

# **Sydney Catchment Authority Operational Audit 2013/14**

Report to the Minister

**Water — Compliance Report**  
December 2014



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# Contents

<b>1</b>	<b>Executive summary</b>	<b>1</b>
1.1	Overview of audit findings	1
1.2	Annual statement of compliance	2
1.3	Our recommendations	2
<b>2</b>	<b>Introduction and scope</b>	<b>5</b>
2.1	Purpose and structure of this report	5
2.2	Audit scope	6
2.3	The audit process	6
<b>3</b>	<b>Summary of audit findings and recommendations</b>	<b>9</b>
3.1	Water quality	9
3.2	Water supply sufficiency	11
3.3	Catchment	12
3.4	Environment	13
<b>4</b>	<b>Progress on previous audit recommendations</b>	<b>14</b>
	<b>Appendices</b>	<b>17</b>
A	Compliance grades	19
B	2013/14 audit scope	21
C	Operational audit report 2013/14 – SCA	39
D	SCA's statement of compliance	119



# 1 Executive summary

The Independent Pricing and Regulatory Tribunal of New South Wales (**IPART**) has completed the audit of Sydney Catchment Authority's (**SCA**) compliance with the requirements of its 2012-2017 operating licence (**licence**). This audit covers the period from 1 July 2013 to 30 June 2014.

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

Further, in determining the scope of the audit we consult with the NSW Ministry of Health (NSW Health) and seek public submissions. This year, NSW Health did not identify any areas of interest and we received no public comment. We also engaged a specialist auditing firm, Risk Edge Pty Ltd (**Risk Edge**), to assist with the 2013/14 operational audit.

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

## 1.1 Overview of audit findings

This year SCA demonstrated a high level of compliance with its operating licence. The auditor awarded Full Compliance to four of the six clauses audited and High Compliance for the two remaining clauses. In summary, the audit found that SCA achieved:

- ▼ **High Compliance** with requirements relating to water quality.
- ▼ **Full Compliance** with requirements relating to water supply sufficiency.
- ▼ **Full Compliance** with requirements relating to catchment management.
- ▼ **Full Compliance** with requirements relating to environmental management.

SCA's compliance is summarised in Table 1.1 below.

**Table 1.1 SCA's compliance in 2013/14, the second year of its 2012-2017 operating licence**

Licence chapter	Number of audited clauses	Compliance grade awarded		
		Full	High	Adequate
Chapter 1 – Licence details	-	-	-	-
Chapter 2 – Water quality	2	-	2	-
Chapter 3 – Water supply sufficiency	1	1	-	-
Chapter 4 – Catchment	2	2	-	-
Chapter 5 – Assets	-	-	-	-
Chapter 6 – Customers	-	-	-	-
Chapter 7 – Environment	1	1	-	-
Chapter 8 – Performance monitoring	-	-	-	-
<b>Total</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>0</b>

**Source:** Risk Edge, Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART, November 2014.

## 1.2 Annual statement of compliance

In preparing this report we have also reviewed SCA's annual Statement of Compliance (Appendix D). This is an exception based report certified by the CEO and the Chairman of the SCA Board. It lists any licence breaches that occurred during the year. Further, any remedial action taken, or in the process of being taken, to rectify the breaches are reported. This year SCA reported no breaches of its operating licence.

## 1.3 Our recommendations

The auditor prepared a final audit report detailing its findings and recommendations (Appendix C). We endorse all of these findings. There were two clauses for which the auditor did not award Full Compliance. We make one recommendation based on the auditor's recommendations. This recommendation is supplementary to a recommendation made in 2012/13 and is outlined below.

### Recommendation

- 1 SCA should clearly document the following (clauses 2.1.1 and 2.1.2):
  - which Critical Control Points (CCPs) are monitored by the SCA (eg through documenting the relevant instrument numbers which collect CCP data)
  - CCP critical limits, with justification of these limits
  - activities undertaken by SCA to manage CCPs.



Subject to your endorsement of this recommendation, we will request SCA provides a report to us on its progress in implementing the recommendation by 31 March 2014.

Finally, we note that SCA has not closed out all outstanding recommendations from previous operating audits. The auditor found that SCA had not yet completely documented the preventative measures it undertakes to ensure water quality. The auditor also identified that SCA's selected Critical Control Points (CCPs) had been broadly described, on a system level, in SCA's Drinking Water Quality Management Plan (DWQMP) but had not been outlined in site-specific documents. Further, the auditor noted that, although undertaken on site, monitoring methods and CCP points used by the SCA had not been formally identified and documented.



## 2 Introduction and scope

The SCA's primary role is to manage and protect its drinking water catchments, and maintain its dams and other water supply infrastructure in the greater Sydney region. These roles and responsibilities, as well as SCA's objectives, were prescribed by the *Sydney Water Catchment Management Act 1998* (NSW) (**Act**) for the compliance period, in addition to the licence issued to SCA under part 4, division 1 of the Act. We note that on 5 November 2014, the Water NSW Bill (2014) was passed, which now applies to activities previously undertaken by the SCA.<sup>1</sup>

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

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

### 2.1 Purpose and structure of this report

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

- ▼ This chapter (Chapter 2) explains the scope of the audit review and the process followed in undertaking the audit
- ▼ Chapter 3 presents a summary of the audit findings and recommendations

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<sup>1</sup> Under the Bill, SCA's functions are transferred to Water NSW (which will also include State Water's functions), the provisions of the Act are replaced with those of the Bill, and SCA's existing operating licence continues to be in force for Water NSW's SCA functions (as is the case for State Water's current operating licence and Water NSW's State Water functions).

- ▼ Chapter 4 summarises the progress by SCA to address and implement recommendations from previous audits
- ▼ Appendix A contains the table of compliance grades used for this audit
- ▼ Appendix B contains the audit scope
- ▼ Appendix C provides the auditor's detailed audit report
- ▼ Appendix D provides SCA's annual statement of compliance.

## 2.2 Audit scope

This audit covers the period from 1 July 2013 to 30 June 2014.

The audit scope for this year included obligations relating to:

- ▼ Water quality – requirements for the SCA to maintain and implement a Water Quality Management System (WQMS) consistent with the Australian Drinking Water Guidelines (ADWG).
- ▼ Water supply sufficiency – requirements relating to catchment infrastructure being operated and managed consistent with SCA's Design Criteria.
- ▼ Catchment – requirements for managing and protecting SCA's catchment area, consistent with the Act.
- ▼ Environment – requirements relating to SCA's programs to manage environmental risks.

Prior to the audit, SCA provided a statement of compliance certified by the CEO and the Chairman of the SCA Board (Appendix D). This statement reports that SCA has fully complied with its licence in 2013/14 (including the clauses subsequently audited this year).

## 2.3 The audit process

We engaged Risk Edge™ Pty Ltd (Risk Edge) to assist with the 2013/14 audit of SCA. The auditor was required to undertake the following tasks:

1. Liaise with NSW Health and other relevant departments to determine the agencies' views on SCA's licence compliance and whether any licence obligations should receive special focus as part of the audit.
2. Receive stakeholder submissions and comments for inclusion in the audit scope.
3. Prepare an information request (questionnaire) to SCA, setting out all information and evidence requirements, two weeks prior to the commencement of audit interviews.

4. Review reports and documents provided by SCA in response to the questionnaire.
5. Conduct face-to-face interviews with SCA staff at its offices.
6. Conduct field verification to view a physical asset or facility and assess the implementation of SCA's systems and procedures.
7. Assess the level of compliance achieved by SCA against each of the obligations of the licence set out in our risk-based audit scope, providing supporting evidence for this assessment and reporting compliance according to our compliance grades (Appendix A).
8. Assess and report on progress by SCA in addressing any comments made by the relevant Minister and/or recommendations endorsed by us following previous audits, providing supporting evidence for these assessments.
9. Provide drafts of the audit report to us and address comments from SCA and us regarding draft audit findings.
10. Prepare a final report outlining audit findings.

As part of the audit process, we sought submissions from the public on any matter related to the operating licence prior to the commencement of the audit interviews. We advertised for public submissions in the Sydney Morning Herald and The Daily Telegraph on 9 July 2014, and The Land on 10 July 2014. No submissions from the public were received.

Risk Edge contacted NSW Health prior to the audit interview to seek its views on compliance and any other areas, which should be reviewed as part of this audit. NSW Health did not advise the auditor of any specific issues it required to be addressed during the audit (refer to Appendix C for more details).

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

- ▼ ISO 14011 - Guideline for Environmental Auditing
- ▼ ASAE 3100 (2008) - Compliance Engagements issued by the Auditing and Assurance Standards Board
- ▼ ISO 17021:2011 - Conformity Assessment – Requirements for bodies providing audit and certification of management systems (contains principles and requirements for the competence, consistency and impartiality of the audit and certification of management systems of all types)

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

The auditor also carried out the audit according to our Audit Guideline for Public Water Utilities.<sup>2</sup> Under this guideline, auditors can either make **recommendations** or suggest **opportunities for improvement**. Where we support an auditor's recommendation, we follow up the matter to ensure that it is addressed.

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

We held a project start up meeting with the auditors on 5 August 2014, to agree on the project milestones and timing of the audit, and outline our audit expectations. We also held an audit inception meeting with SCA and Risk Edge on the first day of the audit interviews, 22 September 2014. At this meeting mutual understanding and expectations of the audit were established and protocols for the conduct of the audit were agreed. All parties adhered to the agreed protocols throughout the audit.

The operating licence audit interviews were conducted from 22 to 24 September 2014 at SCA's offices in Penrith and Campbelltown. On 23 September 2014, the auditor also undertook a site visit to Cataract Dam, Broughton's Pass, the Warragamba Pipeline Outlet Works and the Raw Water Pumping Station at Prospect Reservoir.

SCA's compliance with the relevant requirements of the operating licence was assessed according to the compliance grades outlined in Appendix A.

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<sup>2</sup> IPART, *Audit Guideline – Public Water Utilities*, July 2014. This Audit Guideline is on our website ([www.ipart.nsw.gov.au](http://www.ipart.nsw.gov.au)).

### 3 Summary of audit findings and recommendations

This chapter provides a summary of the auditor's findings and recommendations for each of the audited clauses of the licence. The 2013/14 audit is the second audit of the 2012-2017 licence.

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

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

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

#### 3.1 Water quality

SCA achieved High for the audited *water quality* clauses.

Chapter 2 of the licence outlines the requirement for SCA to maintain and implement a Water Quality Management System (WQMS) consistent with the Australian Drinking Water Guidelines (ADWG). Under the risk based auditing framework, we consider that this chapter of the licence poses a high risk with respect to both the likelihood and consequence of non-compliance.

**Table 3.1 Summary of compliance with Chapter 2 of the licence – Water quality**

Clause	Requirement	Compliance grading				
		2012/13	2013/14	2014/15	2015/16	2016/17
<b>2</b>	<b>Water quality</b>					
2.1.1	Maintain a WQMS in line with ADWG	High	High	-	-	-
2.1.2	WQMS fully implemented & activities conducted in line with WQMS	High	High	-	-	-

**Source:** Risk Edge, Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART, November 2014.

BB Tech Consulting, Sydney Catchment Authority 2012/13 Operational Audit Final Report, November 2013.

### **Clause 2.1.1 – Maintain a Water Quality Management System**

The auditor reviewed the adequacy and implementation of SCA's Water Quality Management Framework (WQMF) against the 12 Elements of the ADWG and through field verification. The auditor found SCA had implemented its WQMF consistent with requirements of the ADWG, to the satisfaction of NSW Health. However, the auditor noted that some information was incomplete or missing from relevant documents. The auditor reported that the WQMF was missing clearly articulated documentation outlining the selection of CCPs and validation of critical limits. The auditor noted some additional, minor shortcomings in SCA's WQMF as outlined below:

- ▼ a lack of conceptual process flow diagrams identifying external inputs into SCA's system – eg, chlorination by Sydney Water into the Warragamba pipeline
- ▼ no documentation outlining the processes, currently used by SCA, for the design and procurement of equipment
- ▼ no controlled documentation for part of SCA's water quality reporting mechanism for routine results and exceedances.

Accordingly, the auditor awarded SCA High Compliance for clause 2.1.1. Refer to Recommendation 1 below.

### **Clause 2.1.2 – Fully implement the Water Quality Management System**

The auditor found that, as some parts of SCA's WQMS were missing or incomplete (as outlined for clause 2.1.1), the WQMS was therefore unable to be fully implemented.

Accordingly, the auditor awarded SCA High Compliance for clause 2.1.2.

We make one recommendation in relation to clauses 2.1.1 and 2.1.2, based on the auditor's recommendations.



### Recommendation

- 1 SCA should clearly document the following (clauses 2.1.1 and 2.1.2):
  - which CCPs are monitored by the SCA (eg through documenting the relevant instrument numbers which collect CCP data)
  - CCP critical limits, with justification of these limits
  - activities undertaken by SCA to manage CCPs.

The auditor also provided 15 opportunities for improvement for clauses 2.1.1 and 2.1.2. These opportunities focused on formalising documentation regarding processes and procedures implemented by SCA for nine of twelve elements of the ADWG. Details of the opportunities for improvement are available in the auditor's report in Appendix C.

## 3.2 Water supply sufficiency

SCA achieved Full Compliance for the audited *water supply sufficiency* clause.

Chapter 3 of the licence outlines the obligations for operating and managing catchment infrastructure in line with the Design Criteria. Under the risk based auditing framework, we consider that this chapter of the licence poses a high risk with respect to both the likelihood and consequence of non-compliance.

**Table 3.2 Summary of compliance with Chapter 3 of the licence – Water supply sufficiency**

Clause	Requirement	Compliance grading				
		2012/13	2013/14	2014/15	2015/16	2016/17
<b>3</b>	<b>Water supply sufficiency</b>					
3.1.1	Catchment infrastructure management consistent with the Design Criteria	Full	Full	-	-	-

**Source:** Risk Edge, *Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART*, November 2014.

BB Tech Consulting, *Sydney Catchment Authority 2012/13 Operational Audit Final Report*, November 2013.

The SCA Design Criteria have three constraints, security, robustness and reliability of water supply from the dams. The auditor found that SCA demonstrated systems to manage, plan and forecast catchment infrastructure requirements (eg, in relation to water levels in various dams) in a manner consistent with its Design Criteria. As a result, the auditor awarded Full Compliance for clause 3.1.1 and no recommendations or opportunities for improvement were identified.

### 3.3 Catchment

SCA achieved Full Compliance for the audited *catchment* clauses.

Chapter 4 of the licence outlines SCA's obligations for managing and protecting the catchment area in accordance with the Act. Further, this chapter of the licence requires SCA to make information on water quality available. Under the risk based auditing framework, we consider that both clauses 4.1.1 and 4.2.1 poses a high risk with respect to both the likelihood and consequence of non-compliance.

**Table 3.3 Summary of compliance with Chapter 4 of the licence – Catchment**

Clause	Requirement	Compliance grading				
		2012/13	2013/14	2014/15	2015/16	2016/17
<b>4</b>	<b>Catchment</b>					
4.1.1	Catchment management & protection	Full	Full	-	-	-
4.2.1	Make catchment information such as catchment health indicators available to the public	-	Full	-	-	-

**Source:** Risk Edge, *Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART*, November 2014.

BB Tech Consulting, *Sydney Catchment Authority 2012/13 Operational Audit Final Report*, November 2013.

The auditor found that SCA had an extensive suite of programs, monitoring and reporting requirements in place. In particular, the auditor noted that SCA's Healthy Catchments Strategy (HCS) outlined its catchment initiatives and how these were being implemented. The auditor noted that the catchment management activities outlined in SCA's HCS aligned with objectives and functions set out in the Act. The auditor also noted that the programs and budget allocations are as expected of an organisation like SCA. The auditor found that the SCA had made information available on its website. Further, the auditor noted that the SCA had made information available to the public upon information requests.

As a result, the auditor awarded Full Compliance for clauses 4.1.1 and 4.1.2 and no recommendations were identified.

The auditor also provided one opportunity for improvement for clause 4.1.1. This opportunity addressed the potential for further assessment and quantification of SCA's catchment mitigation measures. Further details of the opportunity for improvement are available in the auditor's report in Appendix C.

### 3.4 Environment

SCA achieved Full Compliance for the audited *environment* clause.

Chapter 7 of the licence outlines SCA's obligation for managing its environmental risks. Under the risk based auditing framework, we consider that this chapter of the licence poses a medium risk with respect to both the likelihood and consequence of non-compliance.

**Table 3.4 Summary of compliance with Chapter 7 of the licence – Environment**

Clause	Requirement	Compliance grading				
		2012/13	2013/14	2014/15	2015/16	2016/17
7	<b>Environment</b>					
7.1.4	Maintain and follow programs to manage risks to the environment until the Environmental Management System has been developed	Full	Full	-	-	-

**Source:** Risk Edge, *Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART*, November 2014.

BB Tech Consulting, *Sydney Catchment Authority 2012/13 Operational Audit Final Report*, November 2013.

The auditor found that SCA manages its environmental risks through implementation of its Environmental Management Program (EMP) 2012-2015. The auditor noted that the EMP covers its objectives, targets, and environmental activities and management processes. As a result, the auditor awarded Full Compliance for clause 7.1.4 and no recommendations were identified.

The auditor also provided three opportunities for improvement for clause 7.1.4. These opportunities addressed reporting of environmental issues, document control procedures and managing SCA's business improvements. Further details of the opportunities for improvement are available in the auditor's report in Appendix C.

## 4 Progress on previous audit recommendations

A previous audit in 2013 identified areas where SCA's performance with its licence obligations did not receive Full Compliance. We previously made recommendations to the Minister to address these shortcomings.<sup>3</sup> Two of the five recommendations are ongoing. The following table outlines SCA's progress in implementing these recommended actions.

**Table 4.1 SCA's progress in 2013/14 to address our recommendations from the 2012/13 audit**

Recommendation	Progress
<p>1 The SCA should further develop the Water Quality Management System to:</p> <ul style="list-style-type: none"> <li>▼ further address preventive measures and Critical Control Points (CCPs)</li> <li>▼ revise emergency information and formalise the emergency information revision process</li> <li>▼ clearly define event based monitoring</li> <li>▼ develop a specific drinking water quality policy.</li> </ul>	<p>Largely completed</p> <p>The auditor found that SCA did not explicitly acknowledge drinking water in its Water Quality Policy. However, the auditor also noted that the Water Quality Management Framework (WQMF) and Picnic site Quality Assurance Programs (QAPs) contained appropriate references to drinking water, thus this recommendation could be closed out.</p> <p>The auditor identified that outstanding parts of this recommendation relating to CCPs would be addressed in this year's recommendation.</p>
<p>2 The SCA should:</p> <ul style="list-style-type: none"> <li>▼ formally identify and implement appropriate preventive measures for raw water supplied, particularly those of high importance and any designated as CCPs</li> <li>▼ develop explicit, validated process control tables for each CCP</li> <li>▼ ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul>	<p>Ongoing</p> <p>The auditor noted that the WQMF and CCP tables do not yet fully identify preventative measures to ensure water quality. Further, the auditor found that reasoning for choice of CCPs was not evident in CCP tables and monitoring methods were not clearly articulated.</p>

<sup>3</sup> IPART, *Sydney Catchment Authority Operational Audit 2012/13 Report to the Minister*, 2013.

- |  |  |
|--|--|
| <p>3 The SCA should:</p> <ul style="list-style-type: none"> <li>▼ formally identify and implement appropriate preventive measures for drinking water supplied to its recreational areas (picnic areas), including those designated as CCPs</li> <li>▼ develop explicit, validated process control tables for each CCP</li> <li>▼ ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul> | <p>Ongoing</p> <p>The auditor noted that preventative measures and operational monitoring methods undertaken by the SCA had not been formally documented in the WQMF and CCP tables. The auditor also found that reasons for the choice of CCPs had not been documented in the CCP tables.</p> |
| <p>4 The SCA should ensure logical alignment of data between the Raw Water Quality Incident Response Plan (RWQIRP), Water Monitoring Program, Raw Water Supply Agreements, and process control tables, particularly for CCPs.</p>  | <p>Completed</p> <p>The auditor found that the SCA had updated its RWQIRP and WQMF documentation as required under this recommendation.</p>  |
| <p>5 The SCA should ensure that the RWQIRP is kept up to date.</p>   | <p>Completed</p> <p>The auditor found that the SCA had consulted with NSW Health and revised its RWQIRP to NSW Health's satisfaction.</p>  |

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**Source:** Risk Edge, *Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART*, November 2014, pp 27-30.



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## Appendices





## A Compliance grades

### Compliance grades for public utilities

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

Source: IPART, *Audit Guideline – Public Water Utilities*, July 2014.



## B | 2013/14 audit scope



## Sydney Catchment Authority – 2013-2014 Audit scope

Requirement	Meaning
Audit/ review	Clause to be audited/ reviewed for 2013-2014.
SC	Clause where IPART will rely on the utilities statement of compliance. As below, all clauses require a Statement of Compliance unless there is a designation No requirement.
NR	No requirement (for audit or statement of compliance).

Auditors should note any Tribunal directions shown as comments column.

This scope is based on the audit schedule determined for the new licence 2012 -2017 Trim Record Number D14/16992

### Recommendations from previous years

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

### Statement of Compliance

By 1 September each year, the utility is required to provide a Statement of Compliance (SC) signed by the Managing Director and a Board Member for all licence clauses (no matter whether they are scheduled to be audited or not in that year). Where non compliances are reported this may lead to a late variation to the audit scope to enable a matter to be reviewed if considered warranted.

### Development and implementation of new management systems.

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

The auditor is requested to provide a summary of this update and whether in the auditor's view sufficient progress has been made to meet the future licence requirement. For SCA's licence this applies to the development of a AMS and EMS by 30 June 2015 and that the EMS is certified by 30 June 2017. This opinion should be provided in the cover letter to the audit report.

**Table 2 – Audit Scope for 2012-2103**

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>1</b>	<b>Licence details</b>		
<b>1.1</b>	<b>Objectives of this Licence</b>		
1.1.1	<p>The objective of this Licence is to set out the terms and conditions under which SCA is to:</p> <ul style="list-style-type: none"> <li>a) meet the objectives and other requirements imposed on it in the Act;</li> <li>b) provide, construct, operate, manage and maintain efficient and co-ordinated viable systems and services for supplying Raw Water;</li> <li>c) b)comply with the quality and performance standards specified in this Licence;</li> <li>d) c)compile and report against indicators on the direct impact of its activities on the environment, or other matters as determined by IPART;</li> <li>e) recognise the rights given to Customers; and</li> <li>f) be subject to Operational Audits.</li> </ul>	NR	
<b>1.2</b>	<b>Duration of Licence</b>		
1.2.1	<p>The term of this Licence is 5 years from the Commencement Date.  <i>[Note: This Licence starts on 1 July 2012, which means that it will end on 30 June 2017.]</i></p>	NR	
<b>1.3</b>	<b>Non-exclusive Licence</b>		
1.3.1	<p>This Licence does not prohibit a person from supplying water (whether Raw Water or otherwise) in the Area of Operations if the person is lawfully entitled to do so.</p>	NR	
<b>1.4</b>	<b>Availability of Licence</b>		

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
1.4.1	SCA must make this Licence available free of charge: a) on its website for downloading by any person; and b) at its offices for access or collection by any member of the public.	SC	
<b>1.5</b>	<b>Area of Operations</b>		
1.5.1	This Licence enables SCA to exercise its functions in or in respect of an area in or outside the Area of Operations.	NR	
<b>2</b>	<b>Water Quality</b>		
<b>2.1</b>	<b>Water Quality Management System</b>		
2.1.1	<p>SCA must maintain a Management System that is consistent with:</p> <p>a) the Australian Drinking Water Guidelines; or</p> <p>b) if NSW Health specifies any amendment or addition to the Australian Drinking Water Guidelines that applies to SCA, the Australian Drinking Water Guidelines as amended or added to by NSW Health,</p> <p><b>(Water Quality Management System).</b></p> <p><i>[Note: It is generally expected that SCA will develop a system consistent with the Australian Drinking Water Guidelines, including the Water Quality Framework. However, where NSW Health considers it appropriate, the application of those Guidelines may be amended or added to, to take account of SCA's circumstances and/or Drinking Water quality policy and practices within New South Wales. SCA must also manage the Raw Water Supply System in light of its knowledge of the Drinking Water Supply System. That is, SCA must have adequate systems and processes in place to manage Raw Water quality, taking into account the implementation of planning and risk management across the Drinking Water Supply System.]</i></p>	Audit	<p>Audit will include a risk based adequacy audit of the system, and implementation of the system.</p> <p>The elements of the ADWG framework and the scheme/sites to be visited for field verification will be determined by IPART in consultation with NSW Health and the auditors.</p>

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
2.1.2	SCA must ensure that the Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, including to the satisfaction of NSW Health.	Audit	Auditor is to write to NSW Health regarding its satisfaction with SCA's management of Water Quality.
2.1.3	SCA must obtain NSW Health's approval for any significant changes that SCA proposes to make to the Water Quality Management System before implementing or carrying out its activities in accordance with them	SC	
2.1.4	SCA must advise IPART of any significant changes that it proposes to make to the Water Quality Management System in accordance with the Reporting Manual.	SC	
<b>3</b>	<b>Water Supply Sufficiency</b>		
<b>3.1</b>	<b>Catchment Infrastructure management</b>		
3.1.1	SCA must ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.	Audit	
3.1.2	SCA must make the Design Criteria available to the public in accordance with the Reporting Manual.	SC	
<b>3.2</b>	<b>Re-calculating Water Supply System Yield</b>		



<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
3.2.1	<p>SCA must re-calculate the Water Supply System Yield on the occurrence of any one or more of the following events:</p> <ul style="list-style-type: none"> <li>a) the conclusion of any drought event;</li> <li>b) the commencement of any major modification or augmentation to the Catchment Infrastructure or the Water Supply System Infrastructure which will have a significant impact on SCA's supply of water;</li> <li>c) any material change to the operating rules of the Catchment Infrastructure; or any material change to the Design Criteria.</li> </ul>	SC	<b>Prior notice of change</b> IPART to be advised of any changes prior to finalisation of audit scopes. Audit if triggered by an event in the audit period.
3.2.2	<p>SCA must advise the Minister:</p> <ul style="list-style-type: none"> <li>a) of any changes to the Water Supply System Yield from the previous Water Supply System Yield (including reasons for the change) following a re-calculation under clause 3.2.1; or</li> <li>b) if SCA considers that future demand for Raw Water may exceed the Water Supply System Yield,</li> </ul> <p>in accordance with the Reporting Manual.</p>	SC	<b>Prior notice of change</b> IPART to be advised of any changes prior to finalisation of audit scopes. Audit if triggered by a recalculation of yield
3.2.3	<p>As soon as practicable after advising the Minister of any changes to the Water Supply System Yield under clause 3.2.2(a), SCA must make those changes and reasons for those changes available to the public in accordance with the Reporting Manual.</p>	SC	<b>Prior notice of change</b> IPART to be advised of any changes prior to finalisation of audit scopes
<b>3.3</b>	<b>Reviewing the model for Water Supply System Yield</b>		

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
3.3.1	By 30 June 2016, SCA must retain an independent expert to: a) review its model and procedure for calculating the Water Supply System Yield; b) test the robustness of the model, the key assumptions used in the model, and the process for calculating the Water Supply System Yield, including the appropriate frequency of yield calculation and the appropriateness of the trigger events in clause 3.2.1; and c) advise SCA on whether it should re-calculate the Water Supply System Yield based on the findings of the test conducted in clause 3.3.1(b).	NR	
3.3.2	During the independent expert's review under clause 3.3.1, SCA must consult with: d) Sydney Water; e) stakeholders and regulators as agreed with IPART; and f) any other persons reasonably expected to have an interest in the review of the model under clause 3.3.1.	NR	
3.3.3	SCA must report: a) the findings of the independent expert's review under clause 3.3.1; and b) SCA's response to those findings, in accordance with the Reporting Manual.	NR	
<b>4</b>	<b>Catchment</b>		
<b>4.1</b>	<b>Catchment management</b>		
4.1.1	SCA must manage and protect the Catchment Area consistent with its objectives and functions under the Act.	Audit	Auditor to check compliance with sections 14-19 of the <i>Sydney Water Catchment Management Act 1998</i> .
<b>4.2</b>	<b>Information on Catchment Area</b>		

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
4.2.1	SCA must: a) <i>make available information collected by SCA on water quality relevant to the Catchment Area; and</i> b) <i>provide data in relation to the Catchment Health Indicators to the Catchment Auditor, in accordance with the Reporting Manual.</i>	Audit	Catchment Management Report was due in the audit period. Check compliance with reporting manual
<b>5</b>	<b>Assets</b>		
<b>5.1</b>	<b>Asset Management System</b>		
5.1.1	By 30 June 2015, SCA must develop a Management System that is consistent with: a) the <i>BSI PAS 55:2008 (PAS 55) Asset Management standard</i> ; b) the Water Services Association of Australia's Aquamark benchmarking tool; or c) another asset management standard agreed to by IPART, <b>(Asset Management System)</b> .	NR	
5.1.2	SCA must ensure that by 1 July 2015, the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the System.	NR	.
5.1.3	Until the Asset Management System has been developed in accordance with clause 5.1.1, SCA must take steps towards developing a Management System that will meet the requirements of clause 5.1.1 by 30 June 2015.	Review	A verbal update on progress in developing and implementing an AMS is required. For further details see note at the beginning of this document

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>6</b>	<b>Customers</b>		
<b>6.1</b>	<b>Customer agreement – Customers other than Sydney Water</b>		
6.1.1	SCA must establish terms and conditions for the supply of Raw Water to all of its Customers other than Sydney Water.	SC	
6.1.2	<p>The terms and conditions under clause 6.1.1 must at a minimum include:</p> <ul style="list-style-type: none"> <li>a) the standard of the quality of the water supplied;</li> <li>b) the continuity of the water supplied;</li> <li>c) the costs to be paid by the Customers for the supply of water to them; and</li> <li>d) dispute resolution and complaint handling procedures.</li> </ul> <p><i>[Note: SCA must enter into arrangements with Sydney Water regarding the terms and conditions of supply of water under section 22 of the Act.]</i></p>	SC	
<b>6.2</b>	<b>Complaints</b>		
6.2.1	SCA must maintain a procedure for receiving, responding to, and resolving Complaints, which is consistent with the <i>Australian Standard AS ISO 10002-2006: Customer satisfaction – Guidelines for complaints handling in organizations</i> (ISO 10002:2004, MOD) ( <b>Complaints Handling Procedure</b> ).	SC	
6.2.2	<p>SCA must provide to Customers information concerning the Complaints Handling Procedure which explains how to make a Complaint and how Complaints are managed. SCA must make the information available free of charge:</p> <ul style="list-style-type: none"> <li>a) on its website for downloading by any person; and</li> <li>b) at its offices for access or collection by any member of the public.</li> </ul>	SC	

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>7</b>	<b>Environment</b>		
<b>7.1</b>	<b>Environment management</b>		
7.1.1	By 30 June 2015, SCA must develop a Management System which is consistent with the <i>Australian Standard AS/NZS ISO 14001:2004: Environmental management systems – Requirements with guidance for use (Environmental Management System)</i> .	Review	A verbal update on progress in developing and implementing an EMS is required. For further details see note at the beginning of this document.
7.1.2	SCA must ensure that by 1 July 2015, the Environmental Management System is fully implemented and that all relevant activities are carried out in accordance with the System.	NR	See clause 7.1.1 above
7.1.3	SCA must ensure that: a) by 30 June 2017, the Environmental Management System is certified by an appropriately qualified third party to be consistent with the <i>Australian Standard AS/NZS ISO 14001:2004: Environmental management systems – Requirements with guidance for use</i> ; and b) once the Environmental Management System is certified under clause 7.1.3(a), the certification is maintained during the remaining term of this Licence.	NR	
7.1.4	Until the Environmental Management System has been developed and implemented in accordance with clauses 7.1.1 and 7.1.2, SCA must maintain programs to manage risks to the environment from carrying out its activities and must ensure that all its activities are carried out in accordance with those programs.	Audit	

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>7.2</b>	<b>Environmental Indicators</b>		
7.2.1	SCA must: a) monitor, record and compile data on the Environmental Indicators; and b) report on the Environmental Indicators in accordance with the Reporting Manual.	SC	
<b>8</b>	<b>Performance monitoring</b>		
<b>8.1</b>	<b>Operational Audits</b>		
8.1.1	a) IPART may undertake, or may appoint an Auditor to undertake, an audit on SCA's compliance with: this Licence; b) the Reporting Manual; c) and any matter required by the Minister, <b>(Operational Audit)</b> .	NR	
8.1.2	SCA must provide IPART or any Auditor with all information in or under its possession, custody or control which is necessary to conduct the Operational Audit, including whatever information is reasonably requested by IPART or an Auditor.	NR	
8.1.3	SCA must provide any information requested under clause 8.1.2 within a reasonable time of it being requested.	NR	

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
8.1.4	<p>For the purposes of any Operational Audit or verifying a report on an Operational Audit, SCA must, within a reasonable time of being required by IPART or an Auditor, permit IPART or the Auditor to</p> <ul style="list-style-type: none"> <li>a) have access to any works, premises or offices occupied by SCA;</li> <li>b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;</li> <li>c) take on to any such premises, works or offices any person or equipment necessary for the purposes of performing the Operational Audit or verifying any report on the Operational Audit;</li> <li>d) inspect and make copies of, and take extracts from, any books and records of SCA that are maintained in relation to the performance of SCA's obligations under this Licence; and</li> <li>e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with SCA, including any of SCA's officers and employees.</li> </ul>	NR	
<b>8.2</b>	<b>Reporting</b>		
8.2.1	<p>SCA must comply with its reporting obligations set out in the Reporting Manual, which include:</p> <ul style="list-style-type: none"> <li>a) reporting to IPART, NSW Health, the Minister, and the Catchment Auditor; and</li> <li>b) making reports and other information publicly available,</li> </ul>	SC	
8.2.2	SCA must maintain sufficient record systems that enable it to report accurately in accordance with clause 8.2.1.	SC	

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>8.3</b>	<b>Provision of information</b>		
8.3.1	If IPART requests that SCA provide information relating to the performance of its obligations under clause 8.2, SCA must provide the information requested within a reasonable time of IPART's request, including providing IPART with physical access to the records required to be kept under clause 8.2 and providing physical and/or electronic records.	NR	
8.3.2	SCA must provide IPART with such information as is reasonably required to enable IPART to conduct any review or investigation of SCA's obligations under this Licence.	NR	
8.3.3	If SCA contracts out any of its activities to third parties (including a subsidiary), it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such third parties provide information and do the things specified in this clause 8 as if that third party were SCA	NR	
8.3.4	If IPART or an Auditor requests information under this clause 8 which is confidential, the information must be provided to IPART or the Auditor, subject to IPART or the Auditor entering into reasonable arrangements to ensure that the confidential information remains confidential.	NR	



<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>9.</b>	<b>Memorandum of Understanding</b>		
<b>9.1</b>	<b>Memorandum of Understanding</b>		
9.1.1	<p>SCA must maintain a Memorandum of Understanding in accordance with section 36 of the Act, with each of the following:</p> <ul style="list-style-type: none"> <li>a) Director-General of the Ministry of Health; and</li> <li>b) Environment Protection Authority.</li> </ul> <p>[Note: Section 36(1) of the Act requires SCA to enter into a Memorandum of Understanding with the Director-General of the Department of Health. The name of the Department of Health was changed to the Ministry of Health on 5 October 2011.]</p>	SC	<p><b>Prior notice of change</b></p> <p>IPART to be advised of any changes to MOUs prior to finalisation of audit scopes</p>
9.1.2	<p>The purpose of a Memorandum of Understanding is to form the basis for co-operative relationships between the parties to the memorandum. In particular:</p> <ul style="list-style-type: none"> <li>a) the Memorandum of Understanding with Ministry of Health is to recognise Ministry of Health's role in providing advice to the NSW Government in relation to water quality standards and public health.</li> <li>b) the Memorandum of Understanding with Environment Protection Authority is to recognise the role of the Environment Protection Authority in protecting the environment of New South Wales.</li> </ul>	SC	

<b>Licence Clause</b>	<b>Operating Licence Obligations</b>	<b>Requirements 2013/14</b>	<b>Comments</b>
<b>10</b>	<b>End of term review</b>		
<b>10.1</b>	<b>End of Term Review</b>		
10.1.1	<p>It is anticipated that a review of this Licence will commence in the first quarter of 2016 to investigate:</p> <ul style="list-style-type: none"> <li>a) whether this Licence is fulfilling its objectives; and</li> <li>b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence, <b>(End of Term Review)</b>. <p><i>[Note: In the event that IPART undertakes the End of Term review, IPART intends to:</i></p> <ul style="list-style-type: none"> <li>a) <i>commence the end of term review (including undertaking public consultation) in the first quarter of 2016;</i></li> <li>b) <i>report to the Minister by 30 April 2017 on:</i> <ul style="list-style-type: none"> <li>i. <i>the findings of the End of Term Review,</i></li> <li>ii. <i>any recommendations for conditions to be included in a new licence, and</i></li> <li>iii. <i>any recommendations for amending any law that adversely impacts on this Licence; and</i></li> </ul> </li> <li>c) <i>make the report to the Minister publicly available after the End of Term Review.]</i></li> </ul> </li></ul>	NR	
10.1.2	SCA must provide to the person undertaking the End of Term Review such information as is reasonably required to enable the person to undertake the End of Term Review.	NR	

**Table 2 - Recommendations / Outstanding items from previous audits**

<b>Recommendation number</b>	<b>Operational issue (Licence reference where applicable)</b>	<b>IPART Recommendation to Minister</b>	<b>Progress since 2012/13 Audit Reported in 31 March Report 2014</b>	<b>Guidance for 2013/14 Audit</b>
<b>2012/13 - 1</b>	<b>Water Quality - 2.1.1</b>	The SCA should further develop the Water Quality Management System to: further address preventive measures and Critical Control Points (CCPs) revise emergency information and formalise the emergency information revision process clearly define event based monitoring develop a specific drinking water quality policy.	In Progress Work on the issues raised with the Water Quality Management System has commenced and is expected to be completed by 30 June 2014	Audit to check progress
<b>2012/13 - 2</b>	<b>Water Quality - 2.1.2</b>	The SCA should: formally identify and implement appropriate preventive measures for raw water supplied, particularly those of high importance and any designated as CCPs develop explicit, validated process control tables for each CCP ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).	In Progress The issues identified with Regard to preventative measures for raw water supply will be addressed through identification and documentation of CCPs in the supply System. This is expected to be completed by 30 June 2014	Audit to check progress
<b>2012/13 - 3</b>	<b>Water Quality - 2.1.2</b>	The SCA should: formally identify and implement appropriate preventive measures for drinking water supplied to its recreational areas (picnic areas), including those designated as CCPs develop explicit, validated process control tables for each CCP	In Progress The Water Safety Plans for SCA picnic areas are expected to be finalised by 30 June 2014. Preventative measures and CCPs will be clearly documented in this plan.  The SCA will seek	Audit to check progress

		ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).	endorsement from NSW Health to comply with the Public Health Act 2010 and Public Health Regulation 2012	
<b>2012/13 - 4</b>	<b>Water Quality - 2.1.2</b>	The SCA should ensure logical alignment of data between the Raw Water Quality Incident Response Plan (RWQIRP), Water Monitoring Program, Raw Water Supply Agreements, and process control tables, particularly for CCPs.	In progress The Water quality triggers in the water quality incident response plan have been aligned with the Raw Water Supply Agreement and Water Monitoring Program. The Critical Limits in the CCP Tables will be aligned with these triggers.	Audit to check progress
<b>2012/13 - 5</b>	<b>Water Quality - 2.1.2</b>	The SCA should ensure that the Recycled Water Quality Incident Response Protocol is kept up to date.	Complete The raw water quality incident response plan has been revised in consultation with major customers and endorsed by NSW health on 16 December 2013. The matters raised during the 2012/13 operational audit have been addressed in the revised document, which was approved by SCA's A/Chief Executive on 17 January 2014.	Audit to check completion

**Table 3 Past site visits for Sydney Catchment Authority**

<b>Audit year</b>	<b>Location</b>	<b>Facility</b>	<b>Notes</b>
2012/13		Upper Canal	
2011/12	Nil		
2010/11	Nil		

## C | Operational audit report 2013/14 – SCA



# Sydney Catchment Authority 2013/14 Operational Licence Audit (RFQ 14/132) for IPART

Version: Final

26 November 2014

Risk Edge™ Project # 134

In conjunction with Atom Consulting and BBTech  
Consulting

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ITEM	DESCRIPTION
<b>PROJECT DESCRIPTION:</b>	Sydney Catchment Authority: 2013/14 Operational Licence Audit (RFQ 14/132) Risk Edge™ Project # 134
<b>DOCUMENT NAME:</b>	Risk Edge™ Pty Ltd (2014) Sydney Catchment Authority: 2013/14 Operational Licence Audit (RFQ 14/132) for IPART. Risk Edge™ Pty Ltd (with Atom Consulting and BBTech Consulting) Project # 134. Version: Final.
<b>CLIENT:</b>	Independent Pricing and Regulatory Tribunal of New South Wales (IPART)
<b>CLIENT ADDRESS:</b>	PO Box Q290 QVB POST OFFICE NSW 1230
<b>INTENDED USE:</b>	This document has been prepared on behalf of and for the exclusive use of Risk Edge™ Pty Ltd's Client and is bound by the terms of the agreement with that Client. Risk Edge™ Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this document by any third party.

