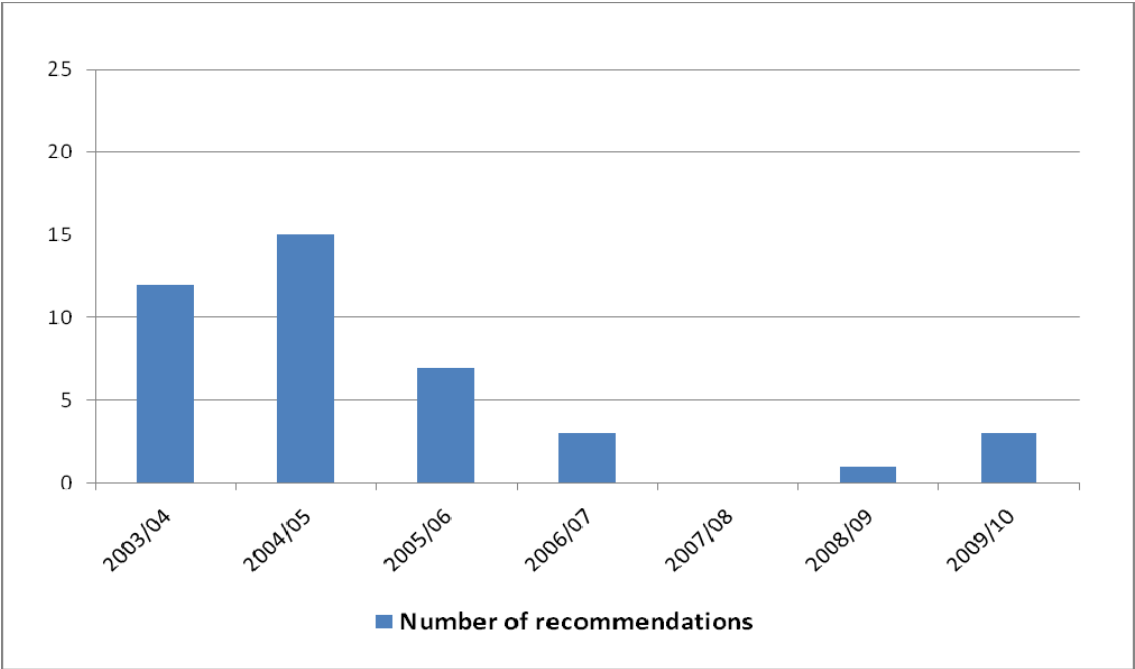


Figure A-2 SWC - Number of Recommendations made in any Licence Year



Appendix B Audit Scope

Audit Scope for Sydney Water Corporation's Operational Audit in 2009/10

(Extracted from IPART Operational Audits of Sydney Water, Hunter Water, SCA and State Water RFT for 2009, Attachment 1 Audit Scope for Water Utilities)

SoC self-audit by Sydney Water, where a Statement of Compliance signed by the Chief Executive and the Chairman of the Board of Sydney Water is submitted to IPART as evidence, clause is not subject to independent audit this year.

NR signifies No Requirement to audit.

Licence Clause	Operating Licence Section Title	Scope	COMMENT
3.1	Drinking Water Quality – Standards		
3.1.1		AUDIT	Additional water quality auditing is required at clause 11.1.1.
3.1.2		SoC	
3.1.3		AUDIT	
3.2	Drinking Water Quality – Monitoring		
3.2.1		AUDIT	Relates to the preparation of a plan, and does not relate directly to water quality The Plan is fairly static once formulated it will not change greatly. However, audit due to Health request
3.2.2		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes. This clause only needs to be audited if circumstances have changed, otherwise SoC
3.3	Drinking Water Quality – Reporting		
3.3.1		AUDIT	NSW Health has again requested a detailed audit of Monitoring and Reporting requirements relating to Water Quality data
3.3.2		AUDIT	NSW Health has again requested a detailed audit of Monitoring and Reporting requirements relating to Water Quality data
3.3.3		AUDIT	NSW Health has again requested a detailed audit of Monitoring and Reporting requirements relating to Water Quality data
3.4	Drinking Water – Planning		
3.4.1		SoC	Prior notice of No Change The 5 year plan was audited in 05/06. Prior to commencement of the audit, SWC is to advise any changes. This clause only needs to be audited if circumstances have changed, otherwise SoC

