

Independent Pricing and Regulatory Tribunal
New South Wales

WaterNSW Operational Audit 2016-17

Report to the Minister

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Summary

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has completed the 2016-17 WaterNSW operational audit (the audit) to assess its compliance with its two operating licences. The licences in operation during the 2016-17 audit period were the Water NSW (State Water Corporation) Operating Licence 2013-2018 and the Water NSW (Sydney Catchment Authority) Operating Licence 2012-2017 (the licences). This audit covers the period from 1 July 2016 to 30 June 2017 (2016-17). We engaged a specialist auditing firm, Cobbitty Consulting Pty Ltd (Cobbitty Consulting), in partnership with Water Futures Pty Ltd (Water Futures), to undertake the audit. We have prepared this report to summarise the audit findings for the Minister for Regional Water, the Hon. Niall Blair, MLC (the Minister).

The 2016-17 audit findings demonstrated that WaterNSW has an overall high level of compliance with both its licences. WaterNSW has implemented all recommendations from previous audits, thereby improving its performance. We have made recommendations for WaterNSW to continue to improve, and generally maintain, compliance with its licence.

Our recommendations

There were three clauses for which our auditor did not assign Full Compliance. One clause was assigned as No Requirement, with those assigned High Compliance relating to reading of customer meters and implementation of the Water Quality Management System (WQMS). Our recommendations are listed below. Our auditor prepared a final audit report detailing its findings and recommendations (Appendix C).

We endorse all of our auditor's findings except for one clause where we have assigned High Compliance, instead of Full Compliance in relation to clause 5.1.2. This is because WaterNSW did not invite a required member (DPI Water) to the customer service committees for a period of six months within the audit period. Overall we assign a total of three clauses a High Compliance grade and one clause a 'No Requirement' grade.

Further, we note that in light of findings from the recent Ken Matthews' Interim Report and the NSW Ombudsman's report, and the limitations found in undertaking our audit of the conferred functions listed in Schedule A, there are shortcomings with current obligations imposed on WaterNSW with regard to the conferred functions. Our audit found no evidence to dispute the findings from Ken Mathews' Interim Report or the NSW Ombudsman report, and we have made recommendations to the Minister to address these as outlined below.

Recommendations to WaterNSW

- 1 By 30 June 2018, WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. (State Water licence clause 4.2.1)

- 2 By 30 June 2018, WaterNSW repairs or replaces the failed Nepean Reservoir mixer. (SCA licence clause 2.1.2)
- 3 By 30 June 2018, WaterNSW undertakes a risk assessment to determine appropriate strategies and controls to address any current reliability concerns or potential failure of all such mixer or aerator assets within its portfolio. (SCA licence clause 2.1.2)
- 4 By 31 December 2018, WaterNSW implements appropriate strategies and controls to address any reliability concerns or potential failure of all such mixer or aerator assets within its portfolio. (SCA licence clause 2.1.2)

We will request WaterNSW provide us with a report on its progress in implementing these recommendations by 31 March 2018, in accordance with the Reporting Manual.

Recommendations to the Minister

- 1 For any functions that remain conferred in the operating licence, the Minister revises the operating licence to include outcomes based performance measures to better define the standards to which WaterNSW should undertake these functions.
- 2 The Minister establishes (or requests the new regulator to establish) outcomes based performance measures in relation to the compliance and enforcement functions that are moved from WaterNSW to the Natural Resources Access Regulator.

Overview of audit findings

WaterNSW compliance with the State Water licence

The 2016-17 audit found that WaterNSW had a high level of compliance with its State Water licence. This is the final audit for this licence and no non-compliances were identified.

We assigned WaterNSW Full Compliance with 17 of the 20 clauses audited, a High Compliance for two clauses and a No Requirement for one clause. The compliance grades that we applied to the audit are explained in Appendix A. In summary, we assigned:

- ▼ **Full Compliance** with auditable requirements relating to:
 - Licence and Licence authorisation (clause 1.4.2)
 - Water quantity (clause 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.3.1)
 - Assets (clause 4.1.1, 4.1.2, 4.1.4)
 - Customers (clause 5.1.1, 5.1.3, 5.3.1, 5.3.3)
 - Environmental management (clause 6.1.1, 6.1.2, 6.1.4)
- ▼ **High Compliance** with requirements relating to:
 - Assets (clause 4.2.1)
 - Customers (clause 5.1.2)
- ▼ **No Requirement** relating to:
 - Assets (clause 4.2.2)

WaterNSW's compliance with the State Water licence is summarised in Table 1 below.

Table 1 WaterNSW's compliance in 2016-17 with its State Water Operating Licence

Licence part	Number of audited clauses	Compliance grade assigned				
		Full	High	Adeq	NC	NR
Part 1 – Licence and Licence authorisation	1	1	-	-	-	-
Part 2 – Water quality	-	-	-	-	-	-
Part 3 – Water quantity	6	6	-	-	-	-
Part 4 – Assets	5	3	1	-	-	1
Part 5 – Customers	5	4	1	-	-	-
Part 6 – Environmental management	3	3	-	-	-	-
Part 7 – Performance monitoring	-	-	-	-	-	-
Part 8 – End of term review	-	-	-	-	-	-
Part 9 – Notices	-	-	-	-	-	-
Total	20	17	2	0	0	1

Note: Full = Full Compliance; High = High Compliance; Adeq = Adequate Compliance; NC = Non-compliant; NR = No Requirement. Not all clauses were audited.