## Document History

TYPE	AUTHOR	ISSUED TO/DATE	NOTES
Internal Draft #1	Dr Annette Davison and Dr Annalisa Contos	Mr Bob Burford / 7 October 2014	For QA checking.
Internal Draft #2	Mr Bob Burford	Dr Annette Davison / 13 October 2014	First QA check.
Internal Draft #3	Dr Annette Davison	Mr Bob Burford / 13 October 2014	Final clarifications.
First Draft	Dr Annette Davison and Dr Annalisa Contos	IPART / 15 October 2014	First Draft of audit report as required by Audit Guideline.
Revised Draft	Dr Annette Davison and Dr Annalisa Contos	IPART / 8 November 2014	IPART and SCA responses addressed and revisions incorporated where appropriate. Responses checked with Mr Bob Burford.
Final for QA	Dr Annette Davison and Dr Annalisa Contos	Mr Bob Burford / 24 November 2014	For final QA check after IPART and SCA responses on Revised Draft addressed and revisions incorporated where appropriate.
Final QA	Mr Bob Burford	Dr Annette Davison / 26 November 2014	Final QA check.
Final	Dr Annette Davison and Dr Annalisa Contos	IPART / 26 November 2014	Final audit report.





## Glossary

ITEM	DESCRIPTION
ADWG	NHMRC, NRMCC (2011) Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra. Version 2.0 Updated December 2013. ISBN Online: 1864965118).
AMS	Asset Management System (see ISO 55000)
Aquality	WSAA's <i>Framework for Management of Drinking Water Quality</i> benchmarking tool.
Aquamark	WSAA's asset management benchmarking tool.
Audit Guideline	IPART (2014) "Public Water Utility Audit Guideline – Revision 5" (July 2014)
Audit Period	The dates of 1 July 2013 to 30 June 2014 over which the SCA's compliance is checked against certain clauses of its Operating Licence (as determined by IPART).
BMS	Business Management System
CCP	Critical control point (as defined in the Framework).
CE/CEO	Chief Executive or Chief Executive Officer
C.t	C.t (concentration (C) and time (t)) values are related to the disinfectant dosage for the drinking water. A C.t value is the product of the concentration of a disinfectant (e.g. free chlorine) and the contact time with the water being disinfected. It is typically expressed in units of mg.min/L.
DWMS	Drinking Water Management System
DWQMP	Drinking Water Quality Management Plan
EMS	Environmental Management System (see ISO 14000)
EPA	NSW Environment Protection Authority
ESG	Environment, Social, Governance
eTRIM	A proprietary software package used for the management of documents and records.
Framework	This term refers to either the <i>Framework for Management of Drinking Water Quality</i> or the <i>Framework for Management of Recycled Water Quality and Use</i> . Its meaning <i>in situ</i> depends on the context of the clause being assessed.
GIPA	<i>Government Information (Public Access) Act 2009</i> (NSW)
IPART	Independent Pricing and Regulatory Tribunal of NSW
ISO 9000	A family of international standards relating to quality management
ISO 14000	A family of international standards relating to environmental management
ISO 31000	ISO 31000:2009 Risk Management – Principles and Guidelines. (adopted in Australia as AS/NZS ISO 31000:2009 (ISO 31000))
ISO 55000	ISO 55000:2014 Asset management -- Overview, principles and terminology.
Licence	Sydney Catchment Authority Operating Licence 2012-2017
NWI	National Water Initiative
OEHS	NSW Office of Environment and Heritage
O&M	Operation and Maintenance
PAS 55	BSI PAS 55:2008 (PAS 55) Asset Management standard
PSAT	Pollution Source Assessment Tool
QAP	Quality Assurance Program
QMS	Quality Management System (see ISO 9000)
RFQ	Request for Quote
RWQIRP	Raw Water Quality Incident Response Plan
RWSA	Raw Water Supply Agreement
SOPs	Standard Operating Procedures
Systems-based Audit	Where specific systems (such as the <i>Framework for Management of Drinking Water Quality</i> ) and their adequacy and implementation are audited, rather than prescriptive licence clauses.
WQMF	Water Quality Management Framework
WQMS	Water Quality Management System
WSAA	Water Services Association of Australia



## Executive Summary

### Audit Background

Through a competitive tender process, the Risk Edge™ audit team was awarded the contract, by the Independent Pricing and Regulatory Tribunal of NSW (IPART), to conduct the 2013/2014 Operating Licence<sup>1</sup> audit of the Sydney Catchment Authority (SCA). As part of this contract, the Risk Edge™ team was required to audit SCA's compliance with certain clauses of the Licence, as determined by IPART, over the period 1 July 2013 to 30 June 2014 (the audit period).

The Risk Edge™ team was also required to audit any existing recommendations outstanding from previous audits and express an opinion on progress to meeting or closing-out these recommendations, as well as the audit compliance of the auditable Licence clauses.

### Auditor Statement

The audit team declares the following:

- It has seen sufficient evidence on which to base its conclusions. The evidence base included (but was not limited to):
  - Pre-audit review of documentation (Excel spreadsheets, Screen shots, Powerpoint presentations, PDF and Word documents, and other files; the SCA website; and the completed audit questionnaire).
  - Face-to-face interviews over two days in the office (22 and 24 September 2014).
  - Formal request and receipt of letter from NSW Health on SCA's performance over the audit period.
  - One day of field verification (23 September 2014) at Cataract picnic area and dam, Broughtons Pass, Campbelltown Office and Prospect handover point.
  - Post-audit review of follow up supporting evidence requested at both the interviews and field verification.
- The audit findings accurately reflect the professional opinion of the auditors.
- When conducting the audit, determining audit findings and preparing the report, the lead auditor and team members had regard to the current audit guideline, the audit deed and the requirements set out in the RFQ.
- The audit findings have not been unduly influenced by the utility and/or any of its associates.

While the Risk Edge™ team has followed good auditing practice in requesting samples of information, following lines of questioning, and employing a range of audit techniques to arrive at its conclusions, the team notes that because of the inherent limitations of auditing, there may be areas where gaps, errors, fraud or other non-compliances may have occurred and may not have been detected by the auditing process. The team has accepted the evidence provided to it in good faith and together with information sought from external stakeholders (NSW Health, Catchment Auditor), has formed its view of SCA's compliance against the selected clauses and recommendations for this 2013/2014 audit.

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<sup>1</sup> Sydney Catchment Authority Operating Licence 2012-2017  
[http://www.sca.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0018/36351/SCA-Operating-Licence-2012-2017.pdf](http://www.sca.nsw.gov.au/__data/assets/pdf_file/0018/36351/SCA-Operating-Licence-2012-2017.pdf)



## Major Findings

The SCA has performed very well in the team's opinion, particularly in the areas of water supply sufficiency, catchment and environment which all received full compliance. However, there are some areas for water quality, which did not receive full compliance. The summary findings for the Licence areas are shown below.

LICENCE AREA / COMPLIANCE	MAJOR FINDINGS
2. Water Quality / High Compliance	<p>The Auditors wrote to the Chief Health Officer of NSW Health on 4 August 2014 to inquire about NSW Health's satisfaction with the SCA's management of water quality. A reply from NSW Health was received by the Auditors<sup>2</sup> stating that NSW Health was satisfied with the SCA in terms of public health aspects of its operations in this context. However, the auditors found that some information within the SCA's drinking (picnic site) and raw water management documents is still incomplete or missing (as noted in the auditor recommendations from 2012-2013). To provide more detail, see findings below based on the elements of the Framework for Management of Drinking Water Quality:</p> <p><b>Element 1:</b> Some minor administrative shortcomings were identified that pose no risk to public health, the environment, customer relations, or SCA finances and operations. Apart from these inadequacies, the SCA demonstrated a strong commitment to the management of raw water quality and drinking water quality.</p> <p><b>Element 2:</b> Conceptual system flow diagrams for both the raw water and the drinking water systems, including water flow direction, are not in place. An adequate conceptual flow diagram is essential to undertaking a proper risk assessment and to facilitate mitigation of the risks to public health and the environment.</p> <p><b>Element 3:</b> While CCPs have been identified for both the raw water and the drinking water systems, they are still not articulated in a way that allows the reader to fully understand the process – nor are the critical limits validated. These issues pose potential risks to public health and were identified in the 2012-2013 operational audit report.</p> <p><b>Element 4:</b> The SCA demonstrated that it has good procedures and processes for its operations. There was not a strong link between the CCPs and their underlying procedures (also identified in the 2012-2013 audit report). The material and chemical component is not well explained in the Framework document. These matters could pose risks to public health.</p> <p><b>Element 5:</b> No issues were identified for the raw water monitoring but documentation needs to be clarified for chlorine verification monitoring at the picnic sites. Failure to clarify this documentation could result in confusion and so, could pose risks to public health.</p> <p><b>Element 6:</b> Linkages between the CCPs and the emergency responses and the Raw Water Quality Incident Management Protocol were poor. This issue is covered in more detail in Element 3 and 4 and in the responses to the water quality recommendation from the 2012-2013 audit. These poor linkages could pose risks to public health but have been addressed in the auditor's comments for Elements 3 and 4.</p> <p><b>Element 7:</b> The SCA demonstrated that it has good induction processes to introduce staff to its BMS including its WQMS. SCA demonstrated it had an active program to identify staff training needs, ensure currency of its staff's expertise and maintained appropriate records of that training.</p> <p><b>Element 8:</b> The SCA demonstrated a comprehensive community engagement strategy through the information provided and the material available through its website.</p> <p><b>Element 9:</b> The SCA has an active and relevant research program. The high compliance grade awarded is reflective of the lack of properly articulated validation evidence which could pose a risk to public health.</p> <p><b>Element 10:</b> Generally speaking document control is undertaken well using eTRIM although the auditors were provided with an uncontrolled document as part of the pre-on site audit evidence package. See Environment section for OFI relating to this issue. The overall quality of the document control system suggests that this is an isolated incident and there are no major systemic risks.</p> <p><b>Element 11:</b> The SCA has good internal systems in place for auditing and capturing the results of audits for further action.</p> <p><b>Element 12:</b> The SCA has good processes in place for reviewing and capturing information and implementing actions, for water quality improvements.</p>
3. Water Supply Sufficiency / Full Compliance	<p>The Design Criteria are requirements to operate and maintain the infrastructure within constraints to protect security of supply while avoiding frequent or lengthy periods of water restrictions.</p>

<sup>2</sup> Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014



LICENCE AREA / COMPLIANCE	MAJOR FINDINGS
	The auditors found that during the audit period, the SCA has operated and managed the catchment infrastructure, consistent with the Design Criteria.
4. Catchment / Full Compliance	The SCA has an extensive suite of programs, monitoring and reporting requirements in place to comprehensively comply with this clause of its licence. The programs and budget allocations in place are consistent with those expected of an organisation of the SCA's size and area of operations.  The SCA has complied with all requirements to make information available.
7. Environment / Full Compliance	The SCA currently has good procedures in place for managing the environment (noting that catchment management is directly linked to environmental management) both of a direct control and 'influence' (indirect control) nature. The auditor noted very few areas for improvement however where they occurred, they were more of a business wide nature, rather than of an environmental nature <i>per se</i> . The auditor was satisfied that the SCA's environmental management activities were consistent with the requirements of the licence.

## Recommendations

### 2. Water Quality

The auditors found that two of the five recommendations resulting from the 2012-2013 audit report which related to the Water Quality requirements in the Operating Licence have not yet been satisfactorily addressed. The shortcomings that gave rise to these recommendations are significant as they relate to critical control points (CCPs) and other measures designed to ensure that water quality conforms to requirements. The ADWG (2011; page 3-13) state that:

*"Critical control points should be identified for those hazards that represent a significant risk and require elimination or reduction to assure supply of safe drinking water." ... "Deviation from critical limits indicates loss of control of the process or activity and should be regarded as representing a potentially unacceptable health risk."*

Thus ineffective documentation and implementation of CCPs and other preventive measures have the potential to result in significant risks to public health, for example through the supply of raw water that cannot be adequately treated to drinking water quality. SCA's management of CCPs forms an important component of the multi-barrier approach to drinking water quality along with the implementation of other controls outside of CCPs, such as upstream preventative catchment management controls. Additional downstream barriers are provided and managed by Sydney Water. Also inadequate documentation poses additional risks during periods of organisational change.

SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		COMPLIANCE	RECOMMENDATIONS (WHERE MADE)
2.1	2.1.1	High	Even though no new recommendations have been made, but because the two existing recommendations have not been closed out, the auditors have awarded a High compliance grade.  However, the auditors feel that a supplementary component to the 2012-2013 Water Quality recommendations should be added as follows:
	2.1.2		<ul style="list-style-type: none"> <li><b>CCP Process Tables and Limits:</b> The CCPs and their limits (particularly for the raw water supply system) need to be better articulated and specifically refer to the activities undertaken by the SCA in managing those points. This improvement in clarity can be achieved, where possible, by simply referencing key procedures and the use of models. Further, the reasoning behind the choice of limits for the CCPs should be clearly stated.</li> </ul>



### 3. Water Supply Sufficiency

SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		COMPLIANCE	RECOMMENDATIONS (WHERE MADE)
3.1	N/A	Full	There are no recommendations for this clause.

### 4. Catchment

SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		COMPLIANCE	RECOMMENDATIONS (WHERE MADE)
4.1	4.1.1	Full	There are no recommendations for this clause.
4.2	4.2.1	Full	There are no recommendations for this clause.

### 7. Environment

SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		COMPLIANCE	RECOMMENDATIONS (WHERE MADE)
7.1	7.1.4	Full	There are no recommendations for this clause.



## TABLE OF CONTENTS

<b>GLOSSARY .....</b>	<b>3</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
AUDIT BACKGROUND .....	4
AUDITOR STATEMENT .....	4
MAJOR FINDINGS .....	5
RECOMMENDATIONS .....	6
<b>I INTRODUCTION .....</b>	<b>10</b>
I.1 OBJECTIVES .....	10
I.2 AUDIT METHOD .....	10
I.2.1 Audit Scope .....	10
I.2.2 Audit Standard .....	12
I.2.3 Audit Steps .....	12
I.2.4 Audit Team .....	12
I.2.5 Audit Grades .....	13
I.3 REGULATORY REGIME .....	13
I.3.1 System Context .....	13
I.3.2 Stakeholder Context .....	14
I.3.3 Legal and Regulatory Context .....	15
I.4 QUALITY ASSURANCE PROCESS .....	19
I.4.1 Information .....	19
I.4.2 Reporting .....	19
<b>2 SECTION 2: WATER QUALITY .....</b>	<b>20</b>
2.1 SUMMARY OF FINDINGS .....	20
2.2 RECOMMENDATIONS .....	22
2.2.1 Recommendations .....	22
2.2.2 Opportunities for Improvement .....	22
<b>3 SECTION 3: WATER SUPPLY .....</b>	<b>24</b>
3.1 SUMMARY OF FINDINGS .....	24
3.2 RECOMMENDATIONS .....	24
3.2.1 Recommendations .....	24
3.2.2 Opportunities for Improvement .....	24
<b>4 SECTION 4: CATCHMENT .....</b>	<b>25</b>
4.1 SUMMARY OF FINDINGS .....	25
4.2 RECOMMENDATIONS .....	25
4.2.1 Recommendations .....	25
4.2.2 Opportunities for Improvement .....	25
<b>5 SECTION 7: ENVIRONMENT .....</b>	<b>26</b>
5.1 SUMMARY OF FINDINGS .....	26
5.2 RECOMMENDATIONS .....	26
5.2.1 Recommendations .....	26
5.2.2 Opportunities for Improvement .....	26
<b>6 RECOMMENDATIONS FROM PREVIOUS AUDITS .....</b>	<b>27</b>



6.1	2012/13 – 1 (WATER QUALITY - 2.1.1) .....	27
6.2	2012/13 – 2 (WATER QUALITY - 2.1.2) .....	28
6.3	2012/13 – 3 (WATER QUALITY - 2.1.2) .....	29
6.4	2012/13 – 4 (WATER QUALITY - 2.1.2) .....	29
6.5	2012/13 – 5 (WATER QUALITY - 2.1.2) .....	30
<b>APPENDIX A. DETAILED AUDIT FINDINGS .....</b>		<b>31</b>
A.1	CLAUSE 2: WATER QUALITY .....	31
A.2	CLAUSE 3: WATER SUPPLY SUFFICIENCY .....	61
A.3	CLAUSE 4: CATCHMENT .....	63
A.4	CLAUSE 7: ENVIRONMENT .....	74

## TABLES

Table 1-1. Clauses audited for the 2013/2014 Operational Licence audit of the SCA. ....	10
Table 1-2. Recommendations for inclusion in 2013/2014 audit scope. ....	11
Table 1-3. Steps involved in the 2013/2014 audit of the SCA. ....	12
Table 1-4. Audit team members and their roles. ....	12
Table 1-5. Compliance grades for public utilities. ....	13
Table 1-6. Key stakeholders for SCA, in the context of the operating licence. ....	14
Table 1-7. Key legal and formal instruments for SCA in the context of the operating licence. ....	15
Table 1-8. Key SCA objectives and functions to be taken into account in this audit. ....	18
Table 2-1. Application of the Framework for Management of Drinking Water Quality (audit scope). ....	20
Table 2-2. Element by element audit grade summary for Clause 2.1.1. ....	21
Table 2-3. Opportunities for improvement – Water Quality. ....	22
Table 6-1. Example validation table. ....	28

## FIGURES

Figure 1-1. Sydney Catchment Authority's drinking water catchments. ....	17
Figure 1-2. The scoring assessment process used in WSAA's drinking water quality benchmarking <i>Aquality</i> Tool. ....	19



# 1 Introduction

## 1.1 Objectives

The objective of this project was to conduct an audit of the Sydney Catchment Authority's (SCA) operations, consistent with audit requirements set out in the "Public Water Utility Audit Guideline – Revision 5" (July 2014) (Audit Guideline 2014), against:

- The Sydney Catchment Authority "Operating Licence 2012 -2017 (April 2012)" and
- The Sydney Water Catchment Management Act 1998 (NSW)<sup>3</sup>.

It should be noted that:

- The audit is not of the full Operating Licence but against specific clauses, which are selected by IPART on a risk-basis.
- Where the Operating Licence requires the licence holder to implement a system and that implementation is at a date outside of this audit period, the licence holder is required to provide an update of system implementation. The Audit Guideline (2014) stipulates that the auditor is to provide a summary of this update and whether, in the auditor's opinion, sufficient progress has been made to meet the future licence requirement. However, this summary is to be provided not in the audit report but as an attachment to the cover note to the audit report.<sup>4</sup>

## 1.2 Audit Method

### 1.2.1 Audit Scope

The scope for the 2013/2014 audit is shown in Table 1-1 including any considerations to be taken into account as instructed by IPART.

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

Table 1-1. Clauses audited for the 2013/2014 Operational Licence audit of the SCA.

LICENCE SECTION / NAME	SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		DESCRIPTION	NOTE/GUIDANCE
2. Water Quality	2.1 Water Quality Management System	2.1.1	2.1.1 SCA must maintain a Management System that is consistent with: a) the Australian Drinking Water Guidelines; or b) if NSW Health specifies any amendment or addition to the Australian Drinking Water Guidelines that applies to SCA, the Australian Drinking Water Guidelines as amended or added to by NSW Health, (Water Quality Management System).	It is generally expected that SCA will develop a system consistent with the Australian Drinking Water Guidelines, including the Water Quality Framework. However, where NSW Health considers it appropriate, the application of those Guidelines may be amended or added to, to take account of SCA's circumstances and/or Drinking Water quality policy and practices within New South Wales.  SCA must also manage the Raw Water Supply System in light of its knowledge of the Drinking Water Supply System. That is, SCA must have adequate systems and processes in place to manage

<sup>3</sup> Noting that a reference to an Act implies a reference to its supporting regulation/s.

<sup>4</sup> Audit Guideline (2014), page 5.





LICENCE SECTION / NAME	SPECIFIC CLAUSES / SUB-CLAUSES AUDITED		DESCRIPTION	NOTE/GUIDANCE
				Raw Water quality, taking into account the implementation of planning and risk management across the Drinking Water Supply System.
		2.1.2	2.1.2 SCA must ensure that the Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, including to the satisfaction of NSW Health.	The auditor is to write to NSW Health regarding its satisfaction with SCA's management of Water Quality.
3. Water Supply Sufficiency	3.1 Catchment Infrastructure Management	3.1.1	SCA must ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.	N/A
4. Catchment	4.1. Catchment Management	4.1.1	SCA must manage and protect the Catchment Area consistent with its objectives and functions under the Act.	Auditor to check compliance with sections 14-19 of the <i>Sydney Water Catchment Management Act 1998</i> (NSW).
	4.2 Information on Catchment Area	4.2.1	SCA must: a) make available information collected by SCA on water quality relevant to the Catchment Area; and b) provide data in relation to the Catchment Health Indicators to the Catchment Auditor, in accordance with the Reporting Manual.	The Catchment Management Report was due in the audit period. Check compliance with reporting manual.
7. Environment	7.1 Environmental Management	7.1.4	Until the Environmental Management System has been developed and implemented in accordance with clauses 7.1.1 and 7.1.2, SCA must maintain programs to manage risks to the environment from carrying out its activities and must ensure that all its activities are carried out in accordance with those programs.	N/A

**Table 1-2. Recommendations for inclusion in 2013/2014 audit scope.**

IDENTIFIER	RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)
2012/13 – 1 (Water Quality - 2.1.1)	The SCA should further develop the Water Quality Management System to: <ul style="list-style-type: none"> <li>• further address preventive measures and Critical Control Points (CCPs)</li> <li>• revise emergency information and formalise the emergency information revision process</li> <li>• clearly define event based monitoring</li> <li>• develop a specific drinking water quality policy.</li> </ul>
2012/13 – 2 (Water Quality - 2.1.2)	The SCA should: <ul style="list-style-type: none"> <li>• formally identify and implement appropriate preventive measures for raw water supplied, particularly those of high importance and any designated as CCPs</li> <li>• develop explicit, validated process control tables for each CCP</li> <li>• ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul>
2012/13 – 3 (Water Quality - 2.1.2)	The SCA should: <ul style="list-style-type: none"> <li>• formally identify and implement appropriate preventive measures for drinking water supplied to its recreational areas (picnic areas), including those designated as CCPs</li> <li>• develop explicit, validated process control tables for each CCP</li> <li>• ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul>
2012/13 – 4 (Water Quality - 2.1.2)	The SCA should ensure logical alignment of data between the Raw Water Quality Incident Response Plan (RWQIRP), Water Monitoring Program, Raw Water Supply Agreements, and process control



IDENTIFIER	RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)
	tables, particularly for CCPs.
2012/13 – 5 (Water Quality - 2.1.2)	The SCA should ensure that the Raw Water Quality Incident Response Protocol is kept up to date.

### 1.2.2 Audit Standard

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

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

- ISO 14011 'Guideline for Environmental Auditing'
- ASAE 3100 (2008) Compliance Engagements issued by the Auditing and Assurance Standards Board
- ISO 17021:2011 Conformity Assessment – Requirements for bodies providing audit and certification of management systems (contains principles and requirements for the competence, consistency and impartiality of the audit and certification of management systems of all types)

### 1.2.3 Audit Steps

The audit steps taken were largely as set out in the Audit Guideline 2014 (as relevant to the audit team; Table 1-3).

Table 1-3. Steps involved in the 2013/2014 audit of the SCA.<sup>5</sup>

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

### 1.2.4 Audit Team

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

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

TEAM MEMBER	ROLE IN PROJECT
Dr Annette Davison	<ul style="list-style-type: none"> <li>• Project Manager (overall responsibility for quality assured outcomes)</li> <li>• Auditor Services responsible in particular for: <ul style="list-style-type: none"> <li>○ Joint Auditor Water Quality</li> <li>○ Lead Auditor Environment</li> <li>○ Lead Auditor Catchment</li> </ul> </li> </ul>

<sup>5</sup> Audit Guideline (2014), Table 2-1, page 5.








TEAM MEMBER	ROLE IN PROJECT
	<ul style="list-style-type: none"> <li>o Joint Auditor Ministerial Recommendations</li> </ul>
Dr Annalisa Contos	<ul style="list-style-type: none"> <li>• Auditor Services responsible in particular for: <ul style="list-style-type: none"> <li>o Joint Auditor Water Quality</li> <li>o Lead Auditor Water Supply Sufficiency</li> <li>o Lead Auditor Assets</li> <li>o Joint Auditor Ministerial Recommendations</li> </ul> </li> </ul>
Mr Bob Burford	<ul style="list-style-type: none"> <li>• Specific review of audit deliverables to provide Quality Assured Outcomes</li> </ul>

### 1.2.5 Audit Grades

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

Table I-5. Compliance grades for public utilities.<sup>6</sup>

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

## 1.3 Regulatory Regime

In order to fully articulate the regulatory regime for the SCA, the following are described in this section:

- System context
- Stakeholder context
- Legal and regulatory context

### 1.3.1 System Context<sup>7</sup>

The SCA was established in 1999, and is largely governed by the *Sydney Water Catchment Management Act 1998* (NSW). The SCA manages and protects more than 16,000 km<sup>2</sup> of catchments across Greater Sydney and other areas, from which raw water is sourced (Figure I-1). The SCA also manages dams and other water supply infrastructure.

<sup>6</sup> Audit Guideline (2014), Table C.1, page 23.

<sup>7</sup> <http://www.sca.nsw.gov.au/about/who-we-are>



SCA's customers for the raw water include:

- Sydney Water
- Shoalhaven Council
- Wingecaribbee Council
- Goulburn Mulwaree Council.

The recipients of the raw water collectively supply water to approximately 5 million people in the following regions:

- Sydney and the Illawarra
- Blue Mountains
- Southern Highlands
- Goulburn
- Shoalhaven.

The responsible minister for the SCA is the Minister for Natural Resources, Lands and Water.

In addition to raw water, the SCA is also responsible for the provision of drinking water at the recreational areas (picnic sites) located at various dams.

### 1.3.2 Stakeholder Context

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

Key stakeholders<sup>8</sup> for SCA include those set out in Table 1-6.

**Table 1-6. Key stakeholders for SCA, in the context of the operating licence.**

SOURCE	KEY STAKEHOLDERS
External	<p>NSW Government including:</p> <ul style="list-style-type: none"> <li>• Premier (overarching oversight)</li> <li>• Dams Safety Committee (safety aspects for 'prescribed dams')</li> <li>• Department of Finance and Services (numerous administrative aspects of the SCA's operations)</li> <li>• Department of Premier and Cabinet</li> <li>• Department of Planning and Environment (regulation of land use in the catchment and that may impact SCA's infrastructure)</li> <li>• NSW EPA (regulation of environmental aspects)</li> <li>• NSW Health (regulation of water quality relating to public health issues)</li> <li>• NSW IPART (operating licence administration and pricing matters)</li> <li>• Department of Primary Industries (NSW Office of Water) (regulation of water use)</li> <li>• NSW Treasury (financial aspects of the SCA's operations)</li> </ul> <p>Customers and consumers (key stakeholders in the operating licence)</p> <p>Owners and operators of land in catchment areas</p> <p>Local Government bodies in catchment areas</p> <p>Public (may be impacted by the SCA's operations in general e.g. through provision of drinking water at the recreational areas)</p>

<sup>8</sup> A reference to a NSW agency or department also implies a reference to the Minister/Director-General of that agency or department as a key stakeholder.



SOURCE	KEY STAKEHOLDERS
	External consultants and contractors (provision of services to the SCA)
Internal	CEO (responsibility for the running and successful operation of the SCA) Staff (responsible for operation and management of the SCA) Board (oversight and direction for the SCA's activities and operation)

### 1.3.3 Legal and Regulatory Context

SCA operates largely in a NSW context but must also have regard to matters outside of that jurisdiction, where those matters may impact on how SCA does business. A summary of the key legal and regulatory instruments for SCA is provided in Table 1-7.<sup>9</sup>

**Table 1-7. Key legal and formal instruments for SCA in the context of the operating licence.<sup>10</sup>**

INSTRUMENT	RELEVANCE
<i>Annual Reports (Departments) Act 1985</i> (NSW)	Applies to reporting requirements of SCA
<i>Competition and Consumer Act 2010</i> (Cth)	An Act for the promotion of competition and fair trading and provision for consumer protection. Could apply to the 'fitness for purpose' of drinking water supplied.
<i>Dams Safety Act 1978</i> (NSW)	Component of the safe management of 'prescribed dams'.
<i>Environmental Planning and Assessment Act 1979</i> (NSW)	Establishes certain concurrence powers for the SCA.
<i>Fisheries Management Act 1994</i> (NSW)	Requirements for protection of fish in SCA areas.
<i>Government Information (Public Access) Act 2009</i> (NSW)	Information may be requested from SCA, which relates to aspects of the licence.
<i>Independent Pricing and Regulatory Tribunal Act 1992</i> (NSW)	Allows for the regulation of utilities such as SCA including the administration and auditing of licences and pricing functions.
Memorandum of Understanding with NSW EPA	Sets out the working relationship between NSW EPA and SCA.
Memorandum of Understanding with NSW Health 2011	Sets out the working relationship between NSW Health and SCA.
<i>Protection of the Environment Operations Act 1997</i> (NSW)	This Act sets out the environmental operating context for SCA including, where relevant, the need to gain and operate under an Environmental Protection Licence for its facilities.
<i>Public Health Act 2010</i> (NSW)	The objectives of this Act are to protect and promote public health, control risks to public health, promote the control and prevent the spread of infectious diseases and recognise the role of local governments in protecting public health. Supporting Regulations are intended to support the smooth operation of the Act.
State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011	This SEPP has three main aims: <ul style="list-style-type: none"> <li>To support healthy water catchments that deliver high quality water and permit development that supports that goal.</li> <li>To ensure that consent authorities only allow proposed developments that have a neutral or beneficial effect on water quality</li> <li>To support water quality objectives in the drinking water catchment.</li> </ul>

<sup>9</sup> Intended to be illustrative, not exhaustive, for the purposes of this report.

<sup>10</sup> Where legislation is identified in this table, a reference to that legislation should be taken to include any Regulation/s made pursuant to it.



INSTRUMENT	RELEVANCE
Sydney Catchment Authority Operating Licence 2012-2017	A licence issued by the Governor of NSW, which enables SCA to provide relevant services within its area of operations. This licence also gives effect to the operational audits (this audit) to which SCA is subject.
<i>Sydney Water Catchment Management Act 1998</i> (NSW)	<p>This Act sets out the specific operating context for SCA including its objectives and functions (Table I-8), which must be taken into account in the operational audit.</p> <p>The Act also requires that a Catchment Audit is undertaken every three years.</p>
Water Licences and Approvals package 2012	The package was issued to the SCA on 1 May 2012, under the <i>Water Management Act 2000</i> (NSW), by the NSW Office of Water (NOW) on behalf of the Water Administration Ministerial Corporation. The package includes <i>Water Access Licences</i> and <i>Combined Water Supply Work and Water Use Approvals</i> which require that the SCA complies with the provisions of the <i>Water Sharing Plan for the Greater Metropolitan Region Unregulated Rivers Water Sources 2011</i> .
Water supply agreements	Set out terms and conditions for the supply of raw water to SCA customers.