Licence Clause	Operating Licence Section Title	Scope	COMMENT
3.4.2		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes. This clause only needs to be audited if circumstances have changed, otherwise SoC
3.4.3		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes. This clause only needs to be audited if circumstances have changed, otherwise SoC
3.4.4		AUDIT	
3.5	Drinking Water – Incident Management		
3.5.1		AUDIT	Audit program changed in 2009. Public health incident reporting determined to be audited every year.
3.5.2		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes and confirm that the Incident Management contacts are current and that any required updates of procedures have been carried out. This clause only needs to be audited if circumstances have changed, otherwise SoC
3.5.3		SoC	Same 3.5.2
3.5.4		SoC	Same as 3.5.2
3.6	Other grades of water		
3.6.1		AUDIT	This reflects the introduction of the Australian Guidelines for Water Recycling. Since this is an evolving situation, it should be audited every year.
3.6.2			Definitional clause
3.6.3		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any conflicts. This clause only needs to be audited if conflicts exist, otherwise SoC
4.1-4	System Performance Standards		Prior notice of No Change Prior to the commencement of the audit, SWC should advise IPART if there are any changes to data collection practices or technology which would improve the inherent reliability of the data used in clauses 4.1 – 4.3. Audit if changed.
4.1	Water Pressure Standard	SoC	
4.2	Water Continuity Standard	SoC	
4.3	Sewage Overflows on Private Property Standard	SoC	

Licence Clause	Operating Licence Section Title	Scope	COMMENT
4.4	Sydney Water must comply with the water pressure standard in clause 4.1.1, the water continuity standard in clause 4.2.1 and the sewage overflow standard in clause 4.3.1.	AUDIT	Requirement to comply with SPS – must be audited
4.5	Reporting on system performance standards		
4.5.1		SoC	Results are audited in 4.4, this requirement to only to provide IPART with the report, results are in September 1 Report to IPART
4.5.2		SoC	SoC is to verify that the information provided in the report is complete. Requirement is to provide IPART with the report, results are in September 1 Report to IPART
4.5.3		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes to record systems. This clause only needs to be audited if circumstances have changed, otherwise SoC
4.5.4		SoC	SoC is to explicitly state that SWC has provided the full extent of relevant documentation.
4.6	Review of system performance standards		
4.6.1		-	
4.6.2			
4.6.3			
4.6.4		NR	NR unless System Performance Standards (SPS) have been amended. SPS for 09/10 have not been amended.
4.7	Service quality and system performance indicators		
4.7.1		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes to record systems. This clause only needs to be audited if circumstances have changed, otherwise SoC
4.7.2			Report to IPART, so no need to audit.
4.7.3		SoC	SoC is to verify that the information provided in the report is complete.

Licence Clause	Operating Licence Section Title	Scope	COMMENT
4.7.4		SoC	SoC is to explicitly state that SWC has provided the full extent of relevant documentation.
4.8	Asset Management Obligation	Audit 4.8(a) SoC 4.8(b)-(d)	<p>Note to auditor:</p> <p>4.8(a) requires that SWC maintain its capacity to meet licence obligations into the future. This means that the overall long-term AM strategy should be maintained and not subject to minor operational changes without context. This is relevant to the audit opinion about future compliance and for the auditor to verify that the AM system incorporates service targets that are consistent with licence requirements.</p> <p>The 2008/09 audit identified an issue with SWC's methodology for sizing infrastructure in green field areas. While the auditor did not disagree with SWC's approach, the report recommended that this issue be monitored. IPART determined that clause (a) should be audited periodically.</p>
4.9	Reporting on the asset management system		
4.9.1		NR	NR for annual audit - Separate Audit
4.9.2		NR	2 or more audits to verify that the AM plan as submitted for pricing determination is being implemented as proposed.
4.10	Auditing the asset management system		
4.11	Water Leakage		
4.11.1		SoC	<p>Although a requirement for 2008/09, IPART expects that the 2008/09 result will not be relaxed. IPART requires SoC. 2008/09 audit accepted SWC's methodology to determine leakage.</p> <p>Note Decision of Delegated Tribunal of 26 May 2009 that 105 ±16 ML/day constitutes compliance</p>
4.11.2		SoC	Past audit to verify assumptions and methodology
4.11.3		SoC	<p>Past audits only for section (b) to verify assumptions and methodology.</p> <p>SoC to explicitly verify that these assumptions and methodologies have not changed</p>
4.12	Reports Related to Water Leakage		
4.12.1		SoC	SoC is to verify that the information provided in the report is complete.
4.12.2		SoC	
4.12.3		SoC	
4.12.4		SoC	
4.13	Response time for water main breaks		