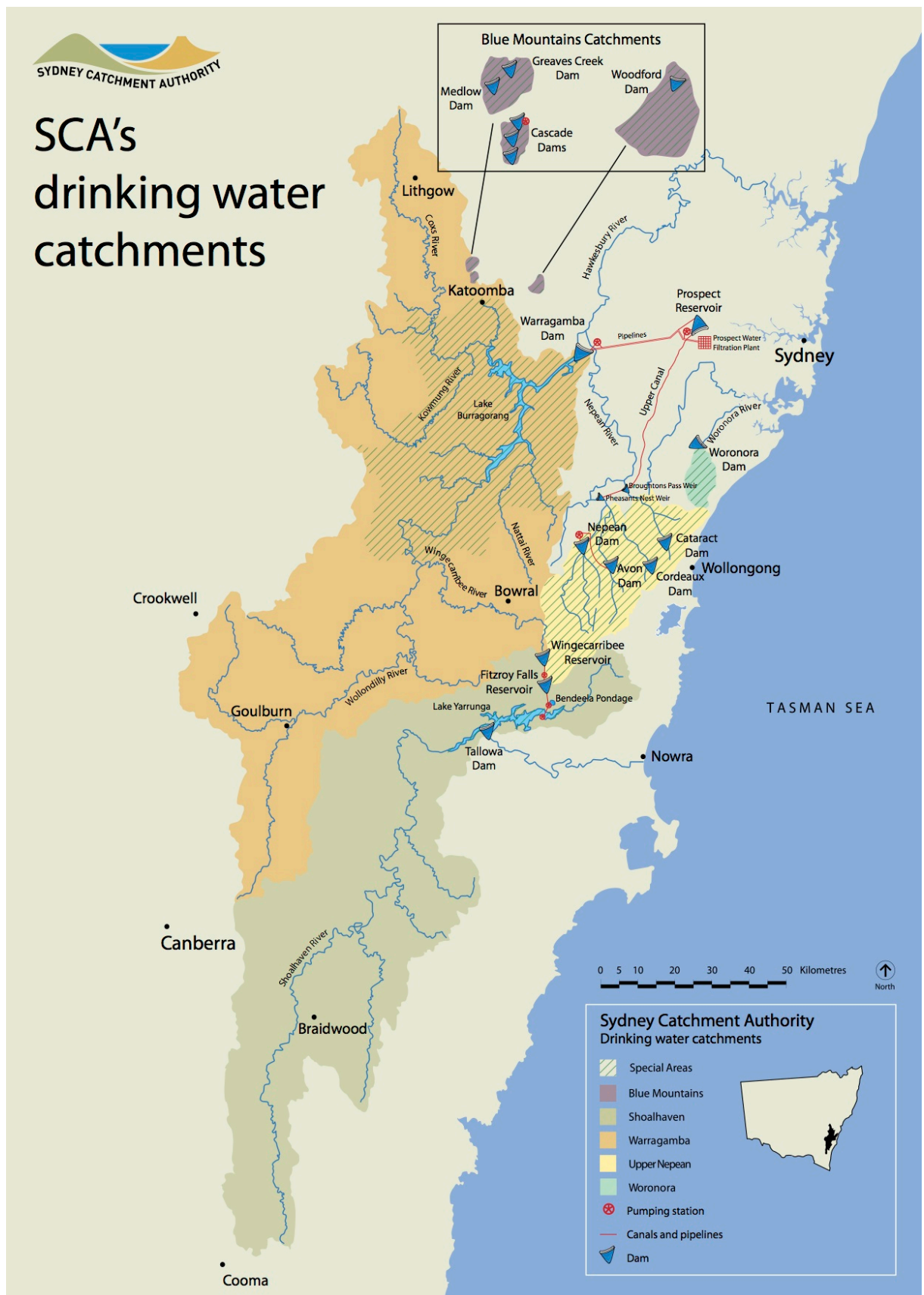


Figure I-1. Sydney Catchment Authority's drinking water catchments.<sup>11</sup>

<sup>11</sup> [http://www.sca.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0018/36405/Catchment-map-fact-sheet-December-13.pdf](http://www.sca.nsw.gov.au/__data/assets/pdf_file/0018/36405/Catchment-map-fact-sheet-December-13.pdf)





Table I-8. Key SCA objectives and functions to be taken into account in this audit.<sup>12</sup>

SECTION	DETAIL
14 Objectives	<p>(1) The principal objectives of the SCA are as follows:</p> <ul style="list-style-type: none"> <li>a) to ensure that the catchment areas and the catchment infrastructure works are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment,</li> <li>b) to ensure that water supplied by it complies with appropriate standards of quality,</li> <li>c) where its activities affect the environment, to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6 (2) of the <i>Protection of the Environment Administration Act 1991</i>,</li> <li>d) to manage the SCA's catchment infrastructure works efficiently and economically and in accordance with sound commercial principles.</li> </ul> <p>(2) In implementing its principal objectives, the SCA has the following special objectives:</p> <ul style="list-style-type: none"> <li>a) to minimise risks to human health,</li> <li>b) to prevent the degradation of the environment.</li> </ul>
15 General Functions	<p>(2) The SCA has the primary function of protecting the quality and quantity of water in catchment areas.</p>
16 Specific Functions	<p>(a) to supply water to the Sydney Water Corporation,</p> <p>(b) to supply water to water supply authorities, prescribed local councils or prescribed county councils,</p> <p>(b1) to supply water to licensed network operators or licensed retail suppliers within the meaning of the <i>Water Industry Competition Act 2006</i>,</p> <p>(c) to supply water to other persons and bodies, but under terms and conditions that prevent the person or body concerned from supplying the water for consumption by others within the State unless the person or body is authorised to do so by or under an Act,</p> <p>(c1) to provide or construct systems or services for supplying water,</p> <p>(c2) to install new works,</p> <p>(c3) to generate and supply hydro-electricity and undertake any associated activities, whether on the SCA's own account or with others,</p> <p>(d) to manage and protect the catchment areas and the catchment infrastructure works vested in or under the control of the SCA,</p> <p>(e) to protect and enhance the quality of water controlled by the SCA,</p> <p>(f) to undertake research on catchments generally, and in particular on the health of the SCA's catchment areas,</p> <p>(g) to undertake an educative role within the community.</p>
17 Concurrence and other roles under environmental planning instruments	<p>(1) The SCA has such functions as are necessary or convenient to carry out any concurrence or other role conferred or imposed on it by or under any environmental planning instrument in relation to a catchment area.</p> <p>(1A) For the purpose of enabling the SCA to exercise the functions conferred on it by this section:</p> <ul style="list-style-type: none"> <li>(a) the SCA has and may exercise the powers conferred on a council under Division 1A of Part 6 of the <i>Environmental Planning and Assessment Act 1979</i>, and</li> <li>(b) an authorised officer has and may exercise the powers conferred by that Division on a person authorised by a council under section 118A (1) of that Act, subject to that Division.</li> </ul>
18 Concurrence and other roles under licensing legislation	<p>(1) The SCA has such functions as are necessary or convenient to carry out any concurrence or other role conferred or imposed on it by the regulations under this Act in relation to the grant of licences under any Act or instrument under any Act so far as they relate to:</p> <ul style="list-style-type: none"> <li>(a) activities carried out or proposed to be carried out within a catchment area, or</li> <li>(b) activities carried out or proposed to be carried out outside a catchment area but being of such a nature as affect or may affect a catchment area.</li> </ul> <p>(2) The regulations under this Act may, on the recommendation of the Minister and with the approval of the Minister administering the Act concerned, make provision for or with respect to:</p> <ul style="list-style-type: none"> <li>(a) requiring the SCA to be notified of applications for the grant of specified classes of licences, and</li> <li>(b) preventing the grant of specified classes of licences without the concurrence of the SCA.</li> </ul>
19 Compliance role under other legislation	<p>(1) The SCA has such functions as are necessary or convenient to carry out any inspectorial, enforcement or other role conferred or imposed on it by the regulations under this Act by reference to powers conferred on other persons or bodies under any Act or instrument under any Act so far as they relate to:</p> <ul style="list-style-type: none"> <li>(a) activities carried out or proposed to be carried out within a catchment area, or</li> <li>(b) activities carried out or proposed to be carried out outside a catchment area but being of such a nature as affect or may affect a catchment area.</li> </ul> <p>(2) The regulations under this Act may, on the recommendation of the Minister and with the approval of the Minister administering the Act concerned, make provision for or with respect to conferring or imposing on the SCA any such function, and to specifying the effect or consequences of the exercise of any such function.</p>

<sup>12</sup> Licence Section 4.1.1: Auditor to check compliance with sections 14-19 of the *Sydney Water Catchment Management Act 1998* (NSW).





## 1.4 Quality Assurance Process

### 1.4.1 Information

Our quality assurance approach to this audit involved peer review and audit team leader responsibility for all material outputs from the Risk Edge™ team, commencing from the development and submission of the audit questionnaires through to the various levels of reporting. In particular, a non-auditing team member (see below) was assigned to peer review both the draft and final reports.

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

The auditors also had regard to the approach used in the Water Supply Association of Australia's (WSAA's) *Aquality* Tool (Figure 1-2), which includes the aspects of how well processes have been developed, how mature the documentation is, how well covered all areas of the agency are and how frequently the measures are implemented in practice.

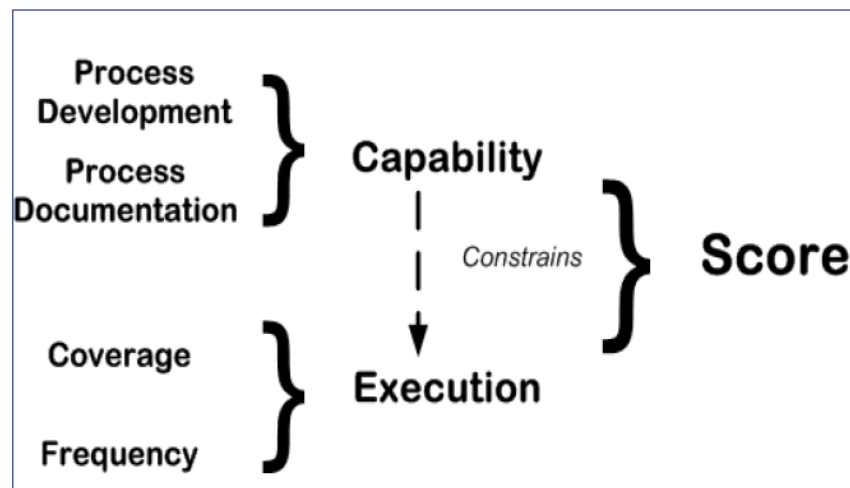


Figure 1-2. The scoring assessment process used in WSAA's drinking water quality benchmarking *Aquality* Tool.<sup>13</sup>

### 1.4.2 Reporting

Throughout the audit report writing process, the documentation was proofed and cross-checked by the audit team members as well as undergoing a separate quality assurance from a non-auditing team member (Mr Bob Burford). The audit team leader (Dr Davison) had overall responsibility for the veracity of the report's content.

<sup>13</sup> Donlon, P., Davison, A. and Deere, D. (2006) Sleeping well at night. Implementing Continuous Improvement in Water Quality Management using *Aquality*. *WSAA Journal*. Issue No. 6 November 2006. Note that this approach is also used in the National Water Commission's *Requality* Tool.

## 2 Section 2: Water Quality

### 2.1 Summary of Findings

#### Clause 2.1.1 – High Compliance

As part of its requirement for this clause, SCA must maintain a Management System consistent with the ADWG.

#### Clause 2.1.2 – High Compliance

The SCA must also ensure that the Water Quality Management System (WQMS) is fully implemented and that all relevant activities are carried out in accordance with the System, including to the satisfaction of NSW Health.

Detailed assessment in respect of these clauses is presented in **Appendix A.1**.

The audit scope for this section of the licence is provided in Table 2-1.

**Table 2-1. Application of the Framework for Management of Drinking Water Quality (audit scope).**

Element	Component	2013-2014 Audit Focus (by scheme)	
		Adequacy	Implementation
1 Commitment to Drinking Water Quality Management	1.1 Drinking water quality policy		Y
	1.2 Regulatory and formal requirements		Y
	1.3 Engaging stakeholders		Y
2 Assessment of the Water Supply System	2.1 Water supply system analysis	Y	Y
	2.2 Assessment of water quality data	Y	Y
	2.3 Hazard identification and risk assessment	Y	Y
3 Preventative Measures for Drinking Water Quality Management	3.1 Preventive measures and multiple barriers	Y	Y
	3.2 Critical control points	Y	Y
4. Operational Procedures and Process Control	4.1 Operational Procedures	Y	Y
	4.2 Operational monitoring	Y	Y
	4.3 Corrective action	Y	Y
	4.4 Equipment capability and maintenance	Y	Y
	4.5 Materials and chemicals	Y	Y
5 Verification of Drinking Water Quality	5.1 Drinking water quality monitoring	Y	Y
	5.2 Consumer satisfaction	Y	Y
	5.3 Short term evaluation of results	Y	Y
	5.4 Corrective action	Y	Y
6 Management of Incidents and Emergencies	6.1 Communication	Y	Y
	6.2 Incident and emergency response protocols	Y	Y
7 Employee Awareness and Training	7.1 Employee awareness and involvement		Y
	7.2 Employee training		Y
8 Community Involvement and Awareness	8.1 Community consultation		Y
	8.2 Communication		Y
9 Research and Development	9.1 Investigative studies and research monitoring		Y
	9.2 Validation of processes		Y
	9.3 Design of equipment		Y
10 Documentation and Reporting	10.1 Management of documentation and records	Y	Y
	10.2 Reporting	Y	Y
11 Evaluation and Audit	11.1 Long term evaluation of results	Y	Y
	11.2 Audit of drinking water quality management	Y	Y
12 Review and Continual Improvement	12.1 Review by senior executive	Y	Y
	12.2 Drinking water quality improvement plan	Y	Y

To test the adequacy and implementation of the Water Quality Management System (WQMS), the auditors used the element by element guidance from IPART which is presented in Table 2-1. A field verification audit was undertaken and consisted of verification at the following sites:



- Cataract Dam picnic site – provision of drinking water, inspection of the treatment facilities including usage of current documentation as stated in the overarching Drinking Water Quality Management Plan for the picnic sites.
- Broughtons Pass – handover point with Sydney Water.
- Campbelltown Office – verification of certain office activities related to the WQMS including display of Water Quality Policy.
- Prospect – handover point with Sydney Water and verification of key assets and asset identifiers.

The compliance grades and key issues noted against each element, to support the grading for the overall clauses, are provided in Table 2-2.

The Auditors wrote to the Chief Health Officer of NSW Health on 4 August 2014 to inquire about NSW Health's satisfaction with the SCA's management of water quality. A reply from NSW Health was received by the Auditors<sup>14</sup> stating that NSW Health was satisfied with the SCA in terms of public health aspects of its operations in this context. However, the auditors reached the conclusion that given the results for each element and for both the raw water and the picnic site supplies, the overall grade for both 2.1.1 and 2.1.2 was 'high'. The auditors note that a 'high compliance' grade was also awarded for this clause in the 2012-2013 audit.

**Table 2-2. Element by element audit grade summary for Clause 2.1.1.**

Element	Compliance Grade	Key Issues
Element 1: Commitment to Drinking Water Quality Management	Full	While, there was a small issue noted with drinking water not being explicitly acknowledged in the Water Quality Policy, the auditors felt that because of references to drinking water quality in the WQMF and the Picnic Site QAPs and provided that the next iteration of the policy includes specific reference to drinking water quality responsibilities, that this element achieved full compliance.
Element 2: Assessment of the Drinking Water Supply System	High	Conceptual system flow diagrams for both the raw water and the drinking water systems, including water flow direction, are not in place. An adequate conceptual flow diagram is essential to undertaking a proper risk assessment. <sup>15</sup>
Element 3: Preventive Measures for Drinking Water Quality Management	High	While CCPs have been identified for both the raw water and the drinking water systems, they are still not articulated in a way that allows the reader to fully understand the process – nor are the critical limits validated. Both issues being the subject of the water quality recommendations from 2012-2013.
Element 4: Operational Procedures and Process Control	High	SCA demonstrated that it had good procedures and processes for their operations. There was not a strong link between the CCPs and their underlying procedures (relating to the 2012-2013 recommendations). The material and chemical component is not well explained in the Framework document.
Element 5: Verification of Drinking Water Quality	High	No issues noted for the raw water monitoring but documentation needs to be clarified for chlorine verification monitoring at the picnic sites.
Element 6: Management of Incidents and Emergencies	Full	No additional issues were noted beyond the poor linkage between the CCPs and the emergency responses and the Raw Water Quality Incident Management Protocol. This issue is covered in more detail in Element 3/4 and in the water quality recommendation responses.
Element 7: Employee Awareness and Training	Full	SCA demonstrated that it has good induction process to introduce staff to its BMS including its WQMS. SCA demonstrated it had an active program to identify staff training needs, ensure currency of its staff's expertise and maintained appropriate records of that training.
Element 8: Community Involvement and Awareness	Full	SCA demonstrated a comprehensive community engagement strategy through the information provided and the material available through its website.
Element 9: Research and Development	High	The SCA has an active and relevant research program, however, the high compliance grade is reflective of the lack of properly articulated validation evidence.
Element 10: Documentation and Reporting	High	Generally speaking document control is undertaken well using eTRIM although the auditors were provided with an uncontrolled document as

<sup>14</sup> Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014.

<sup>15</sup> Examples can be found in the NSW Health guidance at <http://www.health.nsw.gov.au/environment/water/Pages/drinkwater-nsw.aspx>.



Element	Compliance Grade	Key Issues
		part of the pre-on site audit evidence package. See Environment section for OFI relating to this issue.
Element 11: Evaluation and Audit	Full	The SCA has good internal systems in place for auditing and capturing the results of audits for further action.
Element 12: Review and Continual Improvement	Full	The SCA has good processes in place for reviewing, capturing and actioning information on water quality improvements.

## 2.2 Recommendations

### 2.2.1 Recommendations

The auditors considered SCA's progress in addressing five recommendations resulting from the 2012-2013 audit report which related to the Water Quality requirements in the Operating Licence. In Section 6, the auditors have reported that two of these recommendations have not yet been satisfactorily addressed, namely recommendations 2012/13 – 2 and 3 (Table 1-2).

The shortcomings that gave rise to these recommendations are significant. They relate to critical control points (CCPs) and other measures designed to ensure that water quality conforms to requirements. The ADWG (2011) states that:

*“Critical control points should be identified for those hazards that represent a significant risk and require elimination or reduction to assure supply of safe drinking water.” ... “Deviation from critical limits indicates loss of control of the process or activity and should be regarded as representing a potentially unacceptable health risk.”*

Thus ineffective documentation and implementation of CCPs and other preventive measures may pose significant risks to public health. Inadequate documentation poses additional risks during periods of organisational change.

The auditors found that the CCP process tables are currently not in a useful form for informing the reader of exactly what the SCA does at those points to manage water quality and who is responsible. The auditors therefore suggest the following supplementary component to the 2012-2013 audit recommendations (2012/13 – 2 and 3) to underpin the criticality of the previous recommendation and to highlight the fact that significant shortcomings still exist:

**CCP Process Tables and Limits:** The CCPs and their limits (particularly for the raw water supply system) need to be better articulated and specifically refer to the activities undertaken by the SCA in managing those points. This can be achieved, where possible, by simply referencing key procedures and the use of models. Further, the reasoning behind the choice of limits for the CCPs should be clearly stated.

### 2.2.2 Opportunities for Improvement

The opportunities for improvement identified for water quality are listed below (Table 2-3).

Table 2-3. Opportunities for improvement – Water Quality.

Element	Opportunities for Improvement (OFIs)
Element 1: Commitment to Drinking Water Quality Management	<ul style="list-style-type: none"> <li><b>OFI E1-1 Induction (staff and contractors):</b> Implement a water quality section of the combined induction forms to ensure that all understand their responsibilities in terms of water quality protection.</li> <li><b>OFI E1-2 Legal and Other Requirements Register:</b> Ensure that the register is updated with relevant standards for water quality protection including business continuity and the use of appropriate materials for drinking water supply (AS/NZS 5050 and AS/NZS 4020 respectively). Ensure that key contractual information, such as the Raw Water Supply Agreements, is included in the register and the relevant water quality implications are also included in reference to key documents that are already cited in the register such as the Building Code of Australia.</li> </ul>
Element 2: Assessment of the Drinking Water Supply System	<ul style="list-style-type: none"> <li><b>OFI E2-1 Historical Record of WQMF Risk Assessment Attendance:</b> Ensure that in future iterations of the WQMF and future updates of the C2T risk assessment, that information on workshop participants is consolidated into a water quality team register showing who has been involved in the analysis/risk assessments including internal and external personnel</li> </ul>



Element	Opportunities for Improvement (OFIs)
	<ul style="list-style-type: none"> <li>• <b>OFI E2-2 Process Flow Diagrams:</b> For the picnic sites and for the WQMF, when the plans are revised, ensure that conceptual process flow diagrams are developed to aid the risk assessment process and that water flows and any handover points and changes in responsibility are clearly articulated e.g. where water carters are involved and/or supply to the NPWS and the Scout camp. Ensure that inputs to SCA's systems are included in the flow diagram e.g. chlorination of raw water at Broughtons Pass.</li> <li>• <b>OFI E2-3 Delivery/Handover Points:</b> Hard copy file 2001/1573 SCA and SWC Boundaries and Monitoring Points – Strategy and Policy Division (Control Document No. 10) does not contain information relating to the Prospect Raw Water Pumping Station and therefore, the Delivery Points, as part of the system assessment, are not current and do not allow a full risk assessment to be undertaken. Ensure that the raw water pumping station is included in subsequent materials and certainly, within the flow diagram for the raw water delivery system.</li> <li>• <b>OFI E2-4 Chlorine Disinfection (Picnic Sites):</b> Chlorine disinfection efficiency (by calculating C.t), should be undertaken where possible for the picnic sites to show validation of the control. This OFI is particularly important as the SCA has only one disinfection barrier per system and therefore, needs to ensure that that barrier is adequate for achieving primary kill and the provision of a chlorine residual for the reticulation. Further, the event of "Underdosing of chlorine resulting in inability to achieve primary kill" needs to be included in the risk assessment when revised.</li> <li>• <b>OFI E2-5 Picnic Site Drinking Water Risk Visibility:</b> Review whether the picnic site drinking water quality should be more visible within the ERM Framework and the Corporate Risk Register.</li> </ul>
Element 3: Preventive Measures for Drinking Water Quality Management	<ul style="list-style-type: none"> <li>• No OFIs for the element.</li> </ul>
Element 4: Operational Procedures and Process Control	<ul style="list-style-type: none"> <li>• <b>OFI E4-1 Materials and Chemicals' Management:</b> SCA should better articulate the procedures and processes in place for Materials and chemicals.</li> </ul>
Element 5: Verification of Drinking Water Quality	<ul style="list-style-type: none"> <li>• <b>OFI E5-1 Chlorine Verification Monitoring:</b> Ensure that chlorine verification monitoring for the picnic sites is included as part of the parameter suite within the Water Monitoring Program.</li> </ul>
Element 6: Management of Incidents and Emergencies	<ul style="list-style-type: none"> <li>• <b>OFI E6-1 Inclusion of the Current Standard for Business Continuity:</b> SCA should consider incorporating AS/NZS 5050:2010 Business Continuity – Managing Disruption Related Risk in the next review of the Corporate Incident Management Framework.</li> </ul>
Element 7: Employee Awareness and Training	<ul style="list-style-type: none"> <li>• No OFIs for the element.</li> </ul>
Element 8: Community Involvement and Awareness	<ul style="list-style-type: none"> <li>• No OFIs for the element.</li> </ul>
Element 9: Research and Development	<ul style="list-style-type: none"> <li>• <b>OFI E9-1 Component Level Descriptions Required:</b> The 'Design of equipment' component is missing from the WQMF document. The document needs to be revised overall to ensure that other components are not missed.</li> </ul>
Element 10: Documentation and Reporting	<ul style="list-style-type: none"> <li>• <b>OFI E10-1 Picnic Site Water Quality Reporting:</b> Ensure that picnic site drinking water quality results are provided with more visibility in the Board Water Report with their own section or line item.</li> </ul>
Element 11: Evaluation and Audit	<ul style="list-style-type: none"> <li>• <b>OFI E11-1 Visibility of Water Quality Audit:</b> Ensure that the Aquality audit is added as a line item to the Internal Audit Plan and</li> <li>• <b>OFI E11-2 Picnic Site Water Quality Audit:</b> Ensure that the Aquality audit also covers the picnic site water quality and QAPs.</li> </ul>
Element 12: Review and Continual Improvement	<ul style="list-style-type: none"> <li>• <b>OFI E12-1 Review of Picnic Site QAPs and Drinking Water Quality Management Plan:</b> Ensure that the picnic site systems are specifically included as part of the executive review.</li> </ul>



## 3 Section 3: Water Supply

### 3.1 Summary of Findings

#### Clause 3.1.1 – Full Compliance

This clause requires SCA to ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.

The Design Criteria are specified in the operating licence as the levels of service for security, robustness and reliability of water available for supply to Customers other than a Small Customer. The Design Criteria and the operating rules for the Catchment Infrastructure are used to estimate the Water Supply System Yield. The Design Criteria during the audit period were:

- Security level of service - SCA's storages do not approach emptiness (defined as 5% of water in the storage) more often than 0.001% of the time (that is, restrictions are not too severe).
- Robustness level of service – restrictions occur no more often than once in every 10 years on average (that is, restrictions are not too frequent).
- Reliability level of service – restrictions last no longer than 3% of the time on average (that is, restrictions are not for excessively long periods).

It was found that the SCA has operated and managed the catchment infrastructure consistent with the design criteria.

Detailed assessment in respect of this clause is presented in **Appendix A.2**.

### 3.2 Recommendations

#### 3.2.1 Recommendations

There are no recommendations for this clause.

#### 3.2.2 Opportunities for Improvement

There are no opportunities for improvement for this clause.



## 4 Section 4: Catchment

### 4.1 Summary of Findings

#### Clause 4.1.1 – Full Compliance

This clause requires SCA to manage and protect the Catchment Area consistent with its objectives and functions under the Act. The auditor was also to check compliance with sections 14-19 of the *Sydney Water Catchment Management Act 1998* (NSW) (Table 1-8) in relation to this clause.

It was found that, the SCA has an extensive suite of programs, monitoring and reporting requirements in place to show that it comprehensively manages this clause of its licence. The programs and budget allocations in place are consistent with those expected of an organisation of the SCA's size and area of operations. The auditor would like to note that the diligence and subject matter expertise of the staff members involved in this section of the audit was exemplary, as one might expect from an organisation that is tasked with managing the catchment.

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

#### Clause 4.2.1 – Full Compliance

This clause requires SCA to ensure that it must.

- a) make available information collected by SCA on water quality relevant to the Catchment Area; and
- b) provide data in relation to the Catchment Health Indicators to the Catchment Auditor, in accordance with the Reporting Manual.

It was found that the SCA had made information available not only on its website but also through requests for information received from the public. The auditor confirmed with the Catchment Auditor that the SCA had provided the relevant information in a timely fashion, to allow the catchment audit to be undertaken.

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

### 4.2 Recommendations

#### 4.2.1 Recommendations

There are no recommendations for this section.

#### 4.2.2 Opportunities for Improvement

There is one opportunity for improvement.

**OFI 4.1.1-1 Further Quantification of Catchment Mitigation Measures:** Building on the SCA's body of knowledge and progress in this area, consider how catchment mitigation measures can be further assessed and quantified including economic benefits such as quantification of return on investment and incorporation into ESG frameworks. Consider whether it might be possible to use PSAT to facilitate quantification.



## 5 Section 7: Environment

### 5.1 Summary of Findings

#### Clause 7.1.4 – Full Compliance

This clause requires SCA to ensure that until the Environmental Management System has been developed and implemented in accordance with clauses 7.1.1 and 7.1.2, SCA must maintain programs to manage risks to the environment from carrying out its activities and must ensure that all its activities are carried out in accordance with those programs.

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

It was found that the SCA currently has good procedures in place for managing the environment both for where it has direct control and for where it has indirect control (noting that catchment management is directly linked to environmental management). The auditor noted very few areas for improvement however where they occurred, they were more of a business wide nature (i.e. minor document control issues but nothing noted for key risk documents), rather than of an environmental nature *per se*. Further, the auditor commends the SCA on some of the better examples of implementation of environmental management the auditor has sighted including a comprehensive Legal Register and Aspects and Impacts Register.

The auditors were satisfied that the SCA's environmental management activities were consistent with the requirements of the licence.

### 5.2 Recommendations

#### 5.2.1 Recommendations

There are no recommendations for this clause.

#### 5.2.2 Opportunities for Improvement

There are three OFIs for this clause.

**OFI 7.1.4-1 Reporting and Communication:** Expand on the issues arising within the environmental report to IPART to ensure that issues are clearly understood by the reader.

**OFI 7.1.4-2 Document Control:** Found to be a relatively minor issue but review the tightening up of procedures for controlled documents.

**OFI 7.1.4-3 Integration of Business Improvements:** Review whether it would be useful to integrate business improvements into an organisation-wide plan or whether eTRIM is still the best approach for managing business improvements overall.





## 6 Recommendations from Previous Audits

The auditors reviewed SCA's progress against five water quality recommendations from the 2012-2013 audit report. These are discussed below.

### 6.1 2012/13 – 1 (Water Quality - 2.1.1)

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)	PROGRESS SINCE 2012/13 AUDIT REPORTED IN 31 MARCH REPORT 2014	GUIDANCE FOR 2013/14 AUDIT	FINDING
<p>The SCA should further develop the Water Quality Management System to:</p> <ul style="list-style-type: none"> <li>• further address preventive measures and Critical Control Points (CCPs)</li> <li>• revise emergency information and formalise the emergency information revision process</li> <li>• clearly define event based monitoring</li> <li>• develop a specific drinking water quality policy.</li> </ul>	<p>In Progress</p> <p>Work on the issues raised with the Water Quality Management System has commenced and is expected to be completed by 30 June 2014</p>	<p>Audit to check progress</p>	<p>Completed</p>

#### Auditors' Findings:

While, there was a small issue noted with drinking water not being explicitly acknowledged in the Water Quality Policy, the auditors felt that because of references to drinking water quality in the WQMF and the Picnic Site QAPs and provided that the next iteration of the policy includes specific reference to drinking water quality responsibilities, that this part of the recommendation is completed.

Other parts of this recommendation have been rolled into recommendations 2 and 3 or covered in recommendations 4 and 5 and therefore overall, this recommendation is considered completed.



## 6.2 2012/13 – 2 (Water Quality - 2.1.2)

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)	PROGRESS SINCE 2012/13 AUDIT REPORTED IN 31 MARCH REPORT 2014	GUIDANCE FOR 2013/14 AUDIT	FINDING
<p>The SCA should:</p> <ul style="list-style-type: none"> <li>formally identify and implement appropriate preventive measures for raw water supplied, particularly those of high importance and any designated as CCPs</li> <li>develop explicit, validated process control tables for each CCP</li> <li>ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul>	<p>In Progress</p> <p>The issues identified with Regard to preventative measures for raw water supply will be addressed through identification and documentation of CCPs in the supply System. This is expected to be completed by 30 June 2014</p>	<p>Audit to check progress</p>	<p>Not yet complete</p>

### Auditors' Findings:

The WQMF and CCP tables do not yet fully identify the preventive measures actively undertaken to ensure suitable water quality under the range of operational circumstances experienced. For example, references to changing the offtake level are not appropriately documented against the relevant targets and the underlying high importance and fundamental procedures and authorisations are not yet articulated.

There is no validated evidence for the choice of critical or other limits documented within the CCP tables. An example is provided below (Table 6-1).

Table 6-1. Example validation table.

STEP	LOCATION	PARAMETER	VALIDATION
Filtration	Filter channel	Turbidity	0.2 NTU has been selected as a target, as the plant is regularly achieving this value. 1 NTU has been selected for the critical limit based on ADWG guidance for effective disinfection.
Chlorine disinfection	Service water	Free chlorine residual	Free chlorine targets have been set to ensure suitable C.t for inactivation of chlorine sensitive pathogens and to ensure sufficient residual throughout the reticulation system.
	Reticulation system	Free chlorine residual	The organisation undertakes routine testing throughout the reticulation system to allow adjustment of chlorine dosing to ensure sufficient residual in the reticulation system.
Distribution	Reservoirs	Free chlorine residual	The routine testing of chlorine residual provides evidence that the reservoirs have not been compromised.

Monitoring methods are not clearly articulated.

Therefore, the auditors consider that this recommendation is not yet completed and should be checked at the next audit.



### 6.3 2012/13 – 3 (Water Quality - 2.1.2)

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)	PROGRESS SINCE 2012/13 AUDIT REPORTED IN 31 MARCH REPORT 2014	GUIDANCE FOR 2013/14 AUDIT	FINDING
<p>The SCA should:</p> <ul style="list-style-type: none"> <li>formally identify and implement appropriate preventive measures for drinking water supplied to its recreational areas (picnic areas), including those designated as CCPs</li> <li>develop explicit, validated process control tables for each CCP</li> </ul>	<p>In Progress</p> <p>The Water Safety Plans for SCA picnic areas are expected to be finalised by 30 June 2014. Preventative measures and CCPs will be clearly documented in this plan.</p> <p>The SCA will seek endorsement from NSW Health to comply with the <i>Public Health Act 2010</i> and Public Health Regulation 2012</p>	Audit to check progress	Not yet complete

#### Auditors' Findings:

The CCP tables are not included in the QAPs but are described within the DWQMP overall and therefore, the auditors are not convinced that the CCPs accurately reflect the operation of each specific system or have been validated on a system level.

There is no validated evidence for the choice of critical or other limits documented within the CCP tables (see Table 6-1).

Monitoring methods are not clearly articulated.

The auditors therefore consider that this recommendation is not yet completed and should be checked at the next audit.

### 6.4 2012/13 – 4 (Water Quality - 2.1.2)

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)	PROGRESS SINCE 2012/13 AUDIT REPORTED IN 31 MARCH REPORT 2014	GUIDANCE FOR 2013/14 AUDIT	FINDING
The SCA should ensure logical alignment of data between the Raw Water Quality Incident Response Plan (RWQIRP), Water Monitoring Program, Raw Water Supply Agreements, and process control tables, particularly for CCPs.	<p>In progress</p> <p>The Water quality triggers in the water quality incident response plan have been aligned with the Raw Water Supply Agreement and Water Monitoring Program. The Critical Limits in the CCP Tables will be aligned with these triggers.</p>	Audit to check progress	Completed

#### Auditors' Findings:

Evidence was provided that the SCA had updated its RWQIRP and WQMF document based on the requirements of the recommendation. The auditors accepted this evidence and consider the recommendation completed.



## 6.5 2012/13 – 5 (Water Quality - 2.1.2)

RECOMMENDATION / OPERATIONAL ISSUE (LICENCE REFERENCE WHERE APPLICABLE)	PROGRESS SINCE 2012/13 AUDIT REPORTED IN 31 MARCH REPORT 2014	GUIDANCE FOR 2013/14 AUDIT	FINDINGS
The SCA should ensure that the Raw Water Quality Incident Response Protocol is kept up to date.	Complete  The raw water quality incident response plan has been revised in consultation with major customers and endorsed by NSW health on 16 December 2013. The matters raised during the 2012/13 operational audit have been addressed in the revised document, which was approved by SCA's A/Chief Executive on 17 January 2014.	Audit to check completion	Completed

### Auditors' Findings:

Evidence was provided that the SCA had revised its RWQIRP to the satisfaction of NSW Health. The auditors accepted this evidence and consider the recommendation completed.



## APPENDIX A. Detailed Audit Findings

### A.1 Clause 2: Water Quality

#### A.1.1 Water Quality Management System (sub-clauses 2.1, 2.1.1)

Sub-clause	Requirement	Compliance Grade  High
2.1 Water Quality Management System <sup>16</sup>	2.1.1 SCA must maintain a Management System that is consistent with:  a) the Australian Drinking Water Guidelines; or  b) if NSW Health specifies any amendment or addition to the Australian Drinking Water Guidelines that applies to SCA, the Australian Drinking Water Guidelines as amended or added to by NSW Health,  (Water Quality Management System). <sup>17</sup>	
Risk		Target for Full Compliance
The risk posed to public health by non-compliance with this clause could be very significant. The ADWG (2011) involves a multiple barrier approach from catchment to consumer to ensure that drinking water is safe. ADWG (2011) elements relevant to catchment and water resource managers are essential to ensure that water is fit for treatment and subsequent supply.		A management system that is complete and up to date, meets the requirements of the ADWG and includes management of the Raw Water quality, taking into account the implementation of planning and risk management across the Drinking Water Supply System.
Evidence Sighted		
<ul style="list-style-type: none"><li>• Interviews with the SCA's Water Team 24 September 2014.</li><li>• Field verification visit 23 September 2014 (hosted by the Senior Water System Operator).</li><li>• CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX</li><li>• Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014</li><li>• SCA Annual Water Quality Management System Report 2013-14.pdf</li><li>• Information as cited in the Element by Element breakdown tables (A1.3).</li></ul>		
Summary of Reasons for Grade		
<p>As part of its requirement for this clause, SCA must maintain a Water Quality Management System consistent with the ADWG, including the Framework for Management of Drinking Water Quality<sup>18</sup>.</p> <p>The Water Quality Management Framework (WQMF) and the Drinking Water Quality Management Plan and Quality Assurance Programs (DWQMP/QAPs) for the picnic sites reference all the elements of the Framework for Management of Drinking Water Quality and NSW Health is satisfied with the SCA in terms of public health aspects of its operations in this context. However, as noted in Table A.1.3 (the element by element breakdown), the auditors found that some information within the documents is still incomplete or missing (as noted in the auditor recommendations from 2012-2013, see A1.5 and A1.6).</p> <p>Since SCA's Management System is not entirely consistent with the ADWG and NSW Health has not specified amendments that cover these shortcomings, the auditors have awarded a high compliance grade. The auditors note that a high compliance grade was awarded for this clause in the 2012-2013 audit for similar reasons.</p> <p>Recommendations for this clause are listed in Tables A.1.3-A.1.8.</p>		
Discussion and Notes		
Detailed notes are included in the Element by Element breakdown. In addition, the letter received by Risk Edge from NSW		

<sup>16</sup> **IPART Notes:**

Audit will include a risk based adequacy audit of the system, and implementation of the system. The elements of the ADWG framework and the scheme/ sites to be visited for field verification will be determined by IPART in consultation with NSW Health and the auditors.

<sup>17</sup> **Licence Notes:**

It is generally expected that SCA will develop a system consistent with the Australian Drinking Water Guidelines, including the Water Quality Framework. However, where NSW Health considers it appropriate, the application of those Guidelines may be amended or added to, to take account of SCA's circumstances and/or Drinking Water quality policy and practices within New South Wales. SCA must also manage the Raw Water Supply System in light of its knowledge of the Drinking Water Supply System. That is, SCA must have adequate systems and processes in place to manage Raw Water quality, taking into account the implementation of planning and risk management across the Drinking Water Supply System.]

<sup>18</sup> While the first principal objective for the SCA is to ensure that the catchment areas and the catchment infrastructure works are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment, it also has a special objective of minimising risks to human health. Therefore, the Water Quality Management System required by this clause not only has to take into account raw water quality but also how that quality impacts on drinking water treatment processes as well as the quality of the drinking water the SCA supplies at its picnic sites.



Health stated that "NSW Health is satisfied that the SCA has met its obligations under the Operating Licence and MoU."

The SCA provided its Water Quality Management Framework 2012-2017 document (WQMF) as evidence for this clause. The WQMF is based on the required 12 Elements of the Framework for Management of Drinking Water Quality. The SCA acknowledges the whole of the catchment to customer supply chain and notes its role within this supply chain.<sup>19</sup> A further document was also supplied - SCA Annual Water Quality Management System Report 2013-14.pdf and this document is discussed as part of 2.1.2.

## A.1.2 Water Quality Management System (sub-clauses 2.1, 2.1.2)

Sub-clause	Requirement	Compliance Grade
2.1 Water Quality <sup>20</sup>	2.1.2 SCA must ensure that the Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, including to the satisfaction of NSW Health. <sup>21</sup>	High
<b>Risk</b> The risk posed to public health by non-compliance with this clause could be very significant. The ADWG (2011) involves a multiple barrier approach from catchment to consumer to ensure that drinking water is safe. ADWG (2011) elements relevant to catchment and water resource managers are essential to ensure that water is fit for treatment and subsequent supply.		<b>Target for Full Compliance</b> The Water Quality Management System is fully implemented.
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014.</li> <li>Information as cited in the Element by Element breakdown tables (A1.3).</li> </ul>		
<b>Summary of Reasons for Grade</b> Because some parts of the WQMF and the DWQMP/QAPs are missing or incomplete, it is not possible to award full compliance for the implementation and therefore, a grade of high compliance has been awarded. Recommendations for this clause are listed in Tables A.1.3-A.1.8.		
<b>Discussion and Notes</b> See Element by Element breakdown in the following Table A.1.3.		

<sup>19</sup> CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX, p2.

<sup>20</sup> IPART Notes:

Auditor is to write to NSW Health regarding its satisfaction with SCA's management of Water Quality.

<sup>21</sup> The Auditors wrote to the Chief Health Officer of NSW Health on 4 August 2014 to inquire about NSW Health's satisfaction with the SCA's management of water quality and received a reply on 27 August 2014.



### A.1.3 Framework for Management of Drinking Water Quality: Element by Element Breakdown

Sub-clause	Requirement	Compliance Grade
Element 1 Commitment to Drinking Water Quality Management	<p>C1.1 Drinking Water Quality Policy (2013-2014 Audit Test: implementation only)</p> <ul style="list-style-type: none"> <li>Formulate a drinking water quality policy, endorsed by senior executives, to be implemented throughout the organisation.</li> <li>Ensure that the policy is visible and is communicated, understood and implemented by employees.</li> </ul> <p>C1.2 Regulatory and formal requirements (2013-2014 Audit Test: implementation only)</p> <ul style="list-style-type: none"> <li>Identify and document all relevant regulatory and formal requirements.</li> <li>Ensure responsibilities are understood and communicated to employees.</li> <li>Review requirements periodically to reflect any changes.</li> </ul> <p>C1.3 Engaging stakeholders (2013-2014 Audit Test: implementation only)</p> <ul style="list-style-type: none"> <li>Identify all stakeholders who could affect, or be affected by, decisions or activities of the drinking water supplier.</li> <li>Develop appropriate mechanisms and documentation for stakeholder commitment and involvement.</li> <li>Regularly update the list of relevant agencies.</li> </ul>	Full
<b>Evidence Sighted</b> Information provided <ul style="list-style-type: none"> <li>2.1.2-E1.1-CD2012 130[v2] Water Quality Data Review and Reporting Procedure.DOCX</li> <li>2.1.2-E1.1-CD2014 5 Water Quality Policy.DOCX</li> <li>2.1.2-E1.1-D2013 47312 SCA Combined Induction.PPTX</li> <li>2.1.2-E1.1-D2014 36973 Induction Forms - Warragamba - 3 April 2014.PDF</li> <li>2.1.2-E1.1-D2014 67987 2014 Annual ADWG Management Review Presentation.PPTX</li> <li>2.1.2-E1.2-CD2005 1[v2] Warragamba-Water Mgt Licence Release-Orifice Plate Procedure.DOC</li> <li>2.1.2-E1.2-CD2012 117[v2] Legal Updates How To Guide.DOCX</li> <li>2.1.2-E1.2-CD2012 118[v2] Legal Obligation Procedure.DOCX</li> <li>2.1.2-E1.2-CD2013 26 Legal and Other Requirements Register.XLSX</li> <li>2.1.2-E1.2-D2012 47509 PD Manager SE Operations.DOC</li> <li>2.1.2-E1.2-D2012 47516 PD Senior System Planner.DOC</li> <li>2.1.2-E1.2-D2012 47545 PD Water Quality Analyst.DOC</li> <li>2.1.2-E1.2-D2012_47519 PD Senior Water System Operator.DOC</li> <li>2.1.2-E1.2-D2013 59280 NSW Health comment SCA Water Quality management Framework.EML</li> <li>2.1.2-E1.2-D2013 60589 SWC endorsement SCA Water Quality management Framework.EML</li> <li>2.1.2-E1.2-D2014 72359 SCA doc review - Response by NSW Health.EML</li> <li>2.1.2-E1.2-PD Water System Operator.DOC</li> <li>2.1.2-E1.3-CD2004 183[v2] Raw Water Quality Incident Response Plan.DOC</li> <li>2.1.2-E1.3-CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX</li> <li>2.1.2-E1.3-D2013 80338 SCA Communication Strategy - 2012-2015.PPTX</li> <li>2.1.2-E1.3-D2013 94543 Appendix B – Key Contact Directory.DOCX</li> <li>2.1.2-E1.3-D2013 105042 JOG minutes 18 October 2013 - final.DOC</li> <li>2.1.2-E1.3-D2013 125388 SLG meeting minutes 4 Dec 2013_SCA comments.DOCX</li> <li>2.1.2-E1.3-D2014 11389 Proposed 2014 JOG meeting dates.EML</li> <li>2.1.2-E1.3-D2014 38369 LGRP agenda and papers for 5 May 2014 meeting.DOCX</li> <li>2.1.2-E1.3-D2014 81919 Operating Licence RLP Table.XLSX</li> <li>2.1.2-E1.3-D2014 11231 2014 BMS Induction Presentation by OIT.PPTX</li> <li>2.1.2-E1.3-D2014 14722 Environmental Induction Presentation 2014(2).PPTX</li> <li>D2014 34331[v2] 2013-14 Water Quality Management System Report – 1 September Report to IPART.docx</li> </ul>		
<b>Summary of Reasons for Grade</b> <p>While the instruction to the auditors was to test implementation only, some of the water quality recommendations in the 2012-2013 audit report related to this element and therefore, the auditors were bound to test adequacy and implementation relating to the recommendation.</p> <p>While, there was a small issue noted with drinking water not being explicitly acknowledged in the Water Quality Policy, the auditors felt that because of references to drinking water quality in the WQMF and the Picnic Site QAPs and provided that the next iteration of the policy includes specific reference to drinking water quality responsibilities, that this element achieved full</p>		



compliance. In fact, the auditors note that the Legal and Other Requirements Register<sup>22</sup> is one of the better interpretations of implementation of this element that they have viewed.

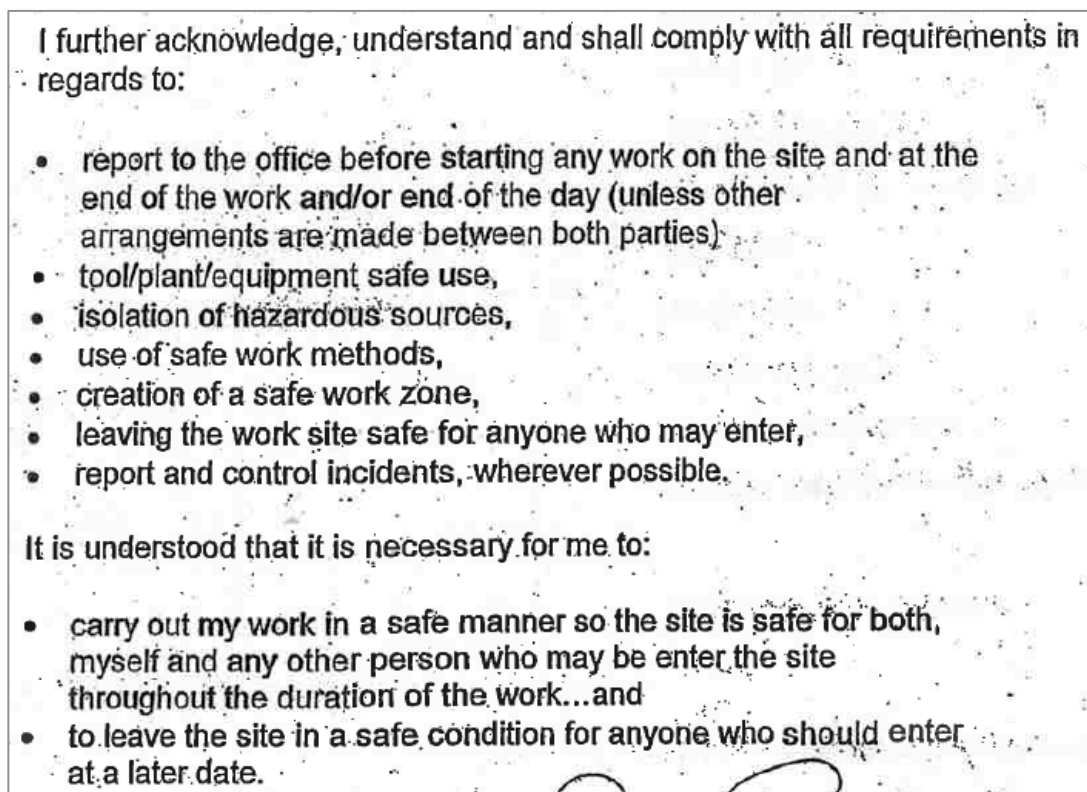
## Discussion and Notes

**CI.1 Drinking Water Quality Policy:** A Water Quality Policy<sup>23</sup> is in place but only refers to raw water and does not clearly acknowledge the SCA's responsibility for the supply of drinking water at the picnic sites. An implementation officer is clearly identified (Senior Manager Water Monitoring<sup>24</sup>). When it is revised, the Water Quality Policy will need to acknowledge the requirements of Recommendation 1 in the 2012-13 Operational Audit Report.

In the WQMF it is stated that copies of the policy are displayed at all SCA offices. The SCA Annual Water Quality Management System Report 2013-14 states that the policy is available on the SCA intranet and notice boards. The auditors sighted the policy at the Campbelltown office and in the Boardroom of the Penrith office but noted that it was not part of the policy suite at reception at the Penrith office.

A commitment to drinking water quality is reiterated in the Picnic Site overarching Drinking Water Quality Management Plan.<sup>25</sup>

An induction Powerpoint file was provided as evidence of implementing communication around water quality. Water quality was covered in the slides as a "thou shall not pollute" instruction and information was also clearly aimed at contractors as well as staff.<sup>26</sup> However, in the quiz at the end of the slides<sup>27</sup>, there is no reinforcement of water quality protection, the questions are aimed more at Workplace Health and Safety (WHS). Induction forms were sighted and were verified as being from the audit period.<sup>28</sup> However from an implementation perspective, there is no specific statement of the need to protect water quality during the contractors' work – the induction process has a WHS focus (see image below).



Extract from induction material

Other induction evidence that may have a bearing on an integrated approach to overall water quality management was also provided.<sup>29</sup>

Water quality responsibilities are communicated as part of the SCA's Corporate Sustainability Strategy 2010-2015.<sup>30</sup>

The auditors were satisfied that the SCA had complied with the requirements of this component.

<sup>22</sup> 2.1.2-E1.2-CD2013 26 Legal and Other Requirements Register.XLSX

<sup>23</sup> 2.1.2-E1.1-CD2014 5 Water Quality Policy.DOCX

<sup>24</sup> 2.1.2-E1.1-CD2014 5 Water Quality Policy.DOCX, p1.

<sup>25</sup> 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC, p6.

<sup>26</sup> 2.1.2-E1.1-D2013 47312 SCA Combined Induction.PPTX, slide 29.

<sup>27</sup> 2.1.2-E1.1-D2013 47312 SCA Combined Induction.PPTX, slide 65.

<sup>28</sup> 2.1.2-E1.1-D2014 36973 Induction Forms - Warragamba - 3 April 2014.PDF

<sup>29</sup> 2.1.2-E1.3-D201411231 2014 BMS Induction Presentation by OIT.PPTX

2.1.2-E1.3-D201414722 Environmental Induction Presentation 2014(2).PPTX

<sup>30</sup> Corporate Sustainability Strategy 2010-2015 Focus Area 5.





**CI.2 Regulatory and formal requirements:** Regulatory and formal requirements are documented within the register 2.1.2-EI.2-CD2013 26 Legal and Other Requirements Register.XLSX. The register clearly documents relevant water quality requirements including correct citation of the *Public Health Act 2010* (NSW) and Regulation for the protection of water quality and public health. Responsibilities are shown for each piece of legislation/other requirement and the controls that SCA has in place to manage its obligations. There are three tabs in the register covering Legislation, Government Policies and Relevant Standards. Procedures on legal obligations and keeping legal and formal obligations current are covered and were reviewed.<sup>31</sup> However, other standards will need to be added to the 'standards' tab of the register including AS/NZS 4020 *Testing of products for use in contact with drinking water* and AS/NZS 5050:2010 *Business continuity - Managing disruption-related risk*. Further, SCA should include key contractual documentation in the register including its Raw Water Supply Agreements with key customers. The *Framework for Management of Drinking Water Quality* includes the following as examples of legal and formal documentation:

- federal, state or territory legislation and regulation;
- operating licences and agreements;
- contracts and agreed levels of service;
- memoranda of understanding;
- industry standards and codes of practice

It is also made clear that "**All regulatory and formal requirements *should* be identified and documented.**"<sup>32</sup> [bold is our emphasis].

The Building Code of Australia will need to be acknowledged in the register for water quality protection as well as building compliance.

The auditors were satisfied that SCA had complied with the requirements of this component.

**CI.3 Engaging stakeholders:** The WQMF includes a section on stakeholder engagement. While the stakeholders are listed in Appendix 6 of that the WQMF, it is not clear how implementation of engagement is conducted with each stakeholder/stakeholder group. 2.1.2-EI.3-CD2004 183[v2] Raw Water Quality Incident Response Plan.DOC contains some information on the nature of communication with key stakeholders during an incident.<sup>33</sup> Further, more detailed information was provided in 2.1.2-EI.3-D2013 94543 Appendix B – Key Contact Directory.DOCX. NSW Health confirmed that it had been notified of incidents including *Cryptosporidium* and *Escherichia coli* detections and was satisfied with SCA's response.<sup>34</sup> Meeting minutes were provided from key stakeholder meetings showing evidence of stakeholder engagement.<sup>35</sup> Stakeholder engagement was also evidenced by provision of data for the Rural Landscape Program Project although there was no date to confirm evidence was within the audit period.<sup>36</sup>

The auditors were satisfied that SCA had complied with the requirements of this component.

#### Recommendation

There are no recommendations for this element.

#### Opportunity for Improvement

- **OFI EI-1 Induction (staff and contractors):** Implement a water quality section of the combined induction forms to ensure that all understand their responsibilities in terms of water quality protection.
- **OFI EI-2 Legal and Other Requirements Register:** Ensure that the register is updated with relevant standards for water quality protection including business continuity and the use of appropriate materials for drinking water supply (AS/NZS 5050 and AS/NZS 4020 respectively). Ensure that key contractual information, such as the Raw Water Supply Agreements, is included in the register and the relevant water quality implications are also included in reference to key documents that are already cited in the register such as the Building Code of Australia.

<sup>31</sup> 2.1.2-EI.2-CD2012 117[v2] Legal Updates How To Guide.DOCX and 2.1.2-EI.2-CD2012 118[v2] Legal Obligation Procedure.DOCX.

<sup>32</sup> Australian Drinking Water Guidelines Version 2.0 Updated December 2013, p21.

<sup>33</sup> 2.1.2-EI.3-CD2004 183[v2] Raw Water Quality Incident Response Plan.DOC, p15.

<sup>34</sup> Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014.

<sup>35</sup> 2.1.2-EI.3-D2013 105042 JOG minutes 18 October 2013 - final.DOC; 2.1.2-EI.3-D2013 125388 SLG meeting minutes 4 Dec 2013\_SCA comments.DOCX; 2.1.2-EI.3-D2014 38369 LGRP agenda and papers for 5 May 2014 meeting.DOCX

<sup>36</sup> 2.1.2-EI.3-D2014 81919 Operating Licence RLP Table.XLSX



Sub-clause	Requirement	Compliance Grade:
Element 2: Assessment of the Drinking Water Supply System	<p>C2.1 Water supply system analysis (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Assemble a team with appropriate knowledge and expertise.</li> <li>Construct a flow diagram of the water supply system from catchment to consumer.</li> <li>Assemble pertinent information and document key characteristics of the water supply system to be considered.</li> </ul> <p>C2.2 Assessment of water quality data (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Assemble historical data from source waters, treatment plants and finished water supplied to consumers (over time and following specific events).</li> <li>List and examine exceedances</li> <li>Assess data using tools such as control charts and trends analysis to identify trends and potential problems.</li> </ul> <p>C2.3 Hazard identification and risk assessment (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Define the approach and methodology to be used for hazard identification and risk assessment.</li> <li>Identify and document hazards, sources and hazardous events for each component of the water supply system.</li> <li>Estimate the level of risk for each identified hazard or hazardous event.</li> <li>Evaluate the major sources of uncertainty associated with each hazard and hazardous event and consider actions to reduce uncertainty.</li> <li>Determine significant risks and document priorities for risk management</li> <li>Periodically review and update the hazard identification and risk assessment to incorporate any changes.</li> </ul>	High
<p><b>Evidence Sighted</b></p> <p>Information provided</p> <ul style="list-style-type: none"> <li>2.1.1-E2.2-SWIRL Notifications 3937_001.pdf</li> <li>2.1.2 - E1.3 - Licence agreement template.pdf</li> <li>2.1.2-E2.1-CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX</li> <li>2.1.2-E2.1-D2012 27147 Pollution Source Assessment Tool Results Report 2011.PDF</li> <li>2.1.2-E2.1-D2012 47509 PD Manager SE Operations.DOC</li> <li>2.1.2-E2.1-D2012 47516 PD Senior System Planner.DOC</li> <li>2.1.2-E2.1-D2012 47545 PD Water Quality Analyst.DOC</li> <li>2.1.2-E2.1-D2012_47519 PD Senior Water System Operator.DOC</li> <li>2.1.2-E2.1-D2014 55503 Copy of 140501_C2T risk register and summary_05.xls.XLSX</li> <li>2.1.2-E2.1-D2014 57647 Bendeela &amp; Wingecarribee Hazard events.XLSX</li> <li>2.1.2-E2.1-D2014 83119 Certificate IV Water Operations.msg</li> <li>2.1.2-E2.1-PD Water System Operator.DOC</li> <li>2.1.2-E2.2-CD2004 183[v2] Raw Water Quality Incident Response Plan.DOC</li> <li>2.1.2-E2.2-CD2011 179[v3] Water Monitoring Program 2015-2020.DOC</li> <li>2.1.2-E2.2-D2013 116235 Nepean 3 sites_colour &amp; inflow excel.XLSX</li> <li>2.1.2-E2.2-D2014 39224 Lake Nepean water quality report - 23 April 2014.PDF</li> <li>2.1.2-E2.2-D2014 46919 C2T 5 year Review planning notes BC_DD_MA.PPTX</li> <li>2.1.2-E2.2-D2014 51786 Lake Burragorang Water Quality Report - 28 May 2014.PDF</li> <li>2.1.2-E2.2-D2014 61723 SCA Annual Water Quality Monitoring Report 2012-13.PDF</li> <li>2.1.2-E2.2-D2014 61725 SCA Annual Water Quality Monitoring Report 2012-13 Appendices.PDF</li> <li>2.1.2-E2.2-D2014 80492 Warragamba colour plot August 2014.XLSX</li> <li>2.1.2-E2.3-CD2011 3[v3] Enterprise Risk Management Framework.DOC</li> <li>2.1.2-E2.3-D2010 5693 Executive Meeting Paper 7 Dec-C2T risk assessment outcomes.DOCX</li> <li>2.1.2-E2.3-D2011 34448 3.5 c2t appendix 6 - Catchment-to-tap custom risk framework.PDF</li> <li>2.1.2-E2.3-D2011 34487 Catchment -to-tap risk assessments 2009-10.PDF</li> <li>2.1.2-E2.3-D2013 18050 Quantitative Microbial Risk Assessment.PDF</li> <li>2.1.2-E2.3-D2013 25601 SCA Cyanobacteria Risk Profile 2010.DOCX</li> <li>2.1.2-E2.3-D2013 69972 Cyanobacteria Management Strategy 2012 - 2015 Final.DOCX</li> </ul>		



- 2.1.2-E2.3-D2013 84941 Pathogen Risk Management Strategy - draft.DOCX
- 2.1.2-E2.3-D2013 89621 Executive Meeting - 17 October 2013 - Annual ~ Item 15 Att 1.DOCX
- 2.1.2-E2.3-D2014 5558 Corporate Risk Register 2013.DOCX
- 2.1.2-E2.3-D2014 14923 Cryptosporidium risk 221013.xlsx.XLSX
- 2.1.2-E2.3-D2014 55503 Copy of 140501\_C2T risk register and summary\_05.xls.XLSX
- 2.1.2-E2.3-D2014 56554 Source Water Assessment Method for SCA Catchments.DOCX
- 2.1.2-E2.3-D2014 56588 Catchment Risk Dashboard.XLSX
- 2.1.2-E2.3-D2014 84729 C2T RA 5 year review overview slides V1.PDF
- 2.1.2-E2.3-D201325601 SCA Cyanobacteria Risk Profile 2010.DOCX
- 2.1.2-E2.D2013 110505 Source Assessment PSAT Method and Case Study – Avon & Warragamba Reservoirs.DOCX
- 2.1.2-E10.2-Auto Exceedence sent140204\_119095\_alg.pdf
- 2.1.2-E10.2-Auto Exceedence sent140204\_119095\_alg2.pdf
- 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC
- Hard copy file 2001/1573 SCA and SWC Boundaries and Monitoring Points – Strategy and Policy Division (Control Document No. 10)

### Summary of Reasons for Grade

The Framework requires that comprehensive system descriptions and conceptual process flow diagrams should be developed to allow a full risk assessment to be undertaken. As the WQMF and the DWQMP/QAPs currently stand, there are no conceptual process flow diagrams included (although figures of the system are provided). Further, some key components of the diagrams are missing, for instance, it is important to capture all system inputs (under direct control and other party control) to ensure that all risks can be reasonably identified and managed. There is no indication on the WQMF system diagrams of inputs to the system by other parties e.g. chlorination by Sydney Water Corporation into the Warragamba pipeline. Further, information is missing from the Delivery Points referenced in the Raw Water Supply Agreement (RWSA) with Sydney Water (the RWSA referred to another document for the detail – but this document had been archived and was provided in hard copy<sup>37</sup> for review at the onsite interviews but did not contain the Prospect Raw Water Pumping Station information. This element has therefore been awarded a high compliance grade as it may mean that some risks may have been missed.

### Discussion and Notes

**C2.1 Water supply system analysis:** SCA has highly qualified people involved in helping to deliver water quality obligations. SCA provided Position Descriptions (PD) for the types of personnel (and qualifications)<sup>38</sup> involved in the system analysis. There is no consolidation of the information into a water quality team register showing who had been involved in the analysis/risk assessments including internal and external personnel. However, there was a register of personnel involved in the picnic site risk assessment.<sup>39</sup>

A description of the raw water supply system is provided in the WQMF.<sup>40</sup> There are no conceptual process flow diagrams of the picnic areas. This makes it difficult to review risks for each step and determine if there are any details, such as raw water bypasses or valves that need to be taken into account in the risk assessment. The only diagrams are location diagrams, which provide overview information.<sup>41</sup> There is largely no indication of water flow direction. Discursive descriptions are provided in both the WQMF and the overarching Picnic Site DWQMP. However there are some useful tabular descriptions in the individual picnic site plans.<sup>42</sup> An overarching water supply system diagram exists on the website and in other documentation.<sup>43</sup> Key characteristics of the overall system are presented in the WQMF at Appendix 1. There is no indication on the system diagrams in the WQMF of inputs to the system e.g. chlorination at Broughtons Pass. The Delivery Points referenced in the Raw Water Supply Agreement with Sydney Water were checked as the RWSA referred to another document for the detail – this document had been archived and was provided in hard copy<sup>44</sup> for review at the onsite interviews. The document does not contain the Prospect Raw Water Pumping Station information in it and therefore, the Delivery Points, as part of the system assessment, are not current and do not allow a full risk assessment to be undertaken.

**C2.2 Assessment of water quality data:** SCA is required to have a Water Monitoring Program (WMP) in place. As well as the WMP, SCA is also required to develop and provide an Annual Water Quality Monitoring Report (AWQMR). The AWQMR describes the results of water quality monitoring undertaken by the SCA during 2012-13, through the WMP. The AWQMR contains trending of data (for selected analytes over a 10 year period) and the examination of exceedances, which fulfils the purposes of this component. The SCA is also required to undertake monitoring during event conditions, which facilitates better understanding of hazard inflows and therefore, risk assessment. The appropriate benchmarks are used for assessing the water quality including the ADWG and Raw Water Supply Agreements. SCA has in place a Raw Water Quality

<sup>37</sup> Hard copy file 2001/1573 SCA and SWC Boundaries and Monitoring Points – Strategy and Policy Division (Control Document No. 10).

<sup>38</sup> 2.1.2-E2.1-D2012 47509 PD Manager SE Operations.DOC; 2.1.2-E2.1-D2012 47516 PD Senior System Planner.DOC; 2.1.2-E2.1-D2012 47545 PD Water Quality Analyst.DOC; 2.1.2-E2.1-D2012\_47519 PD Senior Water System Operator.DOC

<sup>39</sup> 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC, Appendix 3, p47.

<sup>40</sup> Commencing page 5 with further system description in Appendix 1.

<sup>41</sup> E.g. 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC, Figure 5, p14.

<sup>42</sup> 2.1.2-E3.2-CD2014 57 Avon Picnic Area Water Supply Quality Assurance Plan.DOCX, 2.1.2-E3.2-CD2014 58 Fitzroy Falls Picnic Area Water Supply Quality Assurance Plan.DOCX, 2.1.2-E3.2-CD2014 59 Cordeaux Picnic Area Water Supply Quality Assurance Plan.DOCX, 2.1.2-E3.2-CD2014 60 Cataract Picnic Area Water Supply Quality Assurance Plan.DOCX.

<sup>43</sup> E.g. 2.1.2-E2.2-D2014 61723 SCA Annual Water Quality Monitoring Report 2012-13.PDF, Figure 2.1, p17.

<sup>44</sup> Hard copy file 2001/1573 SCA and SWC Boundaries and Monitoring Points – Strategy and Policy Division (Control Document No. 10).



Incident Response Plan (RWQIRP), which creates obligations to report to key stakeholders including raw water customers and NSW Health. NSW Health confirmed that it was satisfied with water quality data reporting by SCA.<sup>45</sup> Water quality data analysis (by incidents) for the picnic sites is provided in the overarching DWQMP.<sup>46</sup> The auditors were satisfied with the SCA's assessment of water quality data.

**C2.3 Hazard identification and risk assessment:** The SCA has conducted a risk assessment for its overarching raw water supply system as well as the picnic sites. A risk summary is documented within the WQMF and the Picnic Site DWQMP. Data are stored in the computer-based "KnowRisk" system. A data export from KnowRisk was viewed for the catchment to tap risk assessment.<sup>47</sup> The information contains the likely hazards and events one would expect for such water supply systems however, the information was complex, probably because it was presented to the auditors as an export. Risk was assessed as inherent and residual, which is consistent with the ADWG Framework. Uncertainty is yet to be identified and will be considered as part of the Catchment to Tap (C2T) review commencing June 2014. The SCA uses specific tools to better identify water quality risks in the catchment including the Pollution Source Assessment Tool (PSAT), results of which are summarised in the WQMF at Appendix 2.<sup>48</sup> The auditors noted that PSAT is a very useful tool for helping to assess risk. KnowRisk was not able to be viewed at the site visit as it is a Sydney Water Corporation specific piece of software.

The SCA uses its own 4 x 4 risk matrix for assessment of risk. The ADWG Framework allows for a specific risk matrix to be used as long as it is documented. However, the risk matrix shown in the Picnic Site DWQMP<sup>49</sup> is different to that shown in the Corporate Risk Register<sup>50</sup>. The reason for the difference in the risk heat maps was explained as being due to a changeover in risk scoring i.e. including more of the higher risks as 'very high' (moving from 1 to 3 risk scores that were scored as very high). The auditors were satisfied with the overall risk assessment process.

For the picnic sites, it was not clear whether the risk assessment summary was for residual or inherent risk. This issue was clarified at the site visit i.e. SCA assesses residual risk not maximum and residual risk. A C.t calculation<sup>51</sup> for disinfection had not been undertaken so it was not possible to assess the adequacy of the disinfection control and therefore, make a statement on the residual risk. Further, the hazardous event, "Underdosing of chlorine resulting in inability to achieve primary kill." did not appear to have been identified and assessed. Other likely events, such as QA/QC of chlorine and distribution reservoir integrity, were identified and assessed. For Fitzroy Falls, C.t was mentioned<sup>52</sup> but only in relation to the supply of water to the National Parks and Wildlife Service (NPWS) and the units reported are not consistent with usual C.t units i.e. mg.min/L.

In general, there were only minor items to report on the management of the drinking water system at the Cataract site. The staff members interviewed were polite, diligent and knew the system and its operation. The minor issues noted included:

- No 'end-capping' on the raw water tank roof used to feed the chlorination unit. End-capping is not normally essential on raw water tanks but given the reliance on the quality of the water extracted from the dam and given that there is only one disinfection barrier (and no filtration), it would be prudent to ensure that no vermin can enter the tank and contaminate the water to the point where the contamination overwhelms the disinfection unit.
- No padlock on the raw water tank roof hatch. Not having the hatch secured can allow easy access for malicious entry and contamination and may also allow the lid to blow open during storms, again providing an access point for contamination. When the auditors pointed this issue out to the staff it was remedied immediately.



The auditors also noted from a fundamental system design perspective, that not only was the disinfection C.t not determined for the Cataract site, but also, that it may not be able to be determined because of the system configuration. The determination of C.t is an important component of validating disinfection efficacy. Last year, the auditors noted that the CCPs did not have validated limits and C.t is one of those elements that needs to be validated to have confidence that the disinfection will work.

It is noted that the ERM Framework does not include picnic site water quality – only raw water quality and that the corporate risk register does not include an event relating to the picnic sites i.e. contamination of water resulting in cases of illness/death

<sup>45</sup> Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014.

<sup>46</sup> 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC, Table 1, p10.

<sup>47</sup> 2.1.2-E2.1-D2014 55503 Copy of I40501\_C2T risk register and summary\_05.xls.XLSX

<sup>48</sup> See also 2.1.2-E3.1-D2012 27147 Pollution Source Assessment Tool Results Report 2011.PDF.

<sup>49</sup> 2.1.2-E7.1-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC, Table 2, p17.

<sup>50</sup> 2.1.2-E3.1-D2014 5558 Corporate Risk Register 2013.DOCX.

<sup>51</sup> C.t (concentration (C) and time (t)) values are related to disinfectant dosage for the drinking water. A C.t value is the product of the concentration of a disinfectant (e.g. free chlorine) and the contact time with the water being disinfected. It is typically expressed in units of mg.min/L. The typical chlorine C.t values used in Australian drinking water supplies, which are based on the World Health Organization's finding that effective disinfection can generally be achieved by applying a free chlorine concentration of 0.5 mg/L to drinking water for a 30 minute contact time (equivalent to a chlorine C.t value of 15 mg.min/L).<sup>51</sup>

<sup>52</sup> 2.1.2-E3.2-CD2014 58 Fitzroy Falls Picnic Area Water Supply Quality Assurance Plan.DOCX, Section 1.3, page 4: National Parks and Wildlife Service (NPWS) Visitors Centre (by agreement, waters are pre-chlorinated with 30 min contact time to aid NPWS in meeting supply quality).

from drinking the water at the picnic site.

#### Recommendation

There are no new recommendations for this element. The recommendations 2012/13-2 and 2012-3 apply to this element and are still outstanding.

#### Opportunity for Improvement

- **OFI E2-1 Historical Record of WQMF Risk Assessment Attendance:** Ensure that in future iterations of the WQMF and future updates of the C2T risk assessment, that information on workshop participants is consolidated into a water quality team register showing who has been involved in the analysis/risk assessments including internal and external personnel
- **OFI E2-2 Process Flow Diagrams:** For the picnic sites and for the WQMF, when the plans are revised, ensure that conceptual process flow diagrams are developed to aid the risk assessment process and that water flows and any handover points and changes in responsibility are clearly articulated e.g. where water carters are involved and/or supply to the NPWS and the Scout camp. Ensure that inputs to SCA's systems are included in the flow diagram e.g. chlorination of raw water at Broughtons Pass.
- **OFI E2-3 Delivery/Handover Points:** Hard copy file 2001/1573 SCA and SWC Boundaries and Monitoring Points – Strategy and Policy Division (Control Document No. 10) does not contain information relating to the Prospect Raw Water Pumping Station and therefore, the Delivery Points, as part of the system assessment, are not current and do not allow a full risk assessment to be undertaken. Ensure that the raw water pumping station is included in subsequent materials and certainly, within the flow diagram for the raw water delivery system.
- **OFI E2-4 Chlorine Disinfection (Picnic Sites):** Chlorine disinfection efficiency (by calculating C.t), should be undertaken where possible for the picnic sites to show validation of the control. This OFI is particularly important as the SCA has only one disinfection barrier per system and therefore, needs to ensure that that barrier is adequate for achieving primary kill and the provision of a chlorine residual for the reticulation. Further, the event of "*Underdosing of chlorine resulting in inability to achieve primary kill*" needs to be included in the risk assessment when revised. Note that this issue relates to the CCPs and the shortcoming is highlighted in the previous audit water quality recommendations.
- **OFI E2-5 Picnic Site Drinking Water Risk Visibility:** Review whether the picnic site drinking water quality should be more visible within the ERM Framework and the Corporate Risk Register.