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Licence Clause	Operating Licence Section Title	Scope	COMMENT
4.13.1		AUDIT	
4.13.2		SoC	
4.13.3		SoC	
4.13.4		AUDIT	Audit to complement audit of 4.13.1
4.14	Priority Sewerage		
4.14.1		NR	Only audit in 05/06 and 08/09 since the requirement is only relevant in these years.
4.14.2		NR	
4.14.3		NR	Results are in 1 September report and audited in 4.14.1. SoC is to include the reasons for ability or inability to comply with 4.14.1. These reasons will be considered in the audit opinion of 4.14.1.
4.14.4		NR	Definitional clause
5.1	Customer Contract		
5.1.1		NR	Definitional clause
5.1.2		NR	Definitional clause
5.1.3		NR	Definitional clause
5.1.4		SoC	
5.1.5		NR	
5.1.6		NR	
5.1.7		NR	Customer Contract not reviewed in 2009/10.
5.1.8		SoC	
5.1.9		SoC	
5.1.10		NR	Not a requirement, but an authority for SWC to enter other contracts for supply of services
5.2	Consumers		
		SoC	
5.3	Code of practice and procedure on debt and disconnection		
5.3.1		SoC	
5.3.2		SoC	
5.3.3		SoC	
5.3.4		SoC	
5.4	Customer councils		
5.4.1		SoC	
5.4.2		SoC	
5.4.3		SoC	
5.4.4		SoC	
5.4.5		NR	NR
5.4.6		SoC	
5.4.7		SoC	
5.4.8		SoC	Customer council composition means that this clause does not apply following clause 5.4.11

Licence Clause	Operating Licence Section Title	Scope	COMMENT
5.4.9		SoC	Customer council composition means that this clause does not apply following clause 5.4.11
5.4.10		SoC	
5.4.11		SoC	Definitional clause. Note that Customer Council is composed entirely of representatives.
5.4.12		SoC	Customer council composition means that this clause does not apply following clause 5.4.11
5.4.13		SoC	Completed
5.4.14		SoC	
5.4.15		SoC	
5.4.16		SoC	
5.5	Customer service indicators		
5.5.1		SoC	
5.5.2		SoC	SoC is to verify that the information provided in the report is complete.
5.5.3		SoC	SoC should address auditor's comment from the 2008/09 audit.
5.5.4		NR	Definition clause only
6.1	Internal Dispute Resolution Process		
6.1.1		SoC	
6.1.2		SoC	
6.1.3		SoC	
6.1.4		SoC	
6.2	External Dispute Resolution Scheme		
6.2.1		SoC	
6.2.2		NR	Definitional clause
6.2.3		SoC	
6.2.4		SoC	
6.2.5		SoC	Report to IPART so no need to audit
6.2.6		SoC	
6.2.7		SoC	
6.3	Complaints to other bodies		
6.3.1		SoC	
6.3.2		SoC	
6.3.3		SoC	
7.1	Environmental Indicators		
7.1.1		SoC	Only Requirement to gather data, requirement to report is at 7.1.2
7.1.2		SoC	SoC is to verify that the information provided in the report is complete.
7.1.3		SoC	
7.1.4		SoC	