Sub-clause	Requirement	Compliance Grade
Element 3: Preventive Measures for Drinking Water Quality Management	<p><b>C3.1 Preventive measures and multiple barriers</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Assess preventive measures from catchment to consumer to identify critical control points.</li> <li>Establish mechanisms for operational control.</li> <li>Document the critical control points, critical limits and target criteria.</li> </ul> <p><b>C3.2 Critical control points</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Assess preventive measures from catchment to consumer to identify critical control points.</li> <li>Establish mechanisms for operational control.</li> <li>Document the critical control points, critical limits and target criteria.</li> </ul>	High
<p><b>Evidence Sighted</b></p> <ul style="list-style-type: none"> <li>2.1.2-E3.1-Catchments Divisional Plan 2014-15 - Extract for OL Audit.pdf</li> <li>2.1.2-E3.1-CD2003 63 Change and Inspect Stop Boards and Screens - Metropolitan Dams.DOC</li> <li>2.1.2-E3.1-CD2007 2[v2] Bulk Water Supply Protocols SWC and SCA.doc</li> <li>2.1.2-E3.1-CD2011 179[v3] Water Monitoring Program 2015-2020.DOC</li> <li>2.1.2-E3.1-CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX</li> <li>2.1.2-E3.1-Corporate Business Plan 2014-15 - Extract for OL Audit.pdf</li> <li>2.1.2-E3.1-D2004 183[v2] Raw Water Quality Incident Response Plan.DOC</li> <li>2.1.2-E3.1-D2011 34448 3.5 c2t appendix 6 - Catchment-to-tap custom risk framework.PDF</li> <li>2.1.2-E3.1-D2012 27147 Pollution Source Assessment Tool Results Report 2011.PDF</li> <li>2.1.2-E3.1-D2012 68458 Final - Healthy Catchments Program 2012-13.PDF</li> <li>2.1.2-E3.1-D2013 2700 Exec Meeting-22 July 13-Healthy Catchments Program 13-14-Item 13 Att 1.DOC</li> <li>2.1.2-E3.1-D2013 33378 Healthy Catchments Strategy 2012 - 2016 - Final - 19 April 2013.PDF</li> <li>2.1.2-E3.1-D2014 5558 Corporate Risk Register 2013.DOCX</li> <li>2.1.2-E3.2-CD2014 57 Avon Picnic Area Water Supply Quality Assurance Plan.DOCX</li> <li>2.1.2-E3.2-CD2014 58 Fitzroy Falls Picnic Area Water Supply Quality Assurance Plan.DOCX</li> <li>2.1.2-E3.2-CD2014 59 Cordeaux Picnic Area Water Supply Quality Assurance Plan.DOCX</li> <li>2.1.2-E3.2-CD2014 60 Cataract Picnic Area Water Supply Quality Assurance Plan.DOCX</li> <li>2.1.2-E3.2-CD2014 61 Drinking Water Quality Management Plan for Picnic Areas.DOC</li> <li>2.1.2-E3.2-D2014 55503 Copy of 140501_C2T risk register and summary_05.xls.XLSX</li> <li>2.1.2-E3.2-Water Divisional Plan 2014-15 - Extract for OL audit.pdf</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>While the control measures have been added to the WQMF and are within the QAPs and the DWQMP, the CCP tables are currently not fully articulated or validated, nor are the key controls fully described within the CCP tables. Therefore this element receives a high rather than a full compliance.</p>		
<p><b>Discussion and Notes</b></p> <p><b>C3.1 Preventive measures and multiple barriers/ C3.2 Critical control points:</b> In general, the preventive measures and multiple barriers were listed in both the WQMF and the picnic site documentation. Information was also provided on other overarching catchment controls.<sup>53</sup> However, as an observation, it was confusing to have to flick between the risk tables and the number controls to see which numbers in the risk tables related to which control.<sup>54</sup> For the C2T risk assessment, control effectiveness was specifically considered which is to be commended.<sup>55</sup> PSAT is used to examine the potential for contamination by four priority pollutants – nitrogen, phosphorus, suspended solids and pathogens.</p> <p>The CCPs are not yet articulated into practical process control tables which clearly identify what the SCA does in relation to managing those points. In fact, the SCA does far more to manage the system than shown in the current CCP process control tables and the tables therefore, do the SCA a disservice. The SCA should include more information on areas such as its proactive dam management for best source water collection such as the use of SCARM outputs.</p>		
<p><b>Recommendation</b></p> <p>Although no new recommendations have been made, the auditors feel that a supplementary component to the 2012-2013 Water Quality recommendations should be added. This supplementary component is to reinforce the fact that the previous recommendations have not been properly addressed. We therefore propose the following supplementary component to</p>		

<sup>53</sup> 2.1.2-E3.1-D2013 2700 Exec Meeting-22 July 13-Healthy Catchments Program 13-14-Item 13 Att 1.DOC; 2.1.2-E3.1-Catchments Divisional Plan 2014-15 - Extract for OL Audit.pdf

<sup>54</sup> E.g. 2.1.2-E3.2-CD2014 57 Avon Picnic Area Water Supply Quality Assurance Plan.DOCX, risk table at p6.

<sup>55</sup> 2.1.2-E3.1-D2011 34448 3.5 c2t appendix 6 - Catchment-to-tap custom risk framework.PDF





support the previous recommendation and to ensure its compliance with the Framework requirements.

- **CCP Process Tables and Limits:** The CCP process tables are not in a useful form for informing the reader of exactly what the SCA does at those points to manage water quality and who is responsible. The CCPs and their limits (particularly for the raw water supply system) need to be better articulated and specifically refer to the activities undertaken by the SCA in managing those points – this can be achieved wherever possible, by simply referencing key procedures and the use of models. Further, the reasoning behind the choice of limits for the CCPs should be clearly stated (noting that this is part of validation, Element 9, but could be included under Element 3 if it helps to make the CCPs of more practical use to the SCA).

#### Opportunity for Improvement

There are no OFIs for this element.



Sub-clause	Requirement	Compliance Grade
Element 4: Operational Procedures and Process Control	<p><b>C4.1 Operational Procedures</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Identify procedures required for processes and activities from catchment to consumer</li> <li>Document all procedures and compile into an operations manual.</li> </ul> <p><b>C4.2 Operational Monitoring</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Develop monitoring protocols for operational performance of the water supply system, including the selection of operational parameters and criteria, and the routine analysis of results.</li> <li>Document monitoring protocols into an operational monitoring plan.</li> </ul> <p><b>C4.3 Corrective Action</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish and document procedures for corrective action to control excursions in operational parameters.</li> <li>Establish rapid communication systems to deal with unexpected events.</li> </ul> <p><b>C4.4 Equipment capability and maintenance</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Ensure that equipment performs adequately and provides sufficient flexibility and process control.</li> <li>Establish a program for regular inspection and maintenance of all equipment, including monitoring equipment.</li> </ul> <p><b>C4.5 Materials and chemicals</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Ensure that only approved materials and chemicals are used.</li> <li>Establish documented procedures for evaluating chemicals, materials and suppliers.</li> </ul>	High
<b>Evidence Sighted</b>		
<p>Information provided for C4.1</p> <ul style="list-style-type: none"> <li>Instrument Calibration and Maintenance Procedures</li> <li>212270 NEW RATING TABLE 9.0 JUNE-2012</li> <li>212270 STREAM INSPECTION MARCH 2014</li> <li>212270 WOLLONDILLY RIVER @ JOORILAND HI-FLOW XS REPORT</li> <li>568045 CALIBRATION REPORT NOV_2013</li> <li>568045 RAINFALL INSPECTION NOV_2013</li> <li>D2013/39556 How To Guide: SCADA Alarm Management</li> <li>D2013/48435 Trouble Shooting Guide</li> <li>D2011/29430 Work Request - Process Chart</li> <li>CD2012/47[v2] Maximo Version 7 - Creating a Service Request - How to Guide</li> <li>CD2012/182 SCADA System Change Management Procedure</li> <li>CD2013/56[v2] Water Quality Management Framework 2012 – 2017</li> <li>CD2007/117[v3] Flood Prediction Procedure</li> <li>CD2003/63 Change and Inspect Stop Boards and Screens – Metropolitan Dams</li> <li>CD2003/136[v2] Warragamba Dam Outlet Stopboard and Screen Change</li> <li>D2014/57376 Draft Raw Water Supply Protocols Sent to SCA_13 June 2014</li> <li>CD2004/183[v2] Raw Water Quality Incident Response Plan</li> <li>D2014/14923 Cryptosporidium Risk 221013</li> <li>D2014/56588 Catchment Risk Dashboard</li> <li>CD2011/179[v3] Water Monitoring Program 2010-2015 – Part B</li> <li>Water Operations Controlled Document List</li> <li>CD2003/61[v2] Water Supply Operations Compliance Reporting</li> <li>CD2012/40[v1] Water Quality Monitoring – Measuring Turbidity Using a Hach 1200Q Portable Analyser – How to Guide</li> </ul> <p>Information provided for C4.2:</p> <ul style="list-style-type: none"> <li>D2014/29024 SCADA Critical alarms sent to the PINO</li> <li>Compared to CCP Tables -CD2013/56[v2] Water Quality Management Framework 2012 – 2017 Appendix 4, alarms are set at a more conservative level to provide staff with some lead time to plan a response.</li> <li>CD2011/179[v3] Water Monitoring Program 2010-2015 - during events Part B applies.</li> <li>D2013/67371 SR F2013-2309 Lake Burragorang Turnover 2013</li> </ul>		





Information provided for C4.3:

- D2014/29024 SCADA Critical alarms sent to the PINO
- Compared to CCP Tables -CD2013/56[v2] Water Quality Management Framework 2012 – 2017 Appendix 4, alarms are set at a more conservative level to provide staff with some lead time to plan a response.
- CD2011/1179[v3] Water Monitoring Program 2010-2015 - during events Part B applies.
- D2013/67371 SR F2013-2309 Lake Burragorang Turnover 2013
- CD2004/183[v2] Raw Water Quality Incident Response Plan
- D2013/94543 Appendix B – Key Contact Directory

Information provided for C4.4:

- Instrument Calibration and Maintenance Procedures
- 212270 NEW RATING TABLE 9.0 JUNE-2012
- 212270 STREAM INSPECTION MARCH 2014
- 212270 WOLLONDILLY RIVER @ JOORILAND HI-FLOW XS REPORT
- 568045 CALIBRATION REPORT NOV\_2013
- 568045 RAINFALL INSPECTION NOV\_2013
- WO 2344946.pdf
- WO 2344988.pdf
- WO 2345030.pdf
- WO 2345059.pdf
- Work Orders For WQM Equipment At WP0903.xlsx

Information provided for C4.5:

- CD2004/185[v2] Monitoring and Operation of Metropolitan Dams Town Water Supply Systems

### Summary of Reasons for Grade

SCA demonstrated that it had good procedures and processes for its operations. However, there is not a strong link between the CCPs and their underlying procedures (as noted in the 2012-2013 audit report). While some evidence was provided in the pre-interview material and further information was discussed in the interview the material and chemical component is not well explained in the Framework document. This is an area that would benefit from additional consideration by SCA (OFI E4-I).

### Discussion and Notes

SCA demonstrated that it had good procedures, records and process for their operations. For instance, calibration records were provided for meters sighted during the field verification.

Discussions with the Water Supply Operators during the field verification regarding their daily activities verified they were undertaking the procedures as documented. The procedure *CD2004/185[v2] Monitoring and Operation of Metropolitan Dams Town Water Supply Systems* provided pre-audit was available at the Cataract dosing facility. Documents that were cited within other procedures were also checked as being present and used on site.<sup>56</sup>

The auditors noted there was not a strong link between the CCPs and their underlying procedures (a similar finding was included in the 2012-2013 audit report). The actions under the CCPs are broad and do not contain specific references to procedures e.g. *CCPI Adjustment limit* states “consider changing outlet”, however no procedure is referenced to which person / group is responsible for making that decision. The Actions under the critical limits do not refer to, or cross reference with, the Raw Water Quality Incident Response Plan.

### Recommendation

There are no new recommendations for this element. The recommendations 2012/13-2 and 2012-3 apply to this element and are still outstanding.

### Opportunity for Improvement

- **OFI E4-I Materials and Chemicals' Management:** SCA should better articulate the procedures and processes in place for C4.5 Materials and chemicals.

<sup>56</sup> CD2003/069 and CD2003/067V2.



Sub-clause	Requirement	Compliance Grade
Element 5: Verification of drinking water quality	<p><b>C5.1 Drinking water quality monitoring</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Determine the characteristics to be monitored in the distribution system and in water as supplied to the consumer.</li> <li>Establish and document a sampling plan for each characteristic, including the location and frequency of sampling.</li> <li>Ensure monitoring data is representative and reliable.</li> </ul> <p><b>C5.2 Consumer satisfaction</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish a consumer complaint and response program, including appropriate training of employees.</li> </ul> <p><b>C5.3 Short term evaluation of results</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish procedures for the daily review of drinking water quality monitoring data and consumer satisfaction.</li> <li>Develop reporting mechanisms internally, and externally, where required.</li> </ul> <p><b>C5.4 Corrective action</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish and document procedures for corrective action in response to non-conformance or consumer feedback</li> </ul>	High
<p><b>Evidence Sighted</b></p> <p>Information provided for C5.1</p> <ul style="list-style-type: none"> <li>CD2011/179[v3] Water Monitoring Program 2010-2015 – at inlet to WFP or delivery system.</li> <li>D2014/61723 SCA Annual Water Quality Monitoring Report 2012-13</li> <li>SWIRL Notifications 3937_001</li> <li>D2011/53551 Water Monitoring – QAQC Management Protocol</li> <li>Special Requests: <ul style="list-style-type: none"> <li>D2013/37710 SR Prospect Pumping May 2013</li> <li>D2013/67371 SR F2013-2309 Lake Burragorang Turnover 2013</li> <li>D2014/50903 Lake Avon Turnover Monitoring 2014</li> </ul> </li> <li>D2014/52306 Shoalhaven Council Water Quality Report May 2014</li> <li>D2014/56813 BWSA Compliance Report - May 2014</li> <li>D2014/52366 Wingecarribee/Goulburn Mulwarree Shire Council Water Quality Report May 2014</li> <li>D2014/57469 BGA Report – June 2014</li> </ul> <p>Information provided for C5.2</p> <ul style="list-style-type: none"> <li>CD2012/154 Complaints and Compliments Management – How to Guide</li> <li>CD2007/13[v3] Complaints and Compliments Handling Procedure</li> <li>Also staff training records and Corporate Induction records provided for I.I above.</li> </ul> <p>Information provided for C5.3</p> <ul style="list-style-type: none"> <li>CD2012/130[v2] Water Quality Data Review and Reporting Procedure</li> <li>D2014/59602 SCA SCC 4 monthly meeting Minutes - Jun 2014</li> <li>D2014/17888 SCA/WSC/SCC/GMC- Agenda - Interface meeting - 27 Feb 2014</li> <li>D2013/86206 WSC/SCA 4 Monthly Meeting - 12 September 2013 Minutes/Agenda</li> <li>D2014/34202 Agenda and Minutes 19 - SCA-SWC Interface - 10 April 2014</li> <li>NSW Health and Sydney Water Corporation Strategic Liaison Group Meeting Minutes:</li> <li>SLG meeting minutes 18 June 2014_DRAFT Updated 5 Aug 2014</li> <li>Item 02 &amp; 03 - SLG meeting 4 Dec 2013 – minutes</li> <li>Item 02 &amp; 03 - SLG meeting minutes 4 Sept 2013_final draft</li> <li>NSW Health and Sydney Water Corporation Joint Operational Group Meeting Minutes:</li> <li>D2014/75679 Minutes JOG 14 May 2014_final draft</li> <li>Item 4 &amp; 5 – Minutes JOG 17 February 2014_Final</li> <li>Item 05 – Minutes JOG 31 October 2013</li> <li>Item 03 &amp; 04 – Minutes JOG 1 August 2013_Final draft</li> </ul> <p>Information provided for C5.4</p> <ul style="list-style-type: none"> <li>CD2009 2[v4] Corporate Incident Management Framework.docx</li> <li>CD2004/183[v2] Raw Water Quality Incident Response Plan</li> <li>CD2011/11[v2] Incident Notification Form</li> <li>D2011/7925 Incident Notification Form Database</li> </ul>		



### Summary of Reasons for Grade

No issues were noted for the raw water monitoring but documentation needs to be clarified for chlorine verification monitoring at the picnic sites. Therefore a grade of high compliance was awarded.

### Discussion and Notes

SCA conducts an extensive monitoring regime of its raw water supply.<sup>57</sup> Specific to this element however, is the verification of drinking water supplied to consumers (at the picnic sites). SCA documents that laboratory tests are conducted monthly for *E. coli*, total coliforms, chlorophyll-a, algal counts (if chlorophyll-a >5 µg/L) and algal toxins (microcystin-LR analysis if potentially toxin producing >2000 cells/mL) and annual sampling of total aluminium, antimony, arsenic, barium, beryllium, cadmium, calcium, chloride, chromium, copper, fluoride, iodide, total iron, lead, magnesium, total manganese, mercury, molybdenum, nickel, nitrate, nitrite, potassium, selenium, silver, sodium, sulphate, tin, zinc, UV absorbance (254nm), dissolved organic carbon, total organic carbon, true colour at 400 nm and 420nm, alkalinity, total dissolved solids, total hardness, odour, *Clostridium perfringens*. In the *Water Monitoring Program*, no reference was found to the monitoring of chlorine residual in the picnic site reticulation systems.

Issues associated with chlorine residual monitoring of the picnic areas were discussed during the field verification visit. The management and escalation of any issues noted was found to align with the processes formally documented in the procedures.

SCA has a customer complaint process with details publicly available via the website.<sup>58</sup> Procedures for the collection and handling of customer requests were provided.

As the *Water Monitoring Program* pertains primarily to the raw water supply and does not appropriately reflect the picnic site monitoring, this overall element has been awarded high compliance.

### Recommendation

There are no recommendations for this element.

### Opportunity for Improvement

- **OFI E5-I Chlorine Verification Monitoring:** Ensure that chlorine verification monitoring for the picnic sites is included as part of the parameter suite within the *Water Monitoring Program*.

<sup>57</sup> *Water Monitoring Program 2015 – 2020*.

<sup>58</sup> <http://www.sca.nsw.gov.au/about/engage/community/complaints-and-compliments>



Sub-clause	Requirement	Compliance Grade
Element 6 Management of Incidents and Emergencies	<p><b>C6.1 Communication</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Define communication protocols with the involvement of relevant agencies and prepare a contact list of key people, agencies and businesses.</li> <li>Develop a public and media communications strategy</li> </ul> <p><b>C6.2 Incident and emergency response protocols</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Define potential incidents and emergencies and document procedures and response plans with the involvement of relevant agencies</li> <li>Train employees and regularly test emergency response plans</li> <li>Investigate any incidents or emergencies and revise protocols as necessary</li> </ul>	Full
<p><b>Evidence Sighted</b></p> <p>Information provided for C6.1:</p> <ul style="list-style-type: none"> <li>CD2004/183[v2] Raw Water Quality Incident Response Plan</li> <li>D2013/94543 Appendix B – Key Contact</li> <li>Directory</li> <li>CD2011/179[v3] PINO Incident Response Procedure</li> <li>2\2.1.2 - ADWG\Element 6\2.1.2-E6.1-D2014 29493 Comm Protocols &amp; Guidelines.xlsx</li> </ul> <p>Information provided for C6.2:</p> <ul style="list-style-type: none"> <li>CD2009 2[v4] Corporate Incident Management Framework.docx</li> <li>CD2004/183[v2] Raw Water Quality Incident Response Plan</li> <li>D2013/94543 Appendix B – Key Contact Directory</li> <li>SWIRL Notifications 3937_001</li> <li>CD2011/179[v3] Water Monitoring Program 2010-2015 - Part B.</li> <li>D2014/37440 Board Meeting - 2 May 2014 - Incident Exercise Calendar 2014 - 2017 - Item 4.2</li> <li>Item 11 - Exercise Flooded report - final</li> <li>D2014/80992 Dam Safety Emergency Plans (Prospect, Warragamba, Wingecarribee and Woronora dams) Exercise June 2014 – Report</li> <li>SCA Working in IMT Aug 2014 – Post Activity Report</li> <li>D2014/37440 Board Meeting - 2 May 2014 - Incident Exercise Calendar 2014 - 2017 - Item 4.2</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>No additional issues were noted beyond the poor linkage between the CCPs and the emergency responses and the Raw Water Quality Incident Management Protocol. This issue is covered in more detail in Element 3/4 and in the water quality recommendation responses. The auditors have awarded full compliance for this clause noting that the issues associated with the CCPs are covered under Element 3 and 4 for which high compliance was awarded.</p>		
<p><b>Discussion and Notes</b></p> <p><b>C6.1 and C6.2 combined:</b> SCA has a corporate incident management Framework to "ensure the SCA is resilient to incidents". The framework identifies seven different types of incidents:</p> <ul style="list-style-type: none"> <li>Health and Safety;</li> <li>Infrastructure and Water Supply;</li> <li>Water Quality;</li> <li>Catchment/Environment;</li> <li>Security;</li> <li>Information and Communications Technology; and</li> <li>Business.</li> </ul> <p>This document lists a range of subordinate plans including the <i>Raw Water Quality Incident Response Plan</i> which contains a detailed list of water quality incident triggers. The document was within its review cycle (every 2 years) but it was unclear why <i>AS/NZS 5050:2010 Business Continuity – Managing Disruption Related Risk</i> was not consulted and referenced as part of the review process. Further the document still contained references to the now superseded risk management standard <i>AS/NZS 4360:2004</i> instead of the current <i>ISO 31000:2009</i> standard.</p> <p>There is a poor linkage between the CCPs and the emergency responses and the Raw Water Quality Incident Management Protocol and this issue is covered in more detail in Element 3 and in the water quality recommendation responses.</p> <p>The <i>Communication Protocol &amp; Guidelines</i> demonstrate that SCA has developed communication messages for incidents. The <i>Key Contact Directory</i> generally appeared current. It was noted that the telephone contact for an officer at the NSW Office of Water was not up to date (however it was noted by the auditor that this contact has also not yet been updated on the NSW Office of Water website).</p> <p>SCA provided its Incident Exercise Calendar for 2014 -2017 and a report on <i>Exercise Flooded</i>, an operational level exercise conducted with Sydney Water and also attended by NSW Health. Evidence of training for staff in <i>Working in an incident</i></p>		



management team was provided. While the date of training was outside the audit period, the training report demonstrated SCA's training program.

It was noted that the phone number for the notification of Fire and Rescue as part of the protocol for the notification of pollution incidents (if not initially notified as a combat agency) should be 1300 729 579 not 000 as stated in the Procedure for PINO Incident Response.

Further evidence was provided post the on site interviews to show an example of incident scenario training with an external stakeholder and how business improvement actions arising from the training are reviewed by the executive and captured in the business improvement system.<sup>59</sup> Although the scenario training had been conducted outside of the audit period, the actions arising were dealt with within the audit scope and therefore the evidence provided showed a considered sequence of events in terms of dealing with the actions.

#### Recommendation

There are no new recommendations for this element.

#### Opportunity for Improvement

- **OFI E6-I Inclusion of the Current Standard for Business Continuity:** SCA should consider incorporating AS/NZS 5050:2010 *Business Continuity – Managing Disruption Related Risk* in the next review of the Corporate Incident Management Framework.

<sup>59</sup> D2013 50647 Executive Meeting - 17 June 2013 - Incident Exercise with Eraring Energy - Item 18.docx  
Executive Meeting - 17 June 2013 - Incident Exercise with Eraring Energy - REPORT - Item 18 Att 1.PDF  
Executive Meeting Minutes 17 June 2013.docx  
Extract Business Improvement System report Sept 2014.xlsm



Sub-clause	Requirement	Compliance Grade
Element 7 Employee Awareness and Training	<p><b>C 7.1: Employee awareness and involvement</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Develop mechanisms and communication procedures to increase employees awareness of and participation in drinking water quality management</li> </ul> <p><b>C 7.2: Employee training</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Ensure that employees, including contractors, maintain the appropriate experience and qualifications</li> <li>Identify training needs and ensure resources are available to support training programs</li> <li>Document training and maintain records of all employee training</li> </ul>	Full
<p><b>Evidence Sighted</b></p> <p>Information provided for C7.1</p> <ul style="list-style-type: none"> <li>D2014 83119 Certificate IV Water Operations</li> <li>D201414722 Environmental Induction Presentation 2014(2)</li> <li>D201411231 2014 BMS Induction Presentation</li> <li>CD2014/61 Drinking Water Quality Management Plan for Picnic Areas. Tables 2 and 3.</li> <li>CD2014/57 Avon Picnic Area Water Supply Quality Assurance Plan</li> <li>CD2014/58 Fitzroy Falls Picnic Area Water Supply Quality Assurance Plan</li> <li>CD2014/59 Cordeaux Picnic Area Water Supply Quality Assurance Plan</li> <li>CD2014/60 Cataract Picnic Area Water Supply Quality Assurance Plan</li> <li>D2014/12995 List of attendees for WMP review-17/10/13</li> <li>Training Report RC 10.7.14</li> </ul> <p>Information provided for C7.2:</p> <ul style="list-style-type: none"> <li>Position Descriptions for: <ul style="list-style-type: none"> <li>Water System Operator</li> <li>D2012/47519 PD Senior Water System Operator</li> <li>D2012/47545 PD Water Quality Analyst</li> <li>D2012/47509 PD Manager South East Operations</li> <li>D2012/47516 PD Senior System Planner</li> </ul> </li> <li>NATA Certificate Sydney</li> <li>NATA Scope Sydney</li> <li>NATA Certificate Scoresby</li> <li>NATA Scope - Scoresby</li> <li>Sample of conference attendance in 2013-14: <ul style="list-style-type: none"> <li>D2013/69898 Executive Meeting - 15 August 2013 - Conferences and Seminars - Item 22</li> <li>D2013/83397 Executive Meeting - 17 September 2013 - Conferences and Seminars - Item 15</li> <li>D2013/98146 Executive Meeting - 17 October 2013 - Conferences and Seminars</li> <li>D2013/102591 Executive Meeting - 7 November 2013 - Conferences and Seminars - Item 11</li> <li>D2013/110638 Executive Meeting - 5 December 2013 - Conferences and Seminars - Item 17</li> <li>D2014/6103 Executive Meeting - 13 February 2014 - Conferences and Seminars - Item 10</li> <li>D2014/23533 Executive Meeting - 24 March 2014 - Conferences and Seminars - Item 17</li> <li>D2014/45043 Executive Meeting - 22 May 2014 - Conferences and Seminars - Item 15</li> <li>D2014/57184 Executive Meeting - 17 June 2014 - Conferences and Seminars - Item 12</li> </ul> </li> <li>Training Report RC 10.7.14</li> <li>EFocus Staff Development and Training</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>SCA demonstrated that it has good induction process to introduce staff to its BMS including its WQMS. SCA demonstrated it had an active program to identify staff training needs, ensure currency of its staff's expertise and maintained appropriate records of that training.</p>		
<p><b>Discussion and Notes</b></p> <p>Minutes of ten executive meetings were provided. These demonstrated how SCA tracked conferences and seminars and illustrated how SCA contributed to and learnt from the broader industry.</p> <p>Water Quality was noted to be in the <i>Purpose of Position</i> for the four position description's supplied (Manager South East Operations, Senior Water System Operator, Water Quality Analyst and Senior System Planner).</p> <p>A printout of the EFocus Staff Development and Training register was provided and considered acceptable in scope and record keeping.</p> <p>Evidence was provided of three operators continuing their Certification IV studies in water operations.</p>		



<p>SCA provided copies of the NATA accreditation of its sub-contracted laboratories.</p> <p>EMS and BMS (including Water Quality Management) induction presentations were provided.</p> <p>SCA stated that two water quality items included in internal staff newsletter during 2013-14 (although these were not verified):</p> <ul style="list-style-type: none"><li>o <a href="http://intranet.sca.nsw.gov.au/news/archive/2014/20140128">http://intranet.sca.nsw.gov.au/news/archive/2014/20140128</a></li><li>o <a href="http://intranet.sca.nsw.gov.au/news/archive/2014/20140128">http://intranet.sca.nsw.gov.au/news/archive/2014/20140128</a></li></ul> <p>A training report from 1/8/2013 until 27/5/2014 showed that 31 staff attended at total of 628.5 hours technical training and conferences.</p>
<p><b>Recommendation</b></p> <p>There are no new recommendations for this element.</p>
<p><b>Opportunity for Improvement</b></p> <p>There are no opportunities for improvement for this element.</p>



Sub-clause	Requirement	Compliance Grade
Element 8 Community involvement and awareness	<p><b>C 8.1: Community consultation</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Assess requirements for effective community involvement.</li> <li>Develop a comprehensive strategy for community consultation.</li> </ul> <p><b>C 8.2: Communication</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Assess requirements for effective community involvement.</li> <li>Develop an active two-way communication program to inform consumers and promote awareness of drinking water quality issues.</li> </ul>	Full
<p><b>Evidence Sighted</b></p> <p>Information provided for C8.1:</p> <ul style="list-style-type: none"> <li>D2013/80338 SCA Communication Strategy 2012-2015</li> <li>CD2013/56[v2] Water Quality Management Framework 2012 – 2017</li> <li>D2013/96462 Prospect Dam Improvement Work Stakeholder and Community Engagement Plan</li> <li>D2013/96898 Upgrade to Prospect Dam_Govt Stakeholder letter_Oct2013</li> <li>D2013/84401 Prospect Reservoir Closure and Cycleway Diversion_Western Sydney Cycling Network</li> <li>D2013/62456 Upgrade to Prospect Dam_notification to residents July2013_544 Reservoir Rd Prospect</li> <li>D2014/34592 Bendeela Recreation Area - FINAL Masterplan Summary - Web format</li> <li>D2014/36614 Bendeela Recreation Area Masterplan – Public exhibition mail out - April 2014</li> <li>D2014/45707 Bendeela - stakeholder letter drop - May 2014</li> <li>D2014/19646 Bendeela Recreation Area Masterplan – Community Reference Group - Draft Agenda 5 March 2014 Meeting</li> <li>D2014/21157 Bendeela Community Reference Group – CRG - Minutes of Meeting No. 3 - 5 March 2014</li> <li>LGRP Meeting minutes:</li> <li>D2014/10589 LGRP_Minutes 5 August 2013_Final</li> <li>D2014/81976 LGRP_Minutes 3 Feb 2014_Draft</li> </ul> <p>Information provided for C8.2:</p> <ul style="list-style-type: none"> <li>CD2013/56[v2] Water Quality Management Framework 2012 – 2017</li> <li>D2014/61723 SCA Annual Water Quality Monitoring Report 2012-13</li> <li>D2013/80338 SCA Communication Strategy 2012-2015</li> <li>D2013/96462 Prospect Dam Improvement Work Stakeholder and Community Engagement Plan</li> <li>D2013/96898 Upgrade to Prospect Dam_Govt Stakeholder letter_Oct2013</li> <li>D2013/84401 Prospect Reservoir Closure and Cycleway Diversion_Western Sydney Cycling Network</li> <li>D2013/62456 Upgrade to Prospect Dam_notification to residents July2013_544 Reservoir Rd Prospect</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>SCA demonstrated a comprehensive community engagement strategy through the information provided and the material available through its website.</p>		
<p><b>Discussion and Notes</b></p> <p>The presentation <i>SCA Communication strategy 2012-2015</i> included a communication matrix of stakeholders and tactics, demonstrating that SCA had assessed the requirements for effective community involvement and identified the range of engagement activities it undertook for each group.</p> <p>Evidence was provided for specific engagement activities including the Prospect Dam Upgrade works and the Bendeela Recreation Area Masterplan development.</p> <p>The evidence supported a comprehensive interpretation of the Framework requirements for this element.</p>		
<p><b>Recommendation</b></p> <p>There are no new recommendations for this element.</p>		
<p><b>Opportunity for Improvement</b></p> <p>There are no opportunities for improvement for this element.</p>		





Sub-clause	Requirement	Compliance Grade
Element 9 Research and Development	<p><b>C 9.1: Investigative studies and research monitoring</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Establish programs to increase understanding of the water supply system.</li> </ul> <p><b>C 9.2: Validation of processes</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Validate processes and procedures to ensure that they are effective at controlling hazards.</li> <li>Revalidate processes periodically or when variations in conditions occur.</li> </ul> <p><b>C9.3: Design of equipment</b> (2013-2014 Audit Test: implementation)</p> <ul style="list-style-type: none"> <li>Validate the selection and design of new equipment and infrastructure to ensure continuing reliability.</li> </ul>	High
<p><b>Evidence Sighted</b></p> <p>Information provided C9.1:</p> <ul style="list-style-type: none"> <li>D2014/14923 Cryptosporidium Risk 221013</li> <li>D2013/18050 Quantitative Microbial Risk Assessment</li> <li>D2012/27147 Pollution Source Assessment Tool (PSAT) (PSAT Results Report). PSAT identified high risk drainage units which informed the installation location of auto samplers.</li> <li>D2014/15567 Investigation into True Colour in SCA Reservoirs</li> <li>D2013/11404 Review of High True Colour in Nepean Reservoir February 2013, Draft Version 3</li> <li>D2014/80990 Science Literature Review: True Colour</li> </ul> <p>Information provided C9.2:</p> <ul style="list-style-type: none"> <li>D2014/61723 SCA Annual Water Quality Monitoring Report 2012-13</li> <li>D2014/36239 Effect of Chlorination on Giardia in the Upper Canal - Final Report</li> </ul> <p>Information provided C9.3:</p> <ul style="list-style-type: none"> <li>D2010/04289 - Business Case</li> <li>Four vertical profilers have been installed in Lake Burragorang and one in Lake Nepean.</li> <li>D2013/107220 18219000 - Change Request - Change 2</li> <li>D2012/83937 Science &amp; Operations Quarterly Meeting - 14 September 2012 - SCA Vertical Profiler Sep 12</li> <li>D2014/83442 Nepean static profiler - proposed location</li> <li>Replacing solar powered batteries with fuel cells to improve availability of remote sites</li> <li>Access and solar coverage: Fossickers Flat fuel cell trial.</li> <li>Shoalhaven SCADA System - Vegetation Management Issues Affecting System Operation</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>The SCA has an active and relevant research program, however, the high compliance grade is reflective of the lack of properly articulated validation evidence.</p>		
<p><b>Discussion and Notes</b></p> <p>SCA has an active research program as demonstrated through the reports provided for this element and those provided for the Catchment section. SCA also actively participates in research programs undertaken by industry bodies including Water Research Australia and WSAA. Validation tables have not yet been developed and further information on this issue is covered in Element 3 and the 2012-2013 water quality recommendations.</p> <p>Specific evidence relating to Lake Burragorang: During July rain event, turbidity was used as an indicator of pathogens. The variable offtake from the dam was used as a CCP to avoid high turbidity water going into the supply. Online turbidity monitoring on the pipeline was used to verify that changes were effective. When renewing online sensors, opportunity was taken to replace existing thermistor chain (measuring temperature) with multi probe measuring turbidity, temperature, dissolved oxygen, conductivity and pH. This provided added information about water quality and certainty in tracking intrusions.</p> <p>The WQMF document does not go down to Framework component level and therefore, the auditors noticed that some key aspects were missing from the document for instance, 'design of equipment'. However, during the interviews, it was established that the SCA does have procedures and processes in place for the design and procurement of equipment. The missing information is therefore a document structure issue rather than an underlying gap.</p>		
<p><b>Recommendation</b></p> <p>There are no specific recommendations for this element other than the linkage with the 2012-2013 water quality recommendations (2012/13-2 and 2012/13-3).</p>		
<p><b>Opportunity for Improvement</b></p> <ul style="list-style-type: none"> <li><b>OFI E9-1 Component Level Descriptions Required:</b> The 'Design of equipment' component is missing from the WQMF document. The document needs to be revised overall to ensure that other components are not missed.</li> </ul>		



Sub-clause	Requirement	Compliance Grade
Element 10 Documentation and record keeping	<p>C10.1 Management of documentation and records (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Document information pertinent to all aspects of drinking water quality management.</li> <li>Develop a document control system to ensure current versions are in use.</li> <li>Establish a records management system and ensure that employees are trained to fill out records.</li> <li>Periodically review documentation and revise as necessary.</li> </ul> <p>C10.2 Reporting (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish procedures for effective internal and external reporting.</li> <li>Produce an annual report to be made available to consumers, regulatory authorities and stakeholders.</li> </ul>	High
<b>Evidence Sighted</b> Information provided <ul style="list-style-type: none"> <li>2.1.2-E10.1 CD2010 50[v2] Controlled Document Request - New or Review.DOTM</li> <li>2.1.2-E10.1-CD2011 173[v3] Controlled Document - Approve and Publish - How To Guide.DOCX</li> <li>2.1.2-E10.1-CD2011 174[v3] Controlled Document-Create New Version Under Review-How To Guide.DOCX</li> <li>2.1.2-E10.1-CD2011 195[v3] Controlled Document - Creating a new CD in eTrim- How to Guide.DOCX</li> <li>2.1.2-E10.1-D2014 5558 Corporate Risk Register 2013.DOCX</li> <li>2.1.2-E10.1-D2014 54004 IES SCADA Alarms for May 2014.XLSX</li> <li>2.1.2-E10.1-D2014 54738 Plant SCADA Alarms for May 2014.XLSX</li> <li>2.1.2-E10.1-D2014 55503 Copy of 140501_C2T risk register and summary_05.xls.XLSX</li> <li>2.1.2-E10.2-Auto Exceedence sent 140204_119095_alg.pdf</li> <li>2.1.2-E10.2-Auto Exceedence sent 140204_119095_alg2.pdf</li> <li>2.1.2-E10.2-CD2004 183[v2] Raw Water Quality Incident Response Plan.DOC</li> <li>2.1.2-E10.2-CD2010 135[v3] Controlled Document Procedure.DOC</li> <li>2.1.2-E10.2-CD2013 28[v2] Controlled Document - Reporting - How To Guide.DOC</li> <li>2.1.2-E10.2-D2013 86206 WSCSCA 4 Monthly Meeting -12 September 2013 Minutes Agenda.DOCX</li> <li>2.1.2-E10.2-D2013 108877 Board Meeting-26 Nov 2013-Water Report Oct 13-Item 4.4 Att 1.DOCX</li> <li>2.1.2-E10.2-D2013 114386 Corporate Incident Management Framework.DOCX</li> <li>2.1.2-E10.2-D2014 5558 Corporate Risk Register 2013.DOCX</li> <li>2.1.2-E10.2-D2014 17888 SCAWSCSCCGMC- Agenda - Interface meeting - 27 Feb 2014.DOCX</li> <li>2.1.2-E10.2-D2014 31671 Board Meeting-2 May 14-Chief Executive Report-Item 1.5 Att 4.docx</li> <li>2.1.2-E10.2-D2014 34202 Agenda and Minutes 19 - SCA-SWC Interface - 10 April 2014.DOCX</li> <li>2.1.2-E10.2-D2014 55503 Copy of 140501_C2T risk register and summary_05.xls.XLSX</li> <li>2.1.2-E10.2-D2014 59602 SCA SCC 4 monthly meeting Minutes - Jun 2014.DOCX</li> <li>2.1.2-E10.2-D2014 61173 Board Meeting-25 July 14-Water Report-Item 5.3.DOCX</li> <li>2.1.2-E10.2-D2014 61723 SCA Annual Water Quality Monitoring Report 2012-13.PDF</li> <li>2.1.2-E10.2-SWIRL Notifications 3937_001.pdf</li> <li>#134 Information from Tuesday - Screen Shots.docx (SCADA screenshots)</li> </ul>		
<b>Summary of Reasons for Grade</b> <p>The SCA has good internal and external water quality reporting mechanisms including for routine results and exceedances. However, the auditors were provided with an uncontrolled (and awaiting revision) document as part of the evidence package. Therefore, this element was awarded high compliance.</p>		
<b>Discussion and Notes</b> <p><b>C10.1 Management of documentation and records:</b> The WQMF forms the main repository of information on SCA's obligations for reporting on water quality and water quality management. The WQMF is also supported by the Picnic Site DWQMP for the drinking water obligations. Other points of reference for water quality documentation include the KnowRisk platform (incorporating the catchment to tap risk assessment results) and the water quality database. KnowRisk could not be sighted in its entirety as this is a software program for managing risk which is used by Sydney Water. However, a KnowRisk export of the information was sighted by the auditor.<sup>60</sup> The SCA's Corporate Risk Register provides a means of documenting water quality at the corporate level to ensure visibility. The SCA uses SCADA<sup>61</sup> as a means of collecting online water quality and quantity information. The SCA uses a software-based package called eTRIM for managing its document control and records.</p>		

<sup>60</sup> 2.1.2-E2.1-D2014 55503 Copy of 140501\_C2T risk register and summary\_05.xls.XLSX/2.1.2-E10.2-D2014 55503 Copy of 140501\_C2T risk register and summary\_05.xls.XLSX

<sup>61</sup> 2.1.2-E10.1-D2014 54738 Plant SCADA Alarms for May 2014.XLSX; SCADA screenshot information was also provided post the on site verification (#134 Information from Tuesday - Screen Shots.docx).



Procedures and forms relating to the use of eTRIM were sighted and the use of eTRIM to find files was demonstrated at the on site interviews.<sup>62</sup> The SCA ensures currency of documentation by having its intranet connected to eTRIM.

At the Prospect field verification visit, asset identifiers were checked for pH and turbidity assets on the 'As Built' diagrams. The identifiers used in the field matched those provided on the 'As Built' diagrams.<sup>63</sup>

**C10.2 Reporting:** The SCA, as a statutory authority, is required to report to a number of external agencies, example outputs of which include the Annual Catchment Management Report and Annual Water Quality Monitoring report – both of these reports are available (and were sighted) on the website.<sup>64</sup> Also sighted was the SCA Annual Water Quality Management System Report 2013-14 1 September Report to IPART. Water quality is documented and reported in board reports.<sup>65</sup> IPART confirmed that the required reports were received by 1 September 2014.<sup>66</sup> Reporting through minutes of meeting to SCA's stakeholders was confirmed.<sup>67</sup> NSW Health confirmed that it was satisfied with SCA's reporting of water quality and for further requests for data.<sup>68</sup> Picnic site water quality is reported internally to the Board but it would be useful to have a section in the Water Report, which specifically covers the picnic sites as a line item<sup>69</sup>.

#### Recommendation

There are no new recommendations for this element. However document control is covered under the Environment section as an OFI.

#### Opportunity for Improvement

- **OFI E10-1 Picnic Site Water Quality Reporting:** Ensure that picnic site drinking water quality results are provided with more visibility in the Board Water Report with their own section or line item.<sup>70</sup>

<sup>62</sup> 2.1.2-E10.1 CD2010 50[v2] Controlled Document Request - New or Review.DOTM, 2.1.2-E10.1-CD2011 173[v3] Controlled Document - Approve and Publish - How To Guide.DOCX, 2.1.2-E10.1-CD2011 174[v3] Controlled Document-Create New Version Under Review-How To Guide.DOCX, 2.1.2-E10.1-CD2011 195[v3] Controlled Document - Creating a new CD in eTrim- How to Guide.DOCX

<sup>63</sup> Channel instruments: ATU1203 (Turbidity) and APH1204 were viewed in the field and the identifiers confirmed on the diagram As Built Drawing No DG-CWDC-P-0000-010.

<sup>64</sup> E.g. [http://www.sca.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0012/43032/Sydney-Catchment-Authority-Annual-Report-2012-13.pdf](http://www.sca.nsw.gov.au/__data/assets/pdf_file/0012/43032/Sydney-Catchment-Authority-Annual-Report-2012-13.pdf)

<sup>65</sup> 2.1.2-E10.2-D2014 31671 Board Meeting-2 May 14-Chief Executive Report-Item 1.5 Att 4.docx

<sup>66</sup> Confirmation email from IPART to SCA, 2 September 2014 (SCA 1 September Reports and Statement of Compliance).

<sup>67</sup> 2.1.2-E10.2-D2014 59602 SCA SCC 4 monthly meeting Minutes - Jun 2014.DOCX.

<sup>68</sup> Letter from Director of Environmental Health Branch, NSW Health, 27 August 2014.

<sup>69</sup> 2.1.2-E10.2-D2014 61173 Board Meeting-25 July 14-Water Report-Item 5.3.DOCX

<sup>70</sup> 2.1.2-E10.2-D2014 61173 Board Meeting-25 July 14-Water Report-Item 5.3.DOCX



Sub-clause	Requirement	Compliance Grade
Element 11 Evaluation and audit	<p><b>C 11.1: Long term evaluation of results</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Collect and evaluate long-term data to assess performance and identify problems.</li> <li>Document and report results.</li> </ul> <p><b>C 11.2: Audit of drinking water quality management</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Establish processes for internal and external audits.</li> <li>Document and communicate audit results.</li> </ul>	Full
<b>Evidence Sighted</b> Information provided <ul style="list-style-type: none"> <li>2.1.2-EI 1.1-CD2013 56[v2] Water Quality Management Framework 2012-2017.DOCX</li> <li>2.1.2-EI 1.1-D2012 27147 Pollution Source Assessment Tool Results Report 2011.PDF</li> <li>2.1.2-EI 1.1-D2012 68458 Final - Healthy Catchments Program 2012-13.PDF</li> <li>2.1.2-EI 1.1-D2013 33378 Healthy Catchments Strategy 2012 - 2016 - Final - 19 April 2013.PDF</li> <li>2.1.2-EI 1.1-D2014 61723 SCA Annual Water Quality Monitoring Report 2012-13.PDF</li> <li>2.1.2-EI 1.2-D2013 2700 Exec Meeting-22 July 13-Healthy Catchments Prog 13-14-Item 13 Att 1.DOC</li> <li>2.1.2-EI 1.2-D2013 116361 Exec Meeting-13 Feb 2014-31 March Audit Recs Report to IPART-Item 5.DOCX</li> <li>2.1.2-EI 1.2-D2014 13794 31 March 2014 letter to IPART.PDF</li> <li>2.1.2-EI 1.2-D2014 26066 IPART confirmation of receipt of SCA 31 March report.EML</li> <li>D2010_01321 Software Licence Agreement - Hunter Water.PDF</li> </ul>		
<b>Summary of Reasons for Grade</b> The SCA has good internal systems in place for auditing and capturing the results of audits for further action and therefore, this element was found to have full compliance.		
<b>Discussion and Notes</b> <p><b>C 11.1 Long term evaluation of results:</b> The SCA conducts two-yearly trend analysis in line with its requirements with the SCA Reporting Manual and presents those results in the Annual Water Quality Monitoring Report (the last being 2012-13). Further, the independent catchment audit provides another mode for undertaking long trend analysis. Both the Annual Water Quality Monitoring Report and the Catchment audit set of reports were checked and found to satisfy this element. Further, the SCA has a systematic method for checking long term trends of drainage unit performance through its PSAT tool which in turn, informs the Healthy Catchments Strategy and the Healthy Catchments Program. The PSAT Tool has in fact been recognised as best practice for this type of analysis and interest in the tool is growing from other utilities. In fact, the SCA has a signed agreement in place with the Hunter Water Corporation for the use of the PSAT Tool for its own catchment analysis.</p> <p><b>C 11.2 Audit of drinking water quality management:</b> The SCA undergoes annual audits against the operating and water management licences for water quality deliverables. Further, a specific and independent catchment audit is undertaken every 3 years against gazetted catchment indicators, as a requirement of the <i>Sydney Water Catchment Management Act 1998</i> (NSW). Further to the information provided by the SCA, the auditor requested evidence to show the SCA's audit schedule and a report on one of the audited elements. Overall, auditing is governed by the SCA's Internal Audit Manual<sup>71</sup>. The SCA has engaged specific auditors, e.g. Deloitte, to undertake auditing and provide audit reports and recommendations for environmental compliance however currently, the major auditing of water quality is undertaken through the mechanisms identified above and water quality management framework auditing is not yet covered on the internal audit plan<sup>72</sup>. However, the SCA informed the auditor that it is planning to undertake an Aquality audit during 2014-15.</p>		
<b>Recommendation</b> There are no new recommendations for this element.		
<b>Opportunity for Improvement</b> <ul style="list-style-type: none"> <li><b>OFI EI 1-1 Visibility of Water Quality Audit:</b> Ensure that the Aquality audit is added as a line item to the Internal Audit Plan and</li> <li><b>OFI EI 1-2 Picnic Site Water Quality Audit:</b> Ensure that the Aquality audit also covers the picnic site water quality and QAPs.</li> </ul>		

<sup>71</sup> Sydney Catchment Authority Internal Audit Manual July 2013.

<sup>72</sup> I206\_001 Three Year Audit Plan.pdf



Sub-clause	Requirement	Compliance Grade
Element 12 Review and continual improvement	<p><b>C12.1 Review by senior executive</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Senior executive review of the effectiveness of the management system.</li> <li>Evaluate the need for change.</li> </ul> <p><b>C12.2 Drinking water quality management improvement plan</b> (2013-2014 Audit Test: adequacy and implementation)</p> <ul style="list-style-type: none"> <li>Develop a drinking water quality management improvement plan.</li> <li>Ensure that the plan is communicated and implemented, and that improvements are monitored for effectiveness.</li> </ul>	Full
<p><b>Evidence Sighted</b></p> <p>Information provided</p> <ul style="list-style-type: none"> <li>2.1.2-E12.1-D2014 54810 Executive~Water Quality Scorecard Mgt Review 2014.docx</li> <li>2.1.2-E12.1-D2014 67987 2014 Annual ADWG Management Review Pres.PPTX</li> <li>2.1.2-E12.1-D2014 72086 Exec Meeting - 8 Aug 2014 - Item 4 - BMS Annual Mgt Review.DOCX</li> <li>2.1.2-E12.1-D2014 72639 Exec Meeting - 8 Aug 2014 - Item 5 - BMS Policy Review.DOCX</li> <li>2.1.2-E12.2-CD2013 56[v1] Water Quality Management Framework 2012-2017.DOCX</li> <li>2.1.2-E12.2-D2014 61291 Five-year Water Quality Improvement Plan 2012-2017 [v1].DOCX</li> </ul>		
<p><b>Summary of Reasons for Grade</b></p> <p>The SCA has good processes in place for reviewing, capturing and actioning information on water quality improvements and therefore, this element is assessed as having full compliance.</p>		
<p><b>Discussion and Notes</b></p> <p><b>C12.1 Review by Senior Executive:</b> Various pieces of evidence were presented in support of this component including the Water Quality Scorecard. This scorecard also includes some information on the picnic site water quality aspects.<sup>73</sup> The SCA also noted that the WQMF was reviewed by the SCA Executive and Board and will be reviewed on a five yearly basis. The SCA manages review through its integrated Business Management System processes and evidence was sighted to confirm that water quality is a line item on the executive meeting reviews.<sup>74</sup></p> <p><b>C12.2 Drinking Water Quality Management Improvement Plan:</b> The SCA's main piece of evidence for this component was its Five-year Water Quality Improvement Plan. The actions identified in the plan show good connectivity with the WQMF and the Picnic Site Drinking Water Quality Management Plan and QAPs and showed responsibilities for achieving the actions. Once the Aquality assessment is undertaken in 2014/2015, this exercise will also generate actions which will then need to be added into the plan. Also, while not presented directly as evidence by the SCA, the auditors witnessed how eTRIM is used to capture and implement outcomes from other processes which generate water quality improvements, such as the IPART Operational Licence audit.</p>		
<p><b>Recommendation</b></p> <p>There are no new recommendations for this element.</p>		
<p><b>Opportunity for Improvement</b></p> <ul style="list-style-type: none"> <li><b>OFI E12-1 Review of Picnic Site QAPs and Drinking Water Quality Management Plan:</b> Ensure that the picnic site systems are specifically included as part of the executive review.</li> </ul>		

<sup>73</sup> 2.1.2-E12.1-D2014 54810 Executive~Water Quality Scorecard Mgt Review 2014.docx, p2.

<sup>74</sup> 2.1.2-E12.1-D2014 72086 Exec Meeting - 8 Aug 2014 - Item 4 - BMS Annual Mgt Review.DOCX; 2.1.2-E12.1-D2014 72639 Exec Meeting - 8 Aug 2014 - Item 5 - BMS Policy Review.DOCX



#### A.1.4 Water Quality – Recommendation 2012/2013 - 1

Reference	Recommendation	Finding
2012/2013-1 (Water Quality – 2.1.1)	<p>The SCA should further develop the Water Quality Management System to:</p> <ul style="list-style-type: none"> <li>• further address preventive measures and Critical Control Points (CCPs)</li> <li>• revise emergency information and formalise the emergency information revision process</li> <li>• clearly define event based monitoring</li> <li>• develop a specific drinking water quality policy.</li> </ul> <p>Reported at 31 March 2014: Work on the issues raised with the Water Quality Management System has commenced and is expected to be completed by 30 June 2014. Audit 2013-2014 is to check progress.</p>	Completed
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>• CD2013/56[v2] Water Quality Management Framework 2012-2017</li> <li>• CD2011/179[v2] Water Monitoring Program 2015-2020</li> <li>• CD2011/179[v3] Water Monitoring Program 2015-2020</li> <li>• CD2014/5</li> <li>• Evidence presented for the Water Quality Management System requirements was also reviewed as part of auditing this recommendation.</li> </ul>		
<b>Summary of Reasons for Finding</b> <p>While, there was a small issue noted with drinking water not being explicitly acknowledged in the Water Quality Policy, the auditors felt that because of references to drinking water quality in the WQMF and the Picnic Site QAPs and provided that the next iteration of the policy includes specific reference to drinking water quality responsibilities, that this part of the recommendation is closed.</p> <p>Other parts of this recommendation have been rolled into recommendations 2 and 3 or covered in recommendations 4 and 5 and therefore overall, this recommendation is considered completed.</p>		
<b>Discussion and Notes</b> <p>See discussion in recommendations 2 and 3.</p>		
<b>Recommendation</b> <p>There are no new recommendations.</p>		



## A.1.5 Water Quality – Recommendation 2012/2013-2

Reference	Recommendation	Finding
2012/2013-2 (Water Quality – 2.1.2)	<p>The SCA should:</p> <ul style="list-style-type: none"> <li>formally identify and implement appropriate preventive measures for raw water supplied, particularly those of high importance and any designated as CCPs</li> <li>develop explicit, validated process control tables for each CCP</li> <li>ensure appropriate (ideally continuous) frequency of operational monitoring for identified target criteria (including critical limits for CCPs).</li> </ul> <p>Reported at 31 March 2014: The issues identified with regard to preventative measures for raw water supply will be addressed through identification and documentation of CCPs in the supply System. This is expected to be completed by 30 June 2014. Audit 2013-2014 is to check progress.</p>	Not yet complete
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>CD2013/56[v2] Water Quality Management Framework 2012-2017</li> <li>Evidence presented for the Water Quality Management System requirements was also reviewed as part of auditing this recommendation.</li> </ul>		
<b>Summary of Reasons for Finding</b> <p>The WQMF and CCP tables do not yet fully identify the preventive measures actively undertaken to ensure suitable water quality under the range of operational circumstances experienced. For example, references to changing the offtake level are not appropriately documented against the relevant targets and the underlying high importance and fundamental procedures and authorisations are not yet articulated.</p> <p>There is no validated evidence for the choice of critical or other limits documented within the CCP tables.</p> <p>Monitoring methods are not clearly articulated.</p> <p>Therefore, the auditors consider that this recommendation is not yet completed and should be checked at the next audit.</p>		
<b>Discussion and Notes</b> <p>During the interview, it was apparent that SCA used a range of tools, procedures and processes to manage water quality events. These activities are not documented in the CCP tables or the WQMF. While important for all organisations, the formal documentation of this is especially important in light of the organisational change that SCA is likely to undergo with its proposed merger to become Water NSW.<sup>75</sup></p> <p>The CCP tables should have a clearer articulation of:</p> <ul style="list-style-type: none"> <li>Where the critical limit is monitored (ideally including instrument numbers)</li> <li>Procedures and responsibilities for the activities undertaken when operating within the operational target, in the adjustment limit and above the critical limit.</li> </ul> <p>For example:</p> <ul style="list-style-type: none"> <li>For CCP 3 – Selective Abstraction, it is not clear what 'routine monitoring' is. The CCP should state exactly what the monitoring is or refer to a specific procedure and responsibility.</li> <li>For CCP2 – Upper Canal Diversion, there is no item included for what is being measured.</li> <li>For CCP3 – Selective Abstraction Warragamba Dam wall (outlets), it is not clear what monitoring is occurring at the extraction point to provide information on how to determine which level to extract from. Currently, the only measure is stated as being turbidity in the pipelines. If this is really what decisions are based on then the validation should be clearly stated.</li> </ul> <p>The auditors noted that there are two CCPs for selective abstraction. SCA could consider having just one CCP with two or more monitoring parameters and associated critical limits.</p> <p>Further, the SCA notes that "Appendix 4 contains rationale for choosing CCPs and CCP tables, Appendix 5 has a list of controls (preventive, reactive and tools)." However, the CCPs do not have a validation basis and Element 9, which is the usual section for CCP validation, does not contain any validation evidence e.g. what is the rationale for disinfecting the Upper Canal to control <i>Giardia</i>?</p>		

<sup>75</sup> The ADWG (2011), p33, state that: "Detailed procedures are required for the operation of all processes and activities (both ongoing and periodic) from catchment to consumer, including preventive measures, operational monitoring and verification procedures, and maintenance requirements." During mergers and organisational change in general, such important processes and procedures can be lost or misunderstood if left undocumented, therefore leaving water quality management at risk. In their role in auditing in other jurisdictions, the auditors have been privy to such issues.



## Recommendation

There are no new recommendations.

### A.1.6 Water Quality – Recommendation 2012/2013-3

Reference	Recommendation	Finding
2012/2013-3 (Water Quality – 2.1.2)	<p>The SCA should:</p> <ul style="list-style-type: none"> <li>formally identify and implement appropriate preventive measures for drinking water supplied to its recreational areas (picnic areas), including those designated as CCPs</li> <li>develop explicit, validated process control tables for each CCP</li> </ul> <p>Reported at 31 March 2014: The Water Safety Plans for SCA picnic areas are expected to be finalised by 30 June 2014. Preventative measures and CCPs will be clearly documented in this plan.</p> <p>The SCA will seek endorsement from NSW Health to comply with the <i>Public Health Act 2010</i> and Public Health Regulation 2012. Audit 2013-2014 is to check progress.</p>	Not yet complete
<b>Evidence sighted</b> <ul style="list-style-type: none"> <li>CD2014/61 – Drinking Water Quality management Plan for picnic areas</li> <li>CD2014/57 – Quality Assurance Plan for Avon Dam picnic area supply</li> <li>CD2014/58 – Quality Assurance Plan for Fitzroy Falls Dam picnic area supply</li> <li>CD2014/59 – Quality Assurance Plan for Cordeaux Dam picnic area supply</li> <li>CD2014/60 – Quality Assurance Plan for Cataract Dam picnic area supply</li> <li>Evidence presented for the Water Quality Management System requirements was also reviewed as part of auditing this recommendation.</li> </ul>		
<b>Summary of Reasons for Finding</b> <p>The CCP tables are not included in the QAPs but are described within the DWQMP overall and therefore, the auditors are not convinced that the CCPs accurately reflect the operation of each specific system or have been validated on a system level.</p> <p>There is no validated evidence for the choice of critical or other limits documented within the CCP tables.</p> <p>Monitoring methods are not clearly articulated.</p> <p>Therefore, the auditors consider that this recommendation is not yet completed and should be checked at the next audit.</p>		
<b>Discussion and Notes</b> <p>While CCPs and preventive measures have been added to the DWQMP/QAPs for the picnic sites, the general comments for recommendation 2012/2013-2 also apply to this recommendation.</p> <p>The CCP tables are not included in the QAPs but are described within the DWQMP overall. There is no specific information within the CCP tables that provide information on system operation. Further, there is no mention of where the chlorine is measured<sup>76</sup> to establish disinfection efficacy. The information provided is mixed between operational monitoring and/or verification monitoring.<sup>77</sup></p> <p>The main CCP for the picnic sites, disinfection, does not appear to have been validated. See comments under Element 3 and Section 2.</p>		
<b>Recommendation</b> <p>There are no new recommendations.</p>		

<sup>76</sup> DWQMP, page 23, Table 5.

<sup>77</sup> Eg, DWQMP. Page 24, Table 6.





## A.1.7 Water Quality – Recommendation 2012/2013-4

Reference	Recommendation	Finding
2012/2013-4 (Water Quality – 2.1.2)	<p>The SCA should ensure logical alignment of data between the Raw Water Quality Incident Response Plan (RWQIRP), Water Monitoring Program, Raw Water Supply Agreements, and process control tables, particularly for CCPs.</p> <p>Reported at 31 March 2014: The Water quality triggers in the water quality incident response plan have been aligned with the Raw Water Supply Agreement and Water Monitoring Program. The Critical Limits in the CCP Tables will be aligned with these triggers. Audit 2013-2014 is to check progress.</p>	Completed
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>Raw Water Quality Incident Response Plan</li> <li>Raw Water Supply Agreements</li> <li>WQMF Document</li> </ul>		
<b>Summary of Reasons for Finding</b> <p>Evidence was provided that the SCA had updated its RWQIRP and WQMF document based on the requirements of the recommendation. The auditors accepted this evidence and consider the recommendation completed.</p>		
<b>Discussion and Notes</b> <p>SCA advised that it:</p> <p><i>"has aligned data between the Raw Water Quality Incident Response Plan (RWQIRP) (CD2004/1183[v2]), Water Monitoring Program (CD2011/179[v3]), Raw Water Supply Agreements, and process control tables, particularly for CCPs. Water quality trigger values were updated to percentages, to be consistent across all data."</i> and</p> <p><i>"The thresholds which trigger incidents (Tables 3 &amp; 5 in RWQIRP) are now aligned with site specific standards in Table 6.1 of the Water Monitoring Program 2015-2020. The site specific standards have been derived from RWSAs."</i></p> <p>The auditors accepted these assertions based on the information provided and the discussions at the audit interviews.</p>		
<b>Recommendation</b> <p>There are no new recommendations.</p>		



## A.1.8 Water Quality – Recommendation 2012/2013-5

Reference	Recommendation	Finding
2012/2013-5 (Water Quality – 2.1.2)	<p>The SCA should ensure that the Raw Water Quality Incident Response Protocol is kept up to date.</p> <p>Reported at 31 March 2014: The raw water quality incident response plan has been revised in consultation with major customers and endorsed by NSW Health on 16 December 2013. The matters raised during the 2012/13 operational audit have been addressed in the revised document, which was approved by SCA's A/Chief Executive on 17 January 2014. Audit 2013-2014 is to check completion.</p>	Completed
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>D2013/119305 - FW SCA Raw Water Quality Incident Response Plan - NSW Health Endorsement</li> </ul>		
<b>Summary of Reasons for Finding</b> <p>Evidence was provided that the SCA had revised its RWQIRP to the satisfaction of NSW Health. The auditors accepted this evidence and consider the recommendation completed.</p>		
<b>Discussion and Notes</b> <p>The SCA advised that:</p> <p><i>"The RWQIRP was revised, with input from the major customers and was endorsed by NSW Health. The new version was signed off by [the] Chief Executive and implemented in January 2014. See D2013/119305."</i></p> <p>The auditors accepted this evidence and consider the recommendation completed.</p>		
<b>Recommendation</b> <p>There are no new recommendations.</p>		



## A.2 Clause 3: Water Supply Sufficiency

Sub-clause	Requirement	Compliance Grade
3.1 Catchment Infrastructure Management	3.1.1 SCA must ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.	Full
<b>Risk</b> This clause manages the level of service for water supply security. Significant non compliance with this clause impacts on the volumes of water that can be supplied to Sydney.		<b>Target for Full Compliance</b> Evidence of the operational practices procedures and processes that ensure the catchment infrastructure is operated and managed in a manner that is consistent with the design criteria.
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>Interview with the Assets Team including System Configuration and Stakeholder Manager, A/Manager Warragamba and Northwest Operations, A/General Manager Assets, Senior Manager Asset Reliability 24 September 2014.</li> <li>System Nomograph for marking current ~ 14.XLSX</li> <li>System Nomograph for marking current levels Monday 30 April 2014.XLSX.XLSX</li> <li>System Nomograph for marking current levels Tuesday 17 December 2013.XLSX</li> <li>D2014/80966 - Upper Nepean and Shoalhaven Schedule</li> <li>D2014/20573 - Shoalhaven Pump Schedule</li> <li>D2014/58934 - Blue Mountains Schedule 20 June 2014</li> <li>D2012/8035 - BWSS2011 - Summary</li> <li>D2014/83397 - Water Supply Operations Reporting Lines</li> <li>Senior Manager Water Supply Operations - Position Description</li> </ul>		
<b>Summary of Reasons for Grade</b> The Design Criteria are specified in the operating licence as the levels of service for security, robustness and reliability of water available for supply to Customers other than a Small Customer. The Design Criteria and the operating rules for the Catchment Infrastructure are used to estimate the Water Supply System Yield. The Design Criteria during the audit period were: <ul style="list-style-type: none"> <li>Security level of service - SCA's storages do not approach emptiness (defined as 5% of water in the storage) more often than 0.001% of the time (that is, restrictions are not too severe).</li> <li>Robustness level of service – restrictions occur no more often than once in every 10 years on average (that is, restrictions are not too frequent).</li> <li>Reliability level of service – restrictions last no longer than 3% of the time on average (that is, restrictions are not for excessively long periods).</li> </ul> Based on the evidence provided for this clause SCA has operated and managed the catchment infrastructure consistent with the design criteria.		
<b>Discussion and Notes</b> The Design Criteria are specified in the operating licence as the levels of service for security, robustness and reliability of water available for supply to Customers other than a Small Customer. The Design Criteria and the operating rules for the Catchment Infrastructure are used to estimate the Water Supply System Yield. The Design Criteria during the audit period were: <ul style="list-style-type: none"> <li>Security level of service - SCA's storages do not approach emptiness (defined as 5% of water in the storage) more often than 0.001% of the time (that is, restrictions are not too severe).</li> <li>Robustness level of service – restrictions occur no more often than once in every 10 years on average (that is, restrictions are not too frequent).</li> <li>Reliability level of service – restrictions last no longer than 3% of the time on average (that is, restrictions are not for excessively long periods).</li> </ul> SCA advised that the design criteria are assessed using the water supply assessment framework that combines modelling through Wathnet for the current system's capacity and constraints, combined with over 200,000 years (2000 replicates x 100+ years) of synthetically generated inflows that represent the historical frequency and severity of low flow (drought) periods. SCA advised that minor changes to system operating rules are being implemented as an outcome from the independent review of Wathnet (SKM 2012). <p>From this assessment framework, a nomograph is developed to enable the SCA to operate the system. Nomographs listed above were provided as evidence.</p>		



The basic philosophy behind this operation was that every dam had an equal chance of spilling and every dam should be empty at the same time to maximise the system yield. While storage levels remained high SCA advised it may exercise flexibility in storage selection to optimise for water quality. Once storages were lower, water quality management would focus on the selection of the best water from within each storage to maximum the yield.

During the audit period storage levels had remained above 80%

(<http://water.bom.gov.au/waterstorage/awris/#um:bom.gov.au:awris:common:codelist:region.city:sydney>) accessed 25<sup>th</sup> September 2014).

The nomograph is used to assess sources of water to ensure consistency with the design criteria. This feeds the operation through the Upper Nepean and Shoalhaven Schedules. SCA advised the nomograph with current and historical system levels is also routinely distributed, usually monthly although it would be updated with significant rainfall events.

It was noted by the auditors that the Document Control information for the Nomograph showed the templates to be in draft, with a version of 1.1 and a date of 2007). SCA advised 2007 was the last major revision of the template. The "draft" should be removed from the template. However the information within the template was noted as being up to date. Further comments on document control are covered in the Environment section.

While outside the audit scope it was also noted that changes to the nomograph are likely to be required with outcomes from Hawkesbury Nepean Flood Review Stage 2 and Metropolitan Water Plan.

#### **Recommendation**

There are no recommendations for this clause.

#### **Opportunity for Improvement**

There are no opportunities for improvement for this clause.