Licence Clause	Operating Licence Section Title	Scope	COMMENT
7.2	Environment Management		
7.2.1		SoC	Audit only relevant in 05/06
7.2.2		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise any changes to the plan. This clause only needs to be audited if circumstances have changed, otherwise SoC
7.2.3		NR	Requirement for 05/06 only
7.2.4		SoC	
7.2.5		SoC	
7.2.6		SoC	SoC is to verify that the information provided in the report is complete.
7.2.7		SoC	SoC should address auditor's comment from the 2008/09 audit.
7.3	Potable Water Use		
7.3.1		SoC	Prior notice of No Change Prior to commencement of the audit, SWC is to advise if the 2008/09 result has been maintained. This clause only needs to be audited if the prior result has not been maintained, otherwise SoC While this was a requirement for 2008/09, IPART expects that the 2008/09 result should be maintained. SoC should address auditor's comment from the 2008/09 audit.
7.3.2		SoC	SoC should address auditor's comment from the 2008/09 audit.
7.3.3		SoC	
7.3.4		SoC	
7.4	Metering of individual units		
7.4.1		SoC	
8	Pricing		
		SoC	IPART to confirm with Pricing Team
9.1	Water Conservation Target		
9.1.1		SoC	SoC should address auditor's comment (recommendation 9.3) from the 2008/09 audit.
9.1.2		SoC	
9.1.3		SoC	SoC is to verify that the information provided in the report is complete.
9.2	Demand Management Strategy		
9.2.1		AUDIT	
9.2.2		AUDIT	

Licence Clause	Operating Licence Section Title	Scope	COMMENT
9.2.3		AUDIT	Note Delegated Tribunal decision of 26 May 2009 that all parts were auditable Audit should address auditor's comment (recommendation 9.2 and 9.4) from the 2008/09 audit (section 9.2.3(g) and 9.2.3(k) respectively).
9.2.4		NR	
9.3	Reducing Discharges		
9.3.1		SoC	No targets set
9.3.2		SoC	
9.3.3		SoC	
9.4	Water Conservation Rating and Labelling		
9.4.1		SoC	
9.4.2		SoC	
9.5	Review of Part 9 of Licence		
		NR	
10.4	Connection of Services		
10.4.1		SoC	
10.4.2		NR	Definitional clause
10.5	Non-exclusive licence		
		NR	Definitional clause
11.1	Contracting out		
11.1.1		Audit	Water Quality Assurance at Water Filtration Plants The audit will review the processes employed by Sydney Water to manage the operational (not financial) performance of the operators of the Water Filtration Plants. This audit should also provide comment on the effectiveness and efficiency of these processes.
11.1.2		NR	
11.2	Damage and Compensation to Persons		
		SoC	
11.3	Competitive Neutrality		
11.3.1		SoC	No risk to public health, the environment or the community
11.3.2		NR	
12.2	What the audit is to report on		

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Licence Clause	Operating Licence Section Title	Scope	COMMENT
12.2.1 (b)		SoC	Refer to 1 September report. Sydney Water to demonstrate that the MoU exists and is maintained and that Sydney Water has exercised its best endeavours to maintain the MoU.

B Sydney Water Corporation 2010 Risk-based Audit Scope

The sections of the licence that were subject to external audit are set out in the following table.

Licence Clause	Operating Licence Section Title	
3.1	Drinking Water Quality – Standards	AUDIT 3.1.1 and 3.1.3
3.2	Drinking Water Quality – Monitoring	AUDIT 3.1.1
3.3	Drinking Water Quality – Reporting	AUDIT
3.4	Drinking Water – Planning	AUDIT 3.4.4
3.5	Drinking Water – Incident Management	AUDIT 3.5.1
3.6	Other grades of water	AUDIT 3.6.1
4.1-4.4	System Performance Standards	AUDIT 4.4
4.8	Asset management obligation	AUDIT 4.8(a)
4.13	Response time for water main breaks	AUDIT 4.13.1, and 4.13.4
5.5	Customer service indicators	AUDIT 5.5.1-5.5.3
9.2	Demand Management Strategy	AUDIT 9.2.1-9.2.3
11.1	Contracting out	Audit Water Quality Assurance at Water Filtration Plants