## A.3 Clause 4: Catchment

### A.3.1 Catchment Management (sub-clause 4.1.1)

Sub-clause	Requirement	Compliance Grade
4.1 Catchment management	4.1.1 SCA must manage and protect the Catchment Area consistent with its objectives and functions under the Act. <sup>78</sup>	Full
<b>Risk</b>  This clause represents a high risk. Effective catchment management and protection are key components of the objectives and functions set for SCA in the <i>Sydney Water Catchment Management Act 1998</i> (NSW).  Further, effective catchment management is a key determinant of water quality. So poor catchment management poses high risks to public health and the environment.		<b>Target for Full Compliance</b>  The SCA must demonstrate that catchment management and protection activities are fully consistent with the objectives and functions set out in the <i>Sydney Water Catchment Management Act 1998</i> (NSW) and that the activities are of an expected standard with an organisation of its size and area of operations.
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>Interview with Catchment and Science team (including Manager Spatial, General Manager Catchments, Principal Scientist (x 2), Senior Manager Catchment Programs and Compliance) 22 September 2014</li> <li>General: <ul style="list-style-type: none"> <li>D2011 8255 Science Strategic Plan 2010 - 2015.PDF (SSP)</li> <li>D2013 2700 Exec Meeting - 22 July 2013 - Healthy Catchments Prog 13-14 - Item 13 Att 1.DOC (HCP)</li> <li>D2013 33378 Healthy Catchments Strategy 2012 - 2016 - 19 April 2013.PDF (HCS)</li> <li>Annual Catchment Management Report 2012-13</li> </ul> </li> <li>Initiative 1 (information provided and sampled): <ul style="list-style-type: none"> <li>1.1-CD2011 179[v3] Water Monitoring Program 2015-2020.DOC</li> <li>1.1-D2013 85551[v4]Annual Water Quality Monitoring Report 2012-13.DOCX</li> <li>1.1-D2013 100260 Braidwood Map Book has been updated.PDF</li> <li>1.1-D2014 58945 Location Intelligence Strategy and Action Plan 2014-2018.PDF</li> <li>1.2-D2012 99647 Pollution Source Assessment Tool Implementation Plan 2012-2016.PDF</li> <li>1.2-D2013 34341 gully mapping drainage units.PDF</li> <li>1.2-D2014 8432 SSP BR Jul-Dec 13 50000007 Trial evaluation gully erosion.DOCX</li> <li>1.2-D2014 46376 Water RA Project 1071-12 - Water quality impacts ~ Signed doc.PDF</li> <li>1.3-D2012 56794 Project Brief for Imperviousness Mapping.XLS</li> <li>1.3-D2012 115247[v2] Water quality changes from upgrade of Lithgow and Braidwood STPs.DOCX</li> <li>1.3-D2013 37996Validation of Grazing Evaluation Model Report.DOCX</li> <li>1.3-D2013 80847 PSAT Horticulture Module Documentation.DOCX</li> <li>1.3-D2013 98477 PSAT-Horticulture and Cropping Module Meeting Agenda Minutes.DOCX</li> <li>1.3-D2013 108526 Urban Stormwater Module Team Meeting Minutes 41113.DOCX</li> <li>1.3-D2014 14012 Grazing Evaluation Model Description.DOC</li> <li>1.3-D2014 19325 Grazing Evaluation Model - Actual model with revised functions.XLSX</li> <li>1.3-D2014 74457 SCA Annual Report 2013-14 - Draft #1.DOCX</li> <li>1.3-D2014 83315 PSAT Draft Hazard Assessment Criteria &amp; Weightings Forests Module.DOCX</li> </ul> </li> <li>Initiative 2 (information provided and sampled): <ul style="list-style-type: none"> <li>2.1-Grants Committee Recommendations - 12 December 2013.D2013-116304.DOCX</li> <li>2.1.-2014 - NorBE Notes - Issue 11 - (Special Edition for Councils ONLY) - March 2014-D2014-27716.DOCX</li> <li>2.1.1-email - NorBE Notes - February 2014 (Councils)-D2014-20731.MSG</li> <li>2.1.1-Erosion and Sediment Control Refresher Training-D2013-120154.PPTX</li> <li>2.1.1-ERSED Training Attendance-D2013-83723.PDF</li> <li>2.1.1-Grants Committee Recommendations - Sponsorship - Damfest 2013-D2013-104797.DOCX</li> <li>2.1.1-LCC Letter ERSED training evaluation-D2013-85195.PDF</li> <li>2.1.1-NorBE Help Desk calls received in specified period July 13-June14-D2014-71500.PDF</li> </ul> </li> </ul>		

<sup>78</sup> IPART Notes: Auditor to check compliance with sections 14-19 of the *Sydney Water Catchment Management Act 1998* (NSW):

- 14 Objectives
- 15 General functions
- 16 Specific functions
- 17 Concurrence and other roles under environmental planning instruments
- 18 Concurrence and other roles under licensing legislation
- 19 Compliance role under other legislation



- o 2.1.1-NorBE Notes - November 2013 (Councils)-D2013-11119.EML
- o 2.1.1-NorBE Notes - Special Edition - March 2014 - emailed-D2014-28753.EML
- o 2.1.1-NorBE Notes Issue 7 - August 2013-D2013-76533.MSG
- o 2.1.1-SPON 44 - Award Letter - Sydney WaterAid Ball 2013-D2013-71306.PDF
- o 2.1.1-Streamwatch Draft SLA-D2014-72842.DOCX
- o 2.1.1-Submission Sponsorship of WaterAid Ball 2013 03756140-D2013-62028.DOCX
- o 2.1.1-Successful Application Letter CPIG 160 Leura Creek Catchment Group-D2014-40697.PDF
- o 2.1.1-Successful Grant Advice Letter CPIG 159-D2014-40619.PDF
- o 2.1.1-Successful Sponsorship Advice Letter - SPON 45-D2013-118335.PDF
- o 2.1.1-UNSW GeoScience Society - Successful Sponsorship Letter-D2014-2769.PDF
- o 2.1.2014 - NorBE Notes - Issue 12 - May 2014-D2014-50598.EML
- o 2.2-2014 Teachers Promo Day attendees list-D2013-120508.XLSX
- o 2.2-Catchment Management Game for Smartboards - resource development-D2014-73137.DOCX
- o 2.2-Draft Catchment management game for interactive white boards - Version 4.NOTEBOOK-D2014-73570
- o 2.2-Education program monthly reports July 2013 - December 2013-D2014-2405.PDF
- o 2.2-Incursion kit trial October 2013-D2014-73104.PDF
- o 2.2-Incursion kit water testing land use map for high school student.D2014-73114.PDF
- o 2.2-Incursion kit \_Geography worksheet for 2014-D2014-73589.docx
- o 2.2-School statistics reports and analysis FY 2013-2014-D2014-71075.XLSX
- o 2.2-Teacher Event 22 Jan 2014 - Agenda-D2013-119982.DOCX
- o 2.2-Education programs statistics and reports-D2014-2404.XLSX
- o 2.3-13572000 - Project Brief Form - Woronora Dam Interpretation Installation-D2014-11152.DOCX
- o 2.3-Annual Exhibition Program - Photo Summary-D2014-49695.DOCX
- o 2.3-Executive Meeting - 11 July 2013 - Annual Exhibition Program 2013-2014 - D2013-53164.DOCX
- o 2.3-Executive Meeting August 2014 - Annual Exhibition Program 2014-2015-D2014-62811.DOCX
- o 2.3-RLH Natural Resources section for review-D2014-24092.EML
- o 2.3-RLH\_revised\_MASTERCOPY\_29May2014-D2014-52465.DOCX
- o 2.3-Warragamba Visitor Centre Stats\_2013-14-D2014-73026.PDF
- o 2.3-Woronora Interpretation consultants brief draft 2-D2013-101901.DOC
- o 2.4-3 Feb 2014\_LGRP agenda and papers-final-D2014-7565.DOCX
- o 2.4-4 November LGRP agenda and papers draft-D2013-100940.DOCX
- o 2.4-5 August LGRP agenda and papers final-D2013-62379.DOCX
- o 2.4-125 Upper Nepean - SURVEY RESULTS-D2014-99977.XLSX
- o 2.4-Bendeela - CRG - Minutes of Meeting No.3 - 5 March 2014-D2014-21157.DOCX
- o 2.4-Bendeela - stakeholder letter drop - May 2014-D2014-45707.DOCX
- o 2.4-Bendeela Recreation Area - FINAL Masterplan Summary - Web format-D2014-34592.PDF
- o 2.4-Bendeela Recreation Area Masterplan - CRG- Draft Agenda for 5 Mar 2014 Meeting-D2014-19646.doc
- o 2.4-Bendeela Recreation Area Masterplan - Public exhibition mail out - April 2014-D2014-36614.XLSX
- o 2.4-Bethany College Glenmore Park Yr 1 x 110 (2 buses) on 3172013-D2014-107980.DOCX
- o 2.4-D2014 83833-2014 school excursion evaluation.XLSX
- o 2.4-Eval Excursion by Tara Anglican School for Girls, 22 Aug YR 9 Geography 90 students-D2014-109233.DOCX
- o 2.4-Excursion evalu from Jedda Kassis, Our Lady -50 Y2 students, Wed204 2014-D2014-73928.EML
- o 2.4-Excursion Maris College, Yr 10 Geography x 50 (1 bus),29 04 2014-D2014-73727.EML
- o 2.4-Hambelton Primary, excursion, 170 Y 3 students, 30 Apr2014-D2014-73710.EML
- o 2.4-Lithgow Erosion and Sediment Control Training Participant Evaluation Summary -D2013-84997.DOCX
- o 2.4-Notification of work Upper Canal Residents Appin Rd\_24July2013-D2013-65501.DOCX
- o 2.4-Prospect Dam Improvement Works - Stakeholder and Community Engagement Plan\_Sept2013-D2013-96462.DOCX
- o 2.4-Prospect Reservoir Closure and Cycleway Diversion\_WesternSydneyCyclingNetwork-D2013-84401.EML
- o 2.4-SASPoM Public Exhibition Media release August2013-D2013-68680.DOCX
- o 2.4-SASPoM reps report and stakeholder letter from EcoLogical Australia-D2014-11394.MSG
- o 2.4-SASPoM review\_Stakeholder letter\_July2013-D2013-66870.DOCX
- o 2.4-Secrets of the Special Areas - SURVEY RESULTS - Peoples Choice Awards-D2013-61987.XLSX
- o 2.4-Survey Monkey NorBE Tool Results 12.2.14.xls-D2014-15514.XLSX
- o 2.4-Upgrade to Prospect Dam\_Govt Stakeholder letter\_Oct2013-D2013-96898.DOCX
- o 2.4-Upgrade to Prospect Dam\_notification to residents July2013\_544 Reservoir Rd Prospect-D2013-62456.DOCX
- o 2.4-Upper Canal Work\_inform resident letter\_Glenlee Rd 24July2013-D2013-66196.DOCX
- o 2.4-Upper Canal works\_residents inform letter\_Raby Rd 23 July 2013-D2013-66193.DOCX
- o 2.4-Water in the World SURVEY RESULTS-D2014-22034.XLSX
- o 2.4-Y 12 Senior Science students, St George Christian school, 742014-D2014-73948.EML
- Initiative 3 (information provided and sampled):
  - o 3.1-D2013 14834 RRC - HRB - Warragamba Block W2 & W3.DOCX
  - o 3.1-D2013 17741 Proposed trail and soil conservation works 2013-14.XLSX
  - o 3.1-D2013 64843 20132014 LMP and CRAFT Program.EML
  - o 3.1-D2013 81252 Determination - HRB - Warragamba Blocks W2 & W3.DOCX



- 3.1-D2013 84189 C37 HR Block Cordeaux Burn Plan 10 September 2013.DOCX
- 3.1-D2013 87486 Fitzroy Falls HRB Fax -28.4.14.DOC
- 3.1-D2013 97020SASPoM ESG Meeting SCA & OEH - 25 September 2013 - Minutes.DOC
- 3.1-D2014 40224 HCS Reporting for 2014 Financial Year.XLSX
- 3.1-D2014 42514 DRAFT SAOG Minutes 29th August 2013.EML
- 3.1-D2014 47733 Special Areas Strategic Plan of Mgt v13 (exhibition version - August 2013).PDF
- 3.1-D2014 50802 CRAFT and LMP 1314 - Mid Year Report and Invoices.MSG
- 3.1-D2014 51882 SASPoM ESG Meeting SCA & OEH - 21 May 2014 - Minutes.DOCX
- 3.1-D2014 76693 CRAFT and LMP 13\_14 END OF YEAR REPORT TO SCA\_August 2014.XLS
- 3.1-D2014 76694 DRAFT SASPoM End of Year Report 2013\_2014.XLSX
- 3.2-D2012 55942 Program - Fire Trail and Soil Conservation program 2012-13 03228440.DOC
- 3.2-D2013 17741 Proposed trail and soil conservation works 2013-14 03575440 03576440.DOCX
- 3.2-D2014 71110 Contractor Performance Report - trail maintenance.PDF
- 3.4-D2012 55942 Program - Fire Trail and Soil Conservation program 2012-13 03228440.DOC
- 3.4-D2013 17741 Proposed trail and soil conservation works 2013-14.DOCX
- 3.4-D2013 99536 RRC - SCA Braidwood Lands Erosion Control Program 2013-14.DOCX
- 3.4-D2014 32768 File Note Braidwood Erosion Program April 2014.DOCX
- 3.5-CD2012 78 Tree Risk Management Procedure.DOCX
- 3.5-CD2012 106SCA Recreation Area Framework Document.DOC
- 3.5-D2012 62839 Hazard Inspection Program for Catchment Assets 2012-2013.DOCX
- 3.5-D2013 42790SCA Recreation Area Management Controlled Document Hierarchy - Attachment 1.DOCX
- 3.5-D2013 85269 Bendeela- Tree Hazard Audit 2013.PDF
- 3.5-D2014 22030 Arborist Reports and Works - Summary Status - March 2014.DOCX
- 3.5-D2014 23825 Nepean Gardens Overall View Plan.PDF
- 3.5-D2014 38963 C03309440 - ~ Contained within contractors email as proof of review.EML
- 3.6-Fencing Program-Multiyear RW Version.xlsx
- 3.8-D2014 40224 HCS Reporting for 2014 Financial Year.XLSX
- 3.8-D2014 76693 CRAFT and LMP 13\_14 END OF YEAR REPORT TO SCA\_August 2014.XLS
- 3.8-D2014 76694 DRAFT SASPoM End of Year Report 2013\_2014.XLSX
- Initiative 4 (information provided and sampled):
  - 4.1-Compliance Targeted Inspection schedule 2013 2014 for OL Audit-D2014-82849.XLSX
  - 4.2-14 & 15 April 2014. late patrol with police Rural Crimes in Bullio area-D2014-62753.DOCX
  - 4.2-D2014 82841 Compliance Notice Register - SWCM Act s62B & POEO Act s91 & s96.XLSX
  - 4.2-Daily confirmation form Wingecarribee Swamp survey 28-29th Nov2013 Parsons brinkerhoff-D2014-57.EML
  - 4.2-Joint Operation CATPOL 12 - NSW Police - SCA - OEH NPWS - 5 6 & 7 June 2014-D2014-62671.DOCX
  - 4.2-Multi Agency Operation - 15th -16th February 2014-D2014-13654.DOC
  - 4.2-RE Joint Surveillance Helicopter Flight - 28 Nov 2013-D2014-80408.EML
  - 4.2-SCA Operations and Incident Roster-D2011-36474.DOC
  - 4.2-Tasking & Surveillance Report 5-7 Jun 2014 - Warragamba Special area- Kondek- Manna-D2014-54625.DOCX
  - 4.2-Tasking- SCA NPWS NSW fisheries Southern Councils RID & NSW Police-D2014-62698.DOCX
- Initiative 5 (information provided and sampled):
  - 5.1-2014 - NorBE Notes - Issue 11 - (Special Edition for Councils ONLY) - March 2014-D2014-27716.DOCX
  - 5.1-2014 - NorBE Notes - Issue 12 - May 2014-D2014-50598.EML
  - 5.1-Cats and dogs CRP-D2012-62318.DOC
  - 5.1-Comprehensive Review of CRPs, Performance Standards and Addit References - Feb2014-D2014-12871.DOC
  - 5.1-D2014 63509-e-mail to Veronica Kearney - Planning & Infrastructure NSW - SCA s 14.EML
  - 5.1-email - NorBE Notes - February 2014 (Councils)-D2014-20731.MSG
  - 5.1-FINAL Rural Earthmoving CRP - Published to website - 20 Feb 2014-D2014-15193.PDF
  - 5.1-Letter to accompany copies of final manual - other groups - 20 Feb 2014-D2014-16984.PDF
  - 5.1-LGRP Report - Rural Earthmoving in the Sydney drinking water catchment - May 2014-D2014-37726.DOC
  - 5.1-LOA and Consolidated Contract NorBE Upgrade 03531711-D2013-106072.PDF
  - 5.1-NorBE Help Desk calls received by month and call type July 13-June14-D2014-71500.PDF
  - 5.1-NorBE Notes - November 2013 (Councils)-D2013-111119.EML
  - 5.1-NorBE Notes - Special Edition - March 2014 - D2014-28753.EML
  - 5.1-NorBE Notes Issue 7 - August 2013-D2014-76533.MSG
  - 5.1-Part 5 Activities - Advice given - 1 July 13 - 30 June 14-D2014-71785.XLS
  - 5.1-SSI & SSD Register of NSW Depart of Plan and Infra referred applications from 2012-D2012-66764.XLSX
  - 5.2- Advice - re Plann Proposal Land Adjoining Oakdale Public School-D2014-38317.EML
  - 5.2- DA3972014 Residential subdiv and stormwater detention Village Circuit Gregory Hills-D2014-58322.PDF





- o 5.2- lot subdivision, bulk earthworks and 19 dwellings, Gregory Hills-D2013-104607.PDF
- o 5.2-Amend to Clause 4.2A of Wingecarribee LEP 2010 SCA response Mar 2014-D2014-22151.PDF
- o 5.2-D2014 18898 Evaluating ~ synopsis for the integrated water quality planning project.DOC
- o 5.2-DA 2682014 Gledswood Hills-D2014-44927.MSG
- o 5.2-DA 4342014-CW Willowdale Precinct 3 Bulk Earthworks - Camden Valley Way Denham Court-D2014-39687.PDF
- o 5.2-DA10242013 St Gregorys College SCA supplementary response-D2014-54221.MSG
- o 5.2-Dart West rezoning proposal for land adjacent to Canal-D2014-44980.MSG
- o 5.2-Draft Lithgow Local Environmental Plan 2013 SCA response July 2013-D2013-66211.PDF
- o 5.2-Draft Marulan & Kingsdale Localities SCA Response 1 Apr 2014-D2014-31426.PDF
- o 5.2-Draft Sutherland LEP 2013 re-exhibition SCA response-D2013-86910.PDF
- o 5.2-Eltondale Plann Proposal SCA response to Wollondilly Council 26 Mar 2014-D2014-28802.PDF
- o 5.2-Email to Camden Council - submission - DA 10242013 - St Gregorys College-D2014-11755.EML
- o 5.2-Emerald Hills Planning Proposal SCA response Nov 2013-D2013-11112.PDF
- o 5.2-letter to Camden Council - 82 lot subdiv The Hermitage Way Gledswood Hills Dec 2013-D2013-120057.PDF
- o 5.2-Letter to Camden Council - Gregory Hills Dr DA1-D2013-64214.PDF
- o 5.2-Plann Proposal for 780-790 Montpelier Drive, The Oaks. SCA Response Aug 2013-D2013-73174.PDF
- o 5.2-Plann Proposal for Egans Road Oakdale SCA response-D2013-80105.PDF
- o 5.2-Plann proposal for land adjoining Oakdale Sportsfield SCA Response Oct 2013-D2013-95018.PDF
- o 5.2-Plann Proposal SP3 Tourism zone Wingecarribee LEP SCA Response-D2013-97061.PDF
- o 5.2-Plann Proposal to reclassify five public sites under Sched 4 of the Wingecarribee LEP-D2013-100703.PDF
- o 5.2-Planning certain zones under Wingecarribee LEP SCA response-D2014-18598.DOCX
- o 5.2-Re-exhibition of Draft Palerang Local Environ Plan 2013 SCA response-D2014-3209.PDF
- o 5.2-SCA College. 650B Camden Valley Way, Gregory Hills. Lot 39 DPI 137298-D2013-117384.PDF
- o 5.2-SCA Dart West Developments at 45 McKenzie Boulevard, Gregory Hills-D2014-7156.PDF
- o 5.2-SCA letter - DA10992013 The Hermitage Way, Gledswood Hills. subdivision adjacent to UC-D2014-2360..PDF
- o 5.2-SCA response - DA 9352013 - 25 McKenzie Blvd Gregory Hills - 39 residential lots-D2013-111046.PDF
- o 5.2-SCA response DA 3322014 184 Raby road Gledswood Hills-D2014-51398.MSG
- o 5.2-SCA submission to the Draft Blue Mountains LEP SCA submission-D2014-20312.MSG
- o 5.2-SLWCA data on CD sent to Wollondilly 13 Jan 2014-D2014-3008.MSG
- o 5.2-Wilton Junction - revised study area-D2014-49263.EML
- o 5.2-Wilton Junction Precinct - amendment of study area - removal of 3 land parcels -D2014-47609.PDF
- o 5.2-Wilton Junction Precinct Review of Proponent Study Submission SCA Response Jan 2014-D2014-6647.PDF
- o 5.2-Wilton Junction Precinct SEPP letter to Dept of Planning & Infrastructure Jul 2013-D2013-60893.PDF
- o 5.2-Wingecarribee LEP minimum lot size amend\_12 Braemar properties zoned industrial-D2013-58782.PDF
- o 5.2-Wingecarribee residential dwellings in R5 and E3 Zones SCA response-D2013-86727.PDF
- o 5.3-Advice to Office of Chief Scientist & Engineer regarding Mining and CSG-D2014-35091.PDF
- o 5.3-Corro to Sam within the Dams Safety Committee Notification Areas-D2013-68017.PDF
- o 5.3-CSG Impacts on Water Resources - Draft Revision 4 - Web-D2013-20935.DOCX
- o 5.3-Draft minutes SMPIAC meeting of 12 December 2013-D2014-1260.MSG
- o 5.3-February 2014 TWG meeting minutes-D2014-47760.MSG
- o 5.3-Gujarat NRE - Technical Working Group (TWG) - Agenda - 13 Sept 2013-D2013-85444.DOCX
- o 5.3-Gujarat NRE- Minutes of Meeting at SCA Offices-D2013-120679.DOC
- o 5.3-Item 4.4 ATT 1 - Board Meeting - 29 August 2013 - Mining Update-D2013-67428.PDF
- o 5.3-Item 4.4 Att 1b - Board Meeting - 29 August 2013 - Mining Update-D2013-67426.PDF
- o 5.3-Item 4.4 Att 1c - Board Meeting - 29 August 2013 - Mining Update-D2013-67422.PDF
- o 5.3-Letter to Dept of Plan & Infrac on the Dendrobium Swamp Rehab Research Program-D2014-3305.pdf
- o 5.3-Metropolitan Coal Rehabilitation Management Plan -R01-D Feb 2014-D2014-25235.MSG
- o 5.3-Minutes SCA BHP Billiton TWG 6 June 2014-D2014-71189.DOCX
- o 5.3-November 2013 SCA TWG Meeting Minutes-D2014-1249.MSG
- o 5.3-NRE PPR Underground Expansion Project Letter Oct 2013 - MP 09\_0013-D2013-101606.PDF
- o 5.3-Risk Assessment of Longwall Mining - 24 July 2013 - Workshop Report with Participants -D2013-98929.DOC
- o 5.3-SCA BHP Billiton Illawarra Coal TWG Meeting 18 Oct 2013 Minutes-D2014-28841.MSG
- o 5.3-SCA BHP Billiton TWG 21 3 14 Meeting Notes-D2014-47753.DOCX
- o 5.3-SCA Comments - Draft Metropolitan Mine Longwall 23 to 27 Water Management Plan-D2013-119855.MSG
- o 5.3-SCA Letter to Metropolitan Mine - Review LW 23-27 -20 Dec 2013-D2013-120863.PDF
- o 5.3-SCA Peabody TWG Meeting - Agenda and previous Meeting Minutes-D2013-108913.MSG
- o 5.3-SCA submission regarding Coal Seam Gas-D2013-73167.MSG
- o 5.3-SCA submission regarding Coal Seam Gas-D2013-87618.MSG
- o 5.3-SCA Technical Working Group Agenda and Presentation - 31 Jan 2014-D2014-8620.PPTX
- o 5.3-SMP Interagency Committee Meeting 12 Feb Actions - Agencies 27 EP-D2014-21419.MSG





- 2013 -14 Compliance Notice Register for OL Audit - SWCM Act s62B & POEO Act s91 & s96-D2014-82841.XLSX
- Initiative 6 (information provided and sampled):
  - 5.2-Stormwater Network Meeting - Agenda - Oct 16 - Goulburn-D2013-91307.DOCX
  - 6.1-Rural Landscape Program – Targets - 201314-D2014-50600.DOCX
  - 6.2-Acquittal report - David and Skye Ward \_ RMAP084 - Riparian Mgt Assistance Program-D2014-40703.DOCX
  - 6.2-Acquittal report - The Starting Line (Sam Ballas) - RMAP085 -Riparian Mgt Assist Prog-D2014-40129.DOCX
  - 6.2-Agendas for Stormwater and Onsites Network Meetings - 5th Feb and 5th Mar 2014-D2013-120467.DOCX
  - 6.2-Application Form and Assessment Criteria2 - PPP grants\_distributed-D2013-70087.PDF
  - 6.2-Blue Mountains City Council - Signed Grant Agreement-D2014-13005.PDF
  - 6.2-Bowral Sewer Inflow Infiltration Project - Formal Offer and Grant Conditions-D2014-18265.MSG
  - 6.2-Bradley St Pumping Station Upgrade - Formal Offer and Grant Conditions-D2014-7666.MSG
  - 6.2-Evaluation of Sewage and Stormwater Management Practices Final Consolidated report-D2014-49403.DOCX
  - 6.2-Evaluation of Sewage and Stormwater Mgt Practices Final Consolidated report -D2014-49403.DOCX
  - 6.2-Expression Of Interest Form 1 - PPP grants\_distributed-D2013-70088.PDF
  - 6.2-Goulburn Council Bradley St Upgrade Signed Agreement-D2014-19050.PDF
  - 6.2-Grants Committee Recommendations - 12 Dec 2013-D2013-116304.DOCX
  - 6.2-Infrastructure Grant Guidelines - PPP - Funding for Sewerage and Stormwater Infrac-D2013-70090.PDF
  - 6.2-Leura Falls Creek Catchment - Formal Offer and Grant Conditions-D2014-7665.MSG
  - 6.2-On-site Sewage Management Network Meeting - Agenda - 21 Aug 2013 - Robertson-D2013-72345.DOCX
  - 6.2-On-site Sewage Management Network Meeting - Agenda - Goulburn - 27 Nov 2013-D2013-101497.DOCX
  - 6.2-OSSM 11 June 2014 Agenda-D2014-45528.DOCX
  - 6.2-Palerang Council Amended Letter of Offer-D2014-26642.PDF
  - 6.2-Palerang West Braidwood Sewer Extension Signed Grant Conditions-D2014-23248.PDF
  - 6.2-Priority in Infrastructure Grants Program-D2013-68815.PDF
  - 6.2-Signed conditions of grant - John Cask - Riparian Mgt Assist Program-D2014-24487.PDF
  - 6.2-Signed grant conditions - Mr Ben Gleeson - Riparian Mgt Assist Program-D2013-69508.PDF
  - 6.2-Stormwater Management Network Group Meeting - Agenda - 24 Jul 2013 - Moss Vale-D2013-60332.PDF
  - 6.2-Stormwater Management Network Meeting - Agenda - Feb 05 - Penrith-D2014-4415.DOCX
  - 6.2-Wingecarribee Signed Grant Conditions-D2014-20715.PDF
- Initiative 7 (information provided and sampled):
  - D2013 20935 CSG Impacts on Water Resources - Draft Revision 4 - Web.DOCX
  - D2013 47969 Submission - Warragamba Dam Flood Mitigation Investigation and Options Report.DOCX
  - D2013 64195 51000007 Impact of mining on reservoir sediments SSPR June 2013.DOCX
  - D2013 83045 Final agenda and papers for Public Health SLG - Wed 4 Sept.EML
  - D2013 90141 SASPoM ESG Meeting (SCA & OEH) - 25 September 2013 - Agenda.DOC
  - D2013 97020 SASPoM ESG Meeting (SCA & OEH) - 25 September 2013 - Final Minutes.DOC
  - D2013 100643 Science Briefing Note - True Colour Degradation (DWA2) - UPDATE.DOCX
  - D2013 107182 SLG minutes 13 August 2013 - final.DOC
  - D2013 107184 Submission re cancellation of SLG meeting on 10 December 2013.DOCX
  - D2013 125338 Agenda and papers for Public Health SLG meeting on Wednesday 4 Dec.EML
  - D2013 125893 SLG minutes 16 July 2013 - final.DOCX
  - D2013 125934 SLG minutes 12 November 2013 - final.DOCX
  - D2014 5199 SASPoM ESG Agenda - February 2014.DOCX
  - D2014 15226 SASPoM ESG Meeting (SCA & OEH) - 13 February 2014 - Final Minutes.DOC
  - D2014 15567 Phase I Report - Investigation into True Colour in SCA Reservoirs.DOCX
  - D2014 29397 SLG meeting, Tues 20 March - final agenda and papers.EML
  - D2014 29429 Public Health SLG 26 March 2014 - Agenda and Papers.EML
  - D2014 47120 SASPoM ESG Meeting (SCA & OEH) - 21 May 2014 - Agenda.DOCX
  - D2014 51882 SASPoM ESG Meeting (SCA & OEH) - 21 May 2014 - Final Minutes.DOCX
  - D2014 57124 Agenda and papers for Health SLG 18 June 2014.EML
  - D2014 57133 Item 2.1 & 2.2 SLG minutes 26 March 2014\_Final\_Draft.PDF
  - D2014 57134 Agenda SLG 18 June 2014.PDF
  - D2014 64447 SLG meeting minutes June 2014\_SCA comments.DOCX
  - D2014 68934 Item 11 - JOG minutes 12 June 2014.PDF
  - D2014 68936 Item 02 - SLG minutes 20 March 2014.PDF
  - D2014 80990 Science Literature Review - True Colour.DOCX
  - D2014 83521 Imagery Working Group Minutes 19 September 2013.DOC
  - D2014 83522 Imagery Working Group Minutes 12 December 2013.DOC
  - D2014 83524 Imagery NSW Working Group Agenda 5 March 2014.PDF
  - D2014 83525 Imagery Working Group Minutes 5 March 2014.DOC



- o D2014 83529 Imagery NSW Working Group Agenda 15 May 2014.DOCX
- o D2014 83532 Imagery NSW Working Group Meeting Minutes 15 May 2014.DOC
- o D201468936 Item 02 - SLG minutes 20 March 2014.PDF
- o D2013105042 JOG minutes 18 October 2013 - final.doc

## Summary of Reasons for Grade

The SCA has an extensive suite of programs, monitoring and reporting requirements in place to show that it comprehensively manages this clause of its licence. The programs and budget allocations in place are consistent with those expected of an organisation of the SCA's size and area of operations. The issues associated with mining in and near the catchment areas (from the potential risks to water contamination and subsidence causing water quantity losses), is an ongoing risk management issue. The auditor would like to note that the diligence and subject matter expertise of the staff members involved in this section of the audit was exemplary, as one might expect from an organisation that is tasked with managing the catchment.

## Discussion and Notes

As noted in the 2012-2013 Audit Report,<sup>79</sup> there is no international or other standard on which to assess the efficacy of catchment activities. However, the SCA is obligated to fulfil its objectives and functions within the *Sydney Water Catchment Management Act 1998* (NSW), key aspects of which are presented in Section 1.3.3. For consistency, the summarised objectives and functions from the 2012-2013 Audit Report are also used in this audit report, i.e.:

1. To manage and protect the catchment area and catchment infrastructure to promote water quality
2. To protect public health and safety, and the environment
3. To ensure that the water supplied is of appropriate quality
4. To operate according to the principles of ecologically sustainable development
5. To efficiently and economically manage catchment infrastructure works
6. To undertake research on catchments generally, and in particular on the health of the SCA's catchment areas.

The two-part compliance test from the 2012-2013 Audit Report has also been used for consistency:

1. The range of activities undertaken by the SCA comprehensively addresses all of the relevant objectives and functions in the *Sydney Water Catchment Management Act 1998* (NSW) (see Section 1.3.3 for full explanation of the objectives and functions).
2. The broad allocation of effort across these activities indicates that each of the objectives and functions have been addressed to a satisfactory extent.

Further, in considering the information presented by the SCA, we have reviewed the SCA's activities against our experience and knowledge with other organisations with responsibilities for drinking water catchments as well as the evidence presented in defence of the Environment clause.

The SCA's main body of overarching evidence for this clause is contained within the Healthy Catchments Strategy (HCS), the Annual Catchment Management Report, the Science Strategic Plan (SSP) and the Healthy Catchments Program (HCP). The SCA has seven catchment initiatives, which it implements as part of its HCS. To support each of the key evidence documents, the SCA presented an extremely comprehensive list of information categorised on a 'catchment initiative' basis. Each of the initiatives is considered below in more detail. In assessing each initiative, we have considered the requirements one would expect for the management of both protected and mixed use catchments including<sup>80</sup>:

- Point source pollution (including sewage collection and management, intensive agriculture, derelict mines and industrial facilities) and appropriate enforcement of
- Pollution prevention legislation and regulation;
- Land management through statutory development and land use controls, fire control, promotion of good grazing and agricultural practice, erosion control, diffuse pollution control (both nutrients and agricultural chemicals) and control of mining;
- Protection of water quality through protection of riparian zones, control of noxious plants and feral animals, and control of grazing access to waterways;
- Protection of ecological integrity, biodiversity and native vegetation;
- Community partnerships to promote catchment protection and provide resources to assist land-holders; and
- Monitoring and research to review progress and provide input for future evidence-based catchment planning decisions.

Within this audit period, the Annual Catchment Management Report was also due (by 30 November 2013). The SCA provided the auditor with the report dated October 2013, therefore within the scope of the audit and meeting reporting obligations. The Catchment Audit 2013 was tabled in Parliament with evidence provided to show the tabling of the report.<sup>81</sup>

The catchment expenditure in the report<sup>82</sup>, is presented below.

<sup>79</sup> Sydney Catchment Authority Operational Audit 2012/13 Report to the Minister Water — Compliance Report December 2013, p41 of the consultants' section on catchments.

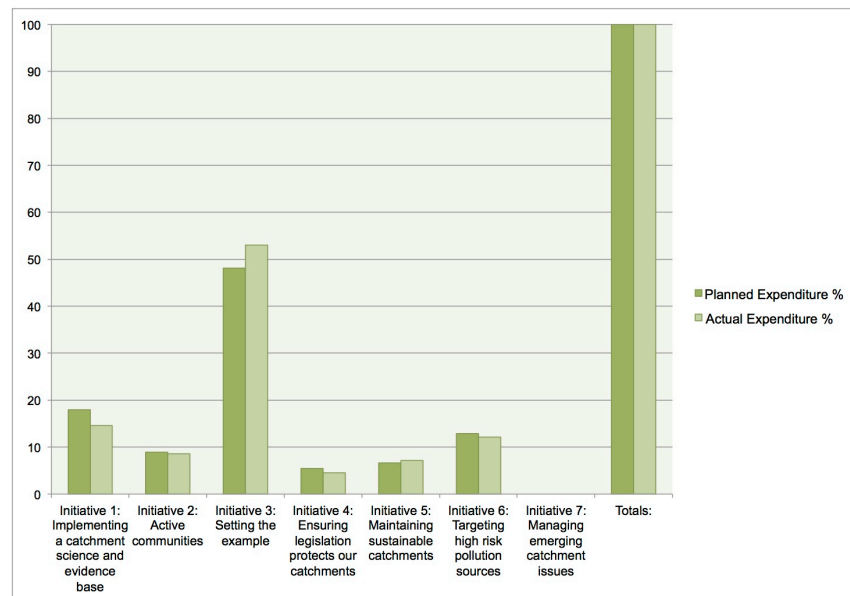
<sup>80</sup> 2012-2013 Operational Licence Audit Report, Consultant's section, p42.

<sup>81</sup> Catchment Audit 2013 - LA tabling.docx

<sup>82</sup> Annual Catchment Management Report 2012-2013, p6.



Initiative	Planned Expenditure (\$,000)	Planned Expenditure %	Actual Expenditure (\$,000)	Actual Expenditure %
Initiative 1: Implementing a catchment science and evidence base	\$4,064	18	\$2,858	15
Initiative 2: Active communities	\$2,019	9	\$1,678	9
Initiative 3: Setting the example	\$10,871	48	\$10,403	53
Initiative 4: Ensuring legislation protects our catchments	\$1,225	5	\$882	4
Initiative 5: Maintaining sustainable catchments	\$1,496	7	\$1,403	7
Initiative 6: Targeting high risk pollution sources	\$2,902	13	\$2,385	12
Initiative 7: Managing emerging catchment issues	\$-	0	\$-	0
<b>Totals:</b>	<b>\$22,577</b>	<b>100</b>	<b>\$19,609</b>	<b>100</b>



The expenditure is presented in a way, which is compliant with the Reporting Manual requirements.<sup>83</sup> The report was confirmed by the auditor as being publicly available on the SCA's website.<sup>84</sup>

#### Initiative 1: Implementing a catchment science and evidence base<sup>85</sup>- ca 15% of actual expenditure

One of the SCA's principal objectives is "to ensure that the catchment areas and the catchment infrastructure works are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment."

The SCA has developed a far-reaching program to deliver catchment and water quality research projects within its *Science Strategic Plan 2010-2015*.<sup>86</sup>

The auditor was very impressed with PSAT, which is used by the SCA to capture information on various parameters (see discussion in Water Quality section). Further commentary about this tool is provided in Element 2: Assessment of the Drinking

<sup>83</sup> Reporting Manual for Sydney Catchment Authority Water Reporting Manual June 2012, Section 4.2.1, p13.

<sup>84</sup> [http://www.sca.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0003/44589/Annual-Catchment-Management-Report-2012-13.pdf](http://www.sca.nsw.gov.au/__data/assets/pdf_file/0003/44589/Annual-Catchment-Management-Report-2012-13.pdf)

<sup>85</sup> Sub-initiatives are:

- 1.1 Capturing key catchment information
- 1.2 Understanding catchment risks
- 1.3 Scientific evaluation of catchment actions

<sup>86</sup> D2011 8255 Science Strategic Plan 2010 - 2015.PDF



Water Supply System. It will be interesting to track how PSAT is rolled out to facilitate catchment understanding and inform risk management with increasing data inputs from future projects such as the Gully Erosion Project.<sup>87</sup>

Another project discussed in detail was that of liaising with local governments in the catchment areas to benchmark and provide recommendations for improvement in Sewage and Stormwater Management Practices.<sup>88</sup> The additional evidence provided showed good outcomes in terms of recommendations for the councils and therefore, takes account of catchment areas not specifically controlled by the SCA in line with the mixed use catchment aspects of its management objective.

Overall, projects are planned well and are informed by a systematic requirement for understanding catchment risk and resources are allocated accordingly. Further, other utilities have recognised the SCA's expertise under this initiative and are implementing similar systems and tools to facilitate understanding of their own catchment risks and mitigation efficacy.<sup>89</sup>

While acknowledged as being difficult to translate catchment management measures into the language of accountancy, it would be beneficial to try and provide more scrutiny of catchment mitigation measures (sub initiative 1.3). Some utilities are starting to incorporate the quantitation of catchment management measures within their ESG (Environment, Social, Governance) programs to help provide a better picture of the true costs and benefits of their activities. For instance, through its 'Upstream Thinking' initiative, South West Water in the UK was able to show that:

*"The benefits to South West Water from Upstream Thinking outweighed the costs by 65 to 1, and that's without taking into account many of the related environmental and social benefits produced in the process."*<sup>90</sup>

It is not always easy to show cause and effect with catchment management measures and the above commentary is included for consideration only. The auditor notes that the SCA is in fact attempting to quantify catchment improvements e.g. the Leura Falls Catchment Improvement project.<sup>91</sup>

## **Initiative 2: Active communities<sup>92</sup> - ca 10% of actual expenditure**

Engaging with stakeholders in the catchment is an essential component of the Framework for Management of Drinking Water Quality (at Element 1) as well as helping to 'influence' better awareness and management of the drinking water catchments overall, especially as the community owns around 90% of the land in the catchment. The SCA presented evidence to show good engagement through a variety of modes with a variety of stakeholder groups including as part of the NorBE information roll out and dissemination.<sup>93</sup> Example modes of communication included emails and newsletters as well as specifically developed catchment tools for student education.<sup>94</sup> Grants were sighted by the auditor and grants committee recommendations noted.<sup>95</sup> The SCA also runs a call centre for taking queries from people involved in implementing NorBE.<sup>96</sup> It is pleasing to see that the SCA has also embraced social media as a means of communicating with a wider audience.<sup>97</sup> While it is difficult to determine and quantify the beneficial affects of stakeholder engagement, it is noted that evidence presented for the Environment clause is showing that communication is having some traction in achieving objectives.<sup>98</sup> Further, surveys have showed that communication relating to the NorBE tool has helped council officers understand more about water quality impacts.

## **Initiative 3: Setting the example<sup>99</sup> - ca. 50% of actual expenditure**

In undertaking programs to achieve this initiative, a significant portion of the SCA's work is conducted in conjunction with the National Parks and Wildlife Service e.g. through management via the Special Areas Strategic Plan of Management or SASPoM. Works undertaken in the special areas have significant impact on water quality and other key objectives such as the protection of ecosystems and environmental health in general. Further, as noted within the HCP and within Initiative 1 above, it is starting

<sup>87</sup> 1.2-D2014 8432 SSP BR Jul-Dec 13 50000007 Trial evaluation gully erosion.DOCX

<sup>88</sup> D2014/26618 Lithgow City Council Final Benchmarking Assessment Report 24/12/2013

D2014/49401 Evaluation of Sewage and Stormwater Management Practices Final Consolidated report - pdf - FINAL 21/5/2014

<sup>89</sup> Eg. D2010\_01321 Software Licence Agreement - Hunter Water.PDF

<sup>90</sup> <http://www.csrwire.com/blog/posts/665-accounting-sustainability-future-proofing-the-cfo>

<sup>91</sup> D2014/35754 Blue Mountains Leura Falls Catchment Improvement Project Description May 2014.

<sup>92</sup> Sub initiatives are:

- 2.1 Capacity building
- 2.2 School education
- 2.3 Community information
- 2.4 Community involvement

<sup>93</sup> 2.1.1-NorBE Notes - Special Edition - March 2014 - emailed-D2014-28753.EML

<sup>94</sup> 2.2-Incursion kit water testing land use map for high school student.D2014-73114.PDF; 2.2-Incursion kit\_Geography worksheet for 2014-D2014-73589.docx

<sup>95</sup> 2.1-Grants Committee Recommendations - 12 December 2013.D2013-116304.DOCX

<sup>96</sup> 2.1.1-NorBE Help Desk calls received in specified period July 13-June14-D2014-71500.PDF

<sup>97</sup> Eg. Twitter: @SCA\_dams

<sup>98</sup> SCA Environmental Management Report 2013-2014, p1, compliance with Environmental Impact Assessment Policy (as part of the findings of the Annual Environmental Audit).

<sup>99</sup> Sub initiatives are:

- 3.1 Fire Management
- 3.2 Unsealed roads
- 3.3 Pests and weeds
- 3.4 Soil erosion
- 3.5 Recreation areas
- 3.6 Barriers and Fencing
- 3.7 Cultural Heritage
- 3.8 Reserve Management



to be possible to quantify the benefits of robust ecosystems on water quality. The SCA is also responsible for managing sites that are listed on the State Heritage Register as well as other items such as indigenous sites. The high proportion of the budget apportioned to this initiative is considered reasonable given the need for engagement with other stakeholders, the types of programs implemented and the intensive nature of the sub initiatives to be managed under this initiative. Given the nature of the resources required, it is pleasing to see that the SCA has a transparent and systematic approach to monitoring and assessing program delivery by other stakeholders, for instance, SCA monitors the NPWS for financial accountability of programs, including a verification of works processes.<sup>100</sup> The practices implemented as part of this initiative are consistent with other catchment programs with which the auditor is familiar and therefore, represent expected practice.

#### **Initiative 4: Ensuring legislation protects our catchments<sup>101</sup> - ca 5% of actual expenditure**

Catchment protection legislation is only useful if it is actually implemented, monitored and enforced. The SCA allocates approximately 5% of its budget to a targeted inspection program (TIP) and the enforcement of compliance within the Special Areas. The SCA's TIP involved 696.5 hours of targeted inspections in the period and included 73 different issues/sites. As a result of the TIP, 24 investigations were launched. The auditor was interested in how compliance officers were trained in terms of investigating non-compliance as well as dealing with what may be potentially dangerous situations as the budget also has to take into account training needs for officers. Additional evidence was provided by the SCA to show a summary of training although only that relating to 'Dealing with aggressive behaviour and personal safety' was conducted during the audit period. However, the evidence did show an overall systematic approach to the training and appointment of compliance officers.<sup>102</sup> Evidence was provided to support the approach for the Investigations and Compliance Targeted Inspections Program.<sup>103</sup>

As well as 3,360 hours of Special Area surveillance, four Special Area compliance operations were undertaken with partners including NSW Police, NPWS, NSW Fisheries and Southern Councils RID<sup>104</sup> Squad. These operations resulted in the issuing of various notices<sup>105</sup> including 1 catchment correction notice, 4 clean up notices, 4 prevention notices which addressed issues that were impacting on water quality or had the potential to impact on water quality. It is considered that the budget allocation is consistent with the activities under this initiative.

#### **Initiative 5: Maintaining sustainable catchments<sup>106</sup> - ca 5% of actual expenditure**

One of the key tools the SCA uses for managing and influencing development in the catchment areas is through the use and communication of the NorBE Tool as well as education in its use. The SCA is also upgrading the NorBE Tool and it is expected that future improvements will include the ability for consultants to be able to use the tool and complete their own assessments as well as the inclusion of new modules which will allow councils to assess a greater number of development types that might impact on the catchment and water quality. However, the new NorBE Tool is not yet implemented and its effectiveness will need to be reviewed once implemented. It is pleasing to see that the SCA also issues Current Recommended Practice notes to help guide catchment practices<sup>107</sup> as well as providing advice to councils on landuse planning and LEPs.<sup>108</sup>

Mining activities within the catchment areas are the principal corporate risk for the SCA. The SCA has six mining principles which underpin the SCA's decision making in relation to managing mining and coal seam gas impacts on catchment infrastructure works and the Special Areas.<sup>109</sup> The SCA also actively communicates the mining principles and water quality impacts to mining companies operating in the area as well as undertaking active engagement.<sup>110</sup>

Given that most of the work under this initiative is related to communication and education, the budget allocation appears reasonable.

#### **Initiative 6: Targeting high risk pollution sources<sup>111</sup> - ca 10% of actual expenditure**

Much of the SCA's work under this initiative is focussed on empowering landholder management through the issuing of grants for focussed priority pollution sources as well as facilitating the dissemination of information through networks such as the On-Site Sewage Management and Stormwater Management Network group (see comments above relating to evaluation of Sewage and Stormwater Management Practice). In its questionnaire response, the SCA notes that:

<sup>100</sup> 3.8-D2014 40224 HCS Reporting for 2014 Financial Year.XLSX

<sup>101</sup> Sub initiatives are:

- 4.1 Targeted Inspection Program
- 4.2 Special Areas enforcement

<sup>102</sup> D2014/93555 Summary of recent training of authorised officers 22/9/2014; D2014/89374 Submission - Authorised Officers - New Members of Compliance Team 8/9/2014

<sup>103</sup> 4.1-Compliance Targeted Inspection schedule 2013 2014 for OL Audit-D2014-82849.XLSX

<sup>104</sup> Regional Illegal Dumping

<sup>105</sup> 4.2-D2014 82841 Compliance Notice Register - SWCM Act s62B & POEO Act s91 & s96.XLSX

<sup>106</sup> Sub initiatives are:

- 5.1 Development and activities
- 5.2 Land use planning
- 5.3 Mining

<sup>107</sup> 5.1-Cats and dogs CRP-D2012-62318.DOC

<sup>108</sup> 5.2-Draft Lithgow Local Environmental Plan 2013 SCA response July 2013-D2013-66211

<sup>109</sup> <http://www.sca.nsw.gov.au/catchment/mining/principles>

<sup>110</sup> 5.3-Gujarat NRE- Minutes of Meeting at SCA Offices-D2013-120679.DOC

<sup>111</sup> Sub initiatives are:

- 6.1 Rural Landscape Program
- 6.2 Priority Pollutant Program



*"The Infrastructure Grants Program has been implemented and four grants awarded. The total reduction in nutrient discharges over 20 years is expected to be 7240kg. These estimates will be reassessed at the conclusion of the projects."*

This quantification will be a good outcome to help with validation of a suite of catchment related issues and actions under Element 9 of the Framework for Management of Drinking Water Quality once the data are collected and assessed.

Given the quantum of grants awarded for the catchment area, the budgeted figure appears reasonable.

#### **Initiative 7: Managing emerging catchment issues<sup>112</sup> – 0% of actual expenditure**

As noted at the interview, the SCA has good relationships in place with key agencies in NSW through which it learns about emerging issues that may impact on the catchment.<sup>113</sup> Further, the SCA is networked into the Federal Attorney's Group from a critical infrastructure perspective – as part of this network, the SCA also learns about federal as well as international emerging issues.

An issue that is emerging, largely from a transitional perspective, and which has been identified by the SCA, is the merger with State Water to become Water NSW.

Mining impacts also continue to be a current and emerging impact for the SCA and will be something that the new Water NSW entity will have to take on board for the whole of its state operations.

Given that most of the activities under this initiative appear to be covered by other programs, pre-existing committees and communication linkages, the budget appears to be correct. However, given the mining issue, it may be necessary to allocate resources to this initiative in the future.

#### **Recommendation**

There are no recommendations for this clause.

#### **Opportunities for Improvement**

- **OFI 4.1.1-I Further Quantification of Catchment Mitigation Measures:** Building on the SCA's body of knowledge and progress in this area, consider how catchment mitigation measures can be further assessed and quantified including economic benefits such as quantification of return on investment and incorporation into ESG frameworks.<sup>114</sup> Consider whether it might be possible to use PSAT to facilitate quantification.

<sup>112</sup> There are no sub initiatives.

<sup>113</sup> E.g.: Strategic Liaison Group –JOG – With EPA and OEH; Strategic Liaison Group - SLG - with EPA & OEH; Strategic Liaison Group - SLG - With NSW Health and Sydney Water; Strategic Liaison Group - SLG - with Hawkesbury-Nepean and Southern Rivers CMAs; ESG Meetings - OEH - Office of Environment and Heritage; Imagery NSW.

<sup>114</sup> <http://www.csrwire.com/blog/posts/665-accounting-sustainability-future-proofing-the-cfo>



### A.3.2 Information on Catchment Area (sub-clause 4.2.1)

Sub-clause	Requirement	Compliance Grade
4.2 Information on Catchment Area	4.2.1 SCA must: a) make available information collected by SCA on water quality relevant to the Catchment Area; and b) provide data in relation to the Catchment Health Indicators to the Catchment Auditor, in accordance with the Reporting Manual. <sup>115</sup>	Full
<b>Risk</b>  Non-compliance with this clause represents a moderate risk because it is more of a reputational risk but could still cause a governance issue.		<b>Target for Full Compliance</b>  Evidence that catchment-relevant data (including water quality data and the gazetted Catchment Health Indicators) were supplied in a timely manner to those requesting such data including the public and the Catchment Auditor.
<b>Evidence Sighted</b> <ul style="list-style-type: none"> <li>• Interview with General Manager Governance (24 September 2014)</li> <li>• <a href="http://www.sca.nsw.gov.au/science-and-education/science/river-health-data">http://www.sca.nsw.gov.au/science-and-education/science/river-health-data</a> (checked 9 September 2014)</li> <li>• 2013-Catchment-Audit-Volume-1-Main-Report.pdf</li> <li>• 2013-Catchment-Audit-Volume-2-Appendices-A-H.pdf</li> <li>• 2013-Catchment-Audit-Volume-3-Appendix-I.pdf</li> <li>• Teleconference with the Catchment Auditor representative (Dr Christobel Ferguson of GHD), 25 September 2014</li> </ul>		
<b>Summary of Reasons for Grade</b>  The SCA provided sufficient evidence to show that it had met the requirements of this section of the licence including direct confirmation from the Catchment Auditor that the SCA staff had not only met the relevance and timeliness of data provision but had done so in a very helpful fashion. When requested by the auditor, the SCA was able to provide additional evidence of requests for data and its release by the SCA, that had been made from various sources.		
<b>Discussion and Notes</b>  The SCA provided evidence to show that it had made data available on its website. The auditor checked that data were available (9 September 2014) and requested further evidence as examples of where parties had requested data (under GIPA or other provisions). A range of requests was provided to the auditor, by the Senior Community Engagement Officer, as evidence. Examples within the audit period included requests for data for flow data for Wingecaribee River (22/5/2014), Water chemistry results for various sampling sites (8/5/2014) and Raw water quality data (4/4/2014).  Dr Christobel Ferguson of GHD was the client's representative for the Catchment Audit. In a teleconference between Dr Ferguson and Dr Davison on 25 September 2014, Dr Ferguson confirmed that the SCA had provided the relevant evidence for the Catchment Audit in the required timeframe and added that the SCA staff had been very helpful in the data provision.		
<b>Recommendation</b>  There are no recommendations for this clause.		
<b>Opportunities for Improvement</b>  There are no opportunities for improvement for this clause.		

<sup>115</sup> IPART Notes: Catchment Management Report was due in the audit period. Check compliance with reporting manual.





## A.4 Clause 7: Environment

### A.4.1 Environment Management System (sub-clause 7.1.4)

Sub-clause	Requirement	Compliance grade
7.1 Environment Management	7.1.4 Until the Environmental Management System has been developed and implemented in accordance with clauses 7.1.1 and 7.1.2, SCA must maintain programs to manage risks to the environment from carrying out its activities and must ensure that all its activities are carried out in accordance with those programs.	Full
<b>Risk</b>  Non-compliance with the requirements of this clause poses a high level of operational risk in respect of environmental health, water quality objectives of the raw water and the ability of SCA to meet its business objectives.		<b>Target for Full Compliance</b>  Documentation showing commitment to understanding and managing environmental issues (for both directly controllable issues and those issues which can only be 'influenced').  System assessment documentation noting clear scope for the environmental management system.  Risk register (or aspects and impacts register) or similar for environmental impacts.  Enterprise Risk Management framework; specifically environmental impact components including risk assessment tools, and risk appetite statements for managing environmental risks.  Evidence of the controls/programs implemented to manage identified risks.
<b>Evidence sighted</b> <ul style="list-style-type: none"> <li>Interview with Environment team (including Manager Environment and Heritage, Senior Manager Economics and Business Planning, General Manager Catchments) 22 September 2014</li> <li>Review of the STARK Energy Database with the Energy Coordinator, 24 September 2014</li> <li>Environmental Management Program 2012-2015</li> <li>SCA Environmental Management Report 2013-14.pdf</li> </ul> <b>Supplementary information provided and sampled</b> <ul style="list-style-type: none"> <li>7.1.4 -Corporate Induction New starters 1.7.13 - 30.6.14.xlsx</li> <li>7.1.4 Env program 2012-2016- D2012-83576.DOC</li> <li>7.1.4-Education and Communication Plan - Waste Reduction and Purchasing Policy (WRAPP)-D2013-111740.DOCX</li> <li>7.1.4-Environmental Site Inspection - Procedure-D2011-28038.DOC</li> <li>7.1.4-Final Copy -Waste Audit 2013 APrince Consulting 04 July 2013-D2013-60441.DOCX</li> <li>7.1.4-Malcolm Hughes Environmental Induction Presentation 2014(2)-D2014-14722.PPTX</li> <li>7.1.4-Nepean fishways - DRAFT REPORT - Duncan,M &amp; Robinson,W (2014) -DPI Fisheries-D2014-83545.PDF</li> <li>7.1.4-Progress report 2012-13 Waste Audit recommendations &amp; WRAPP plan-D2014-78681.DOCX</li> <li>7.1.4-Recommendations from the 2013 Waste Audit-D2013-84270.DOCX</li> <li>7.1.4-Revised SCA WRAPP Plan 2013-D2012-112332.DOC</li> <li>7.1.4-SCA WRAPP report to OEH 2012-13-D201-83793.XLS</li> <li>7.1.4-Shoalhaven Environmental Flows Monitoring Final Report Apr 2014-D2014-61721.PDF</li> <li>7.1.4-Submission - WRAPP Progress Report to OEH 2012-13-D2013-76536.DOCX</li> <li>7.1.4-Submission seeking approval for the revised SCA WRAPP Plan 2013-D2012-112327.DOCX</li> <li>7.1.4-Summary report - Environmental Site Inspections - 20132014-D2014-21260.DOCX</li> <li>7.1.4-Tallowa fishway - DRAFT REPORT - Walsh,C, Rodgers,M, ~ DPI Fisheries-D2014-83551.PDF</li> <li>7.1.4-Upper Nepean Environmental Flows Monitoring - Final report April 2014-D2014-61720.PDF</li> <li>7.1.4-Upper Nepean River fish communities, pre- and post- Pheasants Nest -Nov 2013-D2014-26990.PDF</li> <li>7.1.4-Woronora Environmental Flows Assessment Study - Spring 2013 Survey Report - March 2014 - GHD-D2014-30713.PDF</li> <li>7.1.4-Woronora River Environmental Flows Study - Vegetation Survey - March 2014 - GHD-D2014-30705.PDF</li> <li>7.1.1-Environmental Policy-CD2012-110.DOCX</li> <li>7.1.1-EMS Aspect and Impact Register - draft-D2013-110538.XLSX</li> <li>7.1.1-EMS significant aspects - draft-D2014-48085.XLSX</li> </ul>		





- 7.1.1-Legal and Other Requirements Register - UNDER REVIEW-CD2013-26.XLSX
- 7.1.1-Legal Obligation Procedure-CD2012-118.DOCX
- 7.1.1-BMS Training - Half Day Sessions - 27 March 2013-D2013-27079.PDF
- 7.1.1-BMS Training Attendance Form (for SCA) AM session 27 March 2013-D2013-22189.PDF
- 7.1.1-BMS Training Attendance Form (for SCA) PM session 27 March 2013-D2013-22190.PDF
- 7.1.1-Corporate Incident Management Framework-CD2009-2-v3.DOC
- 7.1.1-Incident Reporting Procedure-CD2011-5 ver4.DOC
- CD2011 181 Environmental Inspection Work Instruction - UNDER REVIEW.DOC
- Email: FW Record Number CD2011181 eTRIM Notification Action Overdue Controlled Document Review Action.pdf
- 7.1.1-Business Improvement Audit Procedure-CD2011-163.DOC
- 7.1.1-Business Improvement Audit Schedule and Register - Organisational Improvement Team-D2012-45727.XLSX
- Three year internal audit plan for 2013/14 to 2015/16 (1206\_001.pdf).
- Sydney Catchment Authority Internal Audit Manual July 2013
- Deloitte audit report: *Sydney Catchment Authority Environmental Compliance Internal Audit August 2014*
- #134 Information from Tuesday - Screen Shots.docx

### Summary of Reasons for Grade

The SCA currently has good procedures in place for managing the environment (noting that catchment management is directly linked to environmental management) both of a direct control and 'influence' nature. The auditor noted very few areas for improvement however where they occurred, they were more of a business wide nature (i.e. minor document control issues but nothing noted for key risk documents), rather than of an environmental nature *per se*. Further, the auditor commends the SCA on some of the better examples of implementation of environmental management the auditor has sighted including a comprehensive Legal Register and Aspects and Impacts Register. Because there are no recommendations, this clause has been awarded full compliance.

### Discussion and Notes

While clause 7.1.1 deals specifically with the implementation of an Environmental Management System based on the standard ISO 14001, the framework within 14001 provides a useful basis on which to assess whether the SCA has developed and implemented key environmental risk controls associated with compliance with this clause (clause 7.1.4). Therefore, evidence provided for 7.1.1 is also used as part of the review of the compliance of 7.1.4 where relevant.

Key elements of a system for managing environmental risks, and how the SCA meets these elements, are covered below.

**Scope and Approach:** The SCA manages its environmental risks by the implementation of its Environmental Management Program 2012-2015 (EMP<sup>116</sup>). The EMP generally covers the scope of the SCA's objectives and targets as well as their associated management controls and actions. The EMP clearly identifies the scope of environmental activities and management<sup>117</sup> as well as the scope of its environmental reporting requirements.<sup>118</sup> The SCA has three environmental objectives these being:

1. Objective one - minimise the environmental impacts of the SCA's activities, projects and infrastructure
2. Objective two - manage and minimise resource use and waste generation
3. Objective three - minimise the environmental impact of the SCA's use of energy

**Environmental Policy:** The SCA has an approved Environmental Policy in place<sup>119</sup> and this was on view at the SCA offices visited as stated.

**Environmental Aspects:** The SCA has a detailed Aspects and Impacts register and has identified a sub-set of significant risks out of the overall long list.<sup>120</sup> The Aspects and Impacts register (essentially an environmental risk register) was exemplary and the auditor notes the use of clearly categorised elements in the register including controlled and uncontrolled risk columns as well as clear plain English terms for facilitating event elucidation.<sup>121</sup> Environmental aspects are systematically identified by SCA site, process and activity, which allows for a thorough review and identification of aspects (risks).

**Legal and Other Requirements:** Understanding the governance context is an essential component of understanding and managing an organisation's risks, environmental or otherwise. The SCA underpins its governance context through several instruments including a Legal and Other Requirements Register (Legal Register) and a procedure for managing Legal Obligations.<sup>122</sup> The Legal Register clearly sets out the legal issues to be considered, how they are pertinent to the SCA including the responsible groups and who needs to know, through to the frequency of checking for changes, how to ensure compliance, reporting obligations associated with the instrument, the method of identifying changes, control procedures, any subordinate

<sup>116</sup> Noting that the EMP will remain in force until it is replaced by the introduction of the EMS in 2015.

<sup>117</sup> EMP, p4.

<sup>118</sup> EMP, pp5-6.

<sup>119</sup> 7.1.1-Environmental Policy-CD2012-110.DOCX, offices visited were head office at Penrith (22/24 September 2014) and Campbelltown (23 September 2014).

<sup>120</sup> 7.1.1-EMS Aspect and Impact Register - draft-D2013-110538.XLSX; 7.1.1-EMS significant aspects - draft-D2014-48085.XLSX

<sup>121</sup> For instance, the use of terms such as "There is a possibility that..." and "Which will have the result of..." for helping to elucidate cause and effect.

<sup>122</sup> 7.1.1-Legal and Other Requirements Register - UNDER REVIEW-CD2013-26.XLSX; 7.1.1-Legal Obligation Procedure-CD2012-118.DOCX



legislation (e.g. regulations) and when the line item was last updated. For environmental issues, the EMS Coordinator will be responsible for reviewing legislation and informing the relevant personnel. It was also noted at the interview that good stakeholder relationships e.g. with OEH, Health etc is another avenue which helps to keep the SCA up to date with changes in the legal context. The auditor notes that this is a very thorough approach and one of the better examples that they have seen.

**Resources, Roles, Responsibility and Authority:** This element is interwoven throughout the SCA's processes and procedures and is discussed where relevant, in the sections preceding and following this paragraph, however, some examples include the position descriptions, the Legal Register and the clear articulation of responsibility and authority within the written procedures.

**Competence, Training and Awareness:** The SCA has a thorough training program in place and presented evidence to show that not only staff but also contractors were trained in environmental awareness and aspects of the SCA's activities.<sup>123</sup> The SCA also has a communication and education plan in place relating to its waste reduction obligations.<sup>124</sup> Training attendance records were presented as evidence for training within the audit period.<sup>125</sup> In general the induction material was good.<sup>126</sup> Of particular usefulness was the diagram on Slide 3 showing the integration and interrelation of the SCA's management systems including water quality and quality management.

**Communication:** Communication of environmental issues is undertaken through a multitude of approaches including visits to SCA educational facilities<sup>127</sup>, reporting obligations<sup>128</sup> and training throughout the business including contractors. From a reporting perspective, there are some areas which could be improved. For instance, under the reporting for Objective One within the Environmental Management Report 2013-14 to IPART, the information related to the non-complying project (paragraph one) left the reader wanting to know more about how the non-complying project panned out overall. Also, the information relating to the project which 'had an issue' (paragraph 2) also left the reader wanting to understand more.

## 1.1 Comply with SCA's Environmental Impact Assessment Policy

### Target: 100% of audited projects meet the SCA's environmental impact assessment policy each year

Two of the three (67%) audited projects met the SCA's environmental impact assessment policy. For the remaining project, works had commenced prior to receiving formal SCA environmental assessment approval, however, an environmental assessment had been undertaken, including the identification of, and agreement reached regarding, appropriate controls to minimise any impacts.

### Target: 100% audited projects comply with the environmental assessment conditions imposed

One of the three (33%) projects assessed as part of the 2013-14 Environmental Audit, complied with the environmental assessment conditions imposed. For two projects the timing of notification of commencement of work to some stakeholders occurred within days of commencement but outside the time period in the condition. One project had an issue with compliance with an environmental safeguard.

In both cases, additional evidence<sup>129</sup> was provided to show the background behind the issues reported but it would be beneficial to have had that information within the report.

**Documentation:** The SCA's documents in general (evidence for environmental documentation was reviewed under this clause) are generally very well laid out and articulated. For instance, procedures are succinct<sup>130</sup> with a clear indication of purpose and scope, who is responsible for implementation, who the procedure is relevant to, any associated relevant documents and relevant legal and formal requirements. Of particular interest was the 'Monitoring, Evaluation and Review' section at the end of the procedure, which shows how the procedure will be monitored in terms of its delivery against its purpose and scope as well as the risk-rated review cycle. The 'Monitoring, Evaluation and Review' section is seen as extremely useful by the auditor and the

<sup>123</sup> 7.1.4 -Corporate Induction New starters 1.7.13 - 30.6.14.xlsx; 7.1.4-Malcolm Hughes Environmental Induction Presentation 2014(2)-D2014-14722.PPTX

<sup>124</sup> 7.1.4-Education and Communication Plan - Waste Reduction and Purchasing Policy (WRAPP)-D2013-111740.DOCX

<sup>125</sup> 7.1.1-BMS Training - Half Day Sessions - 27 March 2013-D2013-27079.PDF; 7.1.1-BMS Training Attendance Form (for SCA) AM session 27 March 2013-D2013-22189.PDF; 7.1.1-BMS Training Attendance Form (for SCA) PM session 27 March 2013-D2013-22190.PDF

<sup>126</sup> 7.1.4-Malcolm Hughes Environmental Induction Presentation 2014(2)-D2014-14722.PPTX

<sup>127</sup> E.g.: 2.2-Catchment Management Game for Smartboards - resource development-D2014-73137.DOCX; 2.2-Education program monthly reports July 2013 - December 2013-D2014-2405.PDF; 2.2-Incursion kit trial October 2013-D2014-73104.PDF; 2.2-School statistics reports and analysis FY 2013-2014-D2014-71075.XLSX

<sup>128</sup> 7.1.4-Tallowa fishway - DRAFT REPORT - Walsh,C, Rodgers,M, ~ DPI Fisheries-D2014-83551.PDF; 7.1.4-Upper Nepean Environmental Flows Monitoring - Final report April 2014-D2014-61720.PDF; 7.1.4-Upper Nepean River fish communities, pre- and post- Pheasants Nest - Nov 2013-D2014-26990.PDF; 7.1.4-Woronora Environmental Flows Assessment Study - Spring 2013 Survey Report - March 2014 - GHD-D2014-30713.PDF; 7.1.4-Woronora River Environmental Flows Study - Vegetation Survey - March 2014 - GHD-D2014-30705.PDF

<sup>129</sup> Deloitte audit report: Sydney Catchment Authority Environmental Compliance Internal Audit August 2014 and questions asked at the interview.

<sup>130</sup> E.g. 7.1.1-Business Improvement Audit Procedure-CD2011-163.DOC



SCA is commended for its inclusion.

**Control of Documents and Records:** Control of documents and records is covered in various aspects of the SCA's activities and was also reviewed under the Water Quality section (see that section for more information). In general, the SCA

### 3. Version control and change history

Date	Version	Approved by	Amendment
Sept 2011	1		

uses eTRIM for management of documents, records and workflows. eTRIM was viewed at the site audit and a screenshot was provided as evidence to show documentation and recording of Opportunities for Improvement from the last operational licence audit as evidence of workflow records and actions. During the interviews, the currency of the Environmental Site Inspection Procedure<sup>131</sup> was reviewed as this had a review due date of July 2013. However, it was confirmed post site interviews that the procedure provided as part of the audit evidence was not a controlled document and had in fact, been an earlier version – the controlled document was

provided along with evidence to show how document review and updates occur.<sup>132</sup> This issue was noted by the SCA as something that it needed to tighten up. eTRIM was interrogated during the site interviews and generally speaking, documents and records could be easily located and showed to the auditors when requested. While there was no document control information directly articulated on the Environmental Management Report 2013-14 to IPART, the SCA was able to demonstrate the authors and review cycle for the report through eTRIM records which were satisfactory and showed that document control for reporting occurs in practice.

**Operational Control:** Operational control is managed through documented procedures (see below), agreements between the SCA and its customers<sup>133</sup> and clear position descriptions. Position description evidence was provided for the Water Quality component and evidence is reviewed within that section. SCADA and water quality models are also used extensively for operational control (as one would expect for an organisation of the SCA's complexity and maturity). SCADA screens and model outputs were checked at the on site interviews and field verification visits. SCADA screenshots were provided post on site audit as additional evidence.<sup>134</sup> Further, for those measures which are not directly controlled by the SCA, there is clear evidence on how the SCA 'influences' approaches to environmental mitigation e.g. via the Aspects and Impacts register and though the awarding of grants to put catchment measures in place.

**Emergency Preparedness and Response:** Being prepared for and having plans in place to deal with emergencies is an essential component of preventing risks escalating. The SCA manages its environmental emergencies and incidents through an overarching business approach, this being the Corporate Incident Management Framework<sup>135</sup> and the Incident Reporting Procedure.<sup>136</sup>

**Checking:** The SCA has an internal and external audit schedule<sup>137</sup> including the auditing undertaken as part of the IPART operational licence auditing. The SCA engages specialist auditors including Deloitte and APC, to undertake specialist audits of its systems and activities for defined scopes. For instance, the SCA engaged APC to undertake a waste audit in February 2013. While SCA was found to have used more paper than in previous years (although this was likely due to an 'out of audit cycle' issue), a note was made as follows:

*"APC has made the following recommendations based on the findings of this audit. They are similar to previous recommendations mainly because it is unclear which actions were implemented during the past 12 months (related to a staff transition during that time). Many of the recommendations promote ongoing communication and training."*

The comment made by APC was followed up at the onsite interviews. It was noted that the position referred to was the Sustainability Officer Position which has recently been filled. The Recommendations from the waste audit are captured separately<sup>138</sup> and progress reported.<sup>139</sup> SCA's normal approach is to follow up and schedule actions<sup>140</sup> arising from audits although there is currently no integrated improvement plan for the business as a whole (with improvement actions being managed per business group, although audit actions are tracked by the Organisational Improvement Team<sup>141</sup>). Additional evidence was provided at the interview to confirm auditing and compliance outcomes.<sup>142</sup>

Where pertinent, the SCA makes use of databases for the capture and analysis of environmentally relevant data. The Senior Manager Economics and Business Planning provided an initial overview of the STARK database, which is used to capture information on energy usage including fuel and electricity. The Energy Coordinator then further demonstrated the use of the database. The Energy Coordinator showed how information is stored and reports can be generated based on the scope of enquiry. While the Energy Coordinator is the main user of the software, processes for use have been documented and other users are being trained. The software contains an in built audit trail for tracking and checking of data and has in recent times

<sup>131</sup> 7.1.4-Environmental Site Inspection - Procedure-D2011-28038.DOC

<sup>132</sup> CD2011 181 Environmental Inspection Work Instruction - UNDER REVIEW.DOC; FW Record Number CD2011 181 eTRIM Notification Action Overdue Controlled Document ReviewAction.pdf

<sup>133</sup> E.g. the Raw Water Supply Agreement between the SCA and Sydney Water Corporation

<sup>134</sup> #134 Information from Tuesday - Screen Shots.docx

<sup>135</sup> 7.1.1-Corporate Incident Management Framework-CD2009-2-v3.DOC

<sup>136</sup> 7.1.1-Incident Reporting Procedure-CD2011-5 ver4.DOC

<sup>137</sup> 7.1.1-Business Improvement Audit Schedule and Register - Organisational Improvement Team-D2012-45727.XLSX

<sup>138</sup> 7.1.4-Recommendations from the 2013 Waste Audit-D2013-84270.DOCX

<sup>139</sup> 7.1.4-Progress report 2012-13 Waste Audit recommendations & WRAPP plan-D2014-78681.DOCX

<sup>140</sup> 7.1.4-Progress report 2012-13 Waste Audit recommendations & WRAPP plan-D2014-78681.DOCX

<sup>141</sup> CD2011/163, pp4-5.

<sup>142</sup> Three year internal audit plan for 2013/14 to 2015/16 (1206\_001.pdf); Sydney Catchment Authority Internal Audit Manual July 2013; Deloitte audit report: Sydney Catchment Authority Environmental Compliance Internal Audit August 2014.



uncovered issues associated with the SCA being overcharged for fuel usage which it had not incurred.

The National Water Initiative audits are also another comprehensive way in which the data collected by the SCA are checked and verified by independent auditors.

Management reviews environmental outcomes via the reporting and checking processes in place (internally<sup>143</sup>, externally) as well as through review of corporate risks, which include environmental risks.

#### Recommendation

There are no recommendations for this clause.

#### Opportunity for Improvement

- **OFI 7.1.4-1 Reporting and Communication:** Expand on the issues arising within the environmental report to IPART to ensure that issues are clearly understood by the reader.
- **OFI 7.1.4-2 Document Control:** Found to be a relatively minor issue but review the tightening up of procedures for controlled documents.
- **OFI 7.1.4-3 Integration of Business Improvements:** Review whether it would be useful to integrate business improvements into an organisation-wide plan or whether eTRIM is still the best approach for managing business improvements overall.

<sup>143</sup> E.g. EMS Annual Management review Report (D2013/69607)



## D | SCA's statement of compliance





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Ref: D2014/79810

The Chief Executive Officer  
Independent Pricing and Regulatory Tribunal of NSW  
PO Box Q290  
QVB Post Office NSW 1230


**Statement of Compliance 1 September 2014**  
**For financial year 2013-14**  
**Submitted by the Sydney Catchment Authority**

The Sydney Catchment Authority reports as follows:

1. This statement documents compliance during 2013-14 with all requirements to which the Sydney Catchment Authority is subject by virtue of its operating licence.
2. This report has been prepared by the Sydney Catchment Authority with all due care and skill to the best of our knowledge of conditions to which it is subject under the *Sydney Water Catchment Management Act 1998*.
3. Schedule A provides information on all requirements with which the Sydney Catchment Authority did not comply during 2013-14. No issues have been identified.
4. Other than the information provided in Schedule A, the Sydney Catchment Authority has complied with all conditions to which it is subject.
5. This compliance report has been approved by the A/Chief Executive and the Chairman of the Board of Sydney Catchment Authority.

  
Signed: \_\_\_\_\_  
David Harris  
29 August 2014

**A/Chief Executive**

  
Signed: \_\_\_\_\_  
Terry Charlton

**Chairman SCA Board**



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### **Schedule A: Non-Compliances for the Sydney Catchment Authority**

List of requirements breached	Description of non-compliance
Nil	Nil