WaterNSW compliance with the SCA licence

The 2016-17 audit found that WaterNSW had a high level of compliance with its SCA licence. This is the final audit in the 5-year term of the licence. No non-compliances were identified by the audit.

We assigned WaterNSW Full Compliance with nine of the 10 clauses audited, and High Compliance for one clause. The compliance grades that we applied to the audit are explained in Appendix A. In summary, we assigned:

- ▼ **Full Compliance** with auditable requirements relating to:
 - Water quality (clause 2.1.1)
 - Water supply sufficiency (clause 3.1.1)
 - Catchment (clause 4.1.1)
 - Assets (clause 5.1.1 and 5.1.2)
 - Environment (clause 7.1.1, 7.1.2, 7.1.3, 7.1.4)
- ▼ **High Compliance** with requirements relating to:
 - Water quality (clause 2.1.2)

WaterNSW's compliance with the SCA licence is summarised in Table 2 below.

Table 2 WaterNSW's compliance in 2016-17 with its SCA Operating Licence

Licence part	Number of audited clauses	Compliance grade assigned				
		Full	High	Adeq	NC	NR
Part 1 – Licence details	-	-	-	-	-	-
Part 2 – Water quality	2	1	1	-	-	-
Part 3 – Water supply sufficiency	1	1	-	-	-	-
Part 4 – Catchment	1	1	-	-	-	-
Part 5 – Assets	2	2	-	-	-	-
Part 6 – Customers	-	-	-	-	-	-
Part 7 – Environment	4	4	-	-	-	-
Part 8 – Performance monitoring	-	-	-	-	-	-
Part 9 – Memoranda of understanding	-	-	-	-	-	-
Part 10 – End of term review	-	-	-	-	-	-
Part 11 – Notices	-	-	-	-	-	-
Total	10	9	1	0	0	0

Note: Full = Full Compliance; High = High Compliance; Adeq = Adequate Compliance; NC = Non-compliant; NR = No Requirement.

Annual statement of compliance

In preparing this report, we have also reviewed WaterNSW's annual Statement of Compliance (Appendix D). This is an exception based report certified by the CEO and the Chairperson of the Board of Directors of WaterNSW. It lists any licence non-compliances that occurred during the year. Further, any remedial action taken, or in the process of being taken, is reported. This year WaterNSW reported no non-compliances with its licence.

Progress with previous recommendations

Finally, we note that in 2016-17 WaterNSW completed all five ongoing recommendations from previous operating audits.

1 Introduction and scope

Water NSW (WaterNSW) is a State Owned Corporation, wholly owned by the NSW State Government, formed on 1 January 2015 by the merging of two previous entities, the State Water Corporation (State Water) and the Sydney Catchment Authority (SCA). WaterNSW provides bulk raw water to customers throughout NSW. Under its State Water licence, WaterNSW captures, stores and releases water into the State's rivers and channels. Customers can place water orders and extract the volume of water ordered. Under its SCA licence, WaterNSW manages and maintains efficient systems for supplying water to customers in the Sydney Catchment Area.

These roles and responsibilities, as well as WaterNSW's objectives, are prescribed by the *State Owned Corporations Act 1989* (NSW), the *Water NSW Act 2014* (NSW) (the Act) and the Operating Licences (licences) issued to WaterNSW under Section 11 of the Act.

We have completed the 2016-17 annual operational audit of WaterNSW's compliance with the obligations imposed on it by its operating licences. We do this by receiving and reviewing reports, undertaking and attending audit interviews with utility staff, and undertaking field verification to investigate how effectively the requirements of the licence are met in practice. At the completion of the audit we publish the audit report and report our findings in this Report to the Minister for Regional Water (the Minister).

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

1.1 Purpose and structure of this report

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

- ▼ This chapter (Chapter 1) explains the scope of the audit review and the process followed in undertaking the audit.
- ▼ Chapter 2 presents the audit findings and recommendations.
- ▼ Chapter 3 summarises the progress by WaterNSW 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 scopes.
- ▼ Appendix C provides the auditor's detailed audit report.
- ▼ Appendix D provides WaterNSW's annual statement of compliance.

1.2 Audit scope

This audit covers the period from 1 July 2016 to 30 June 2017.

The audit scope for this year included obligations for the WaterNSW (State Water) licence:

- ▼ Licence and licence authorisation (Part 1) – requirements to exercise any functions conferred on WaterNSW under this licence consistently with the relevant laws.
- ▼ Water quantity (Part 3) – requirements to process and deliver water orders promptly and efficiently. WaterNSW must also maintain an effective notification system on flow releases for its stakeholders and prepare a water balance report for each valley.
- ▼ Assets (Part 4) – requirements to develop and implement an Asset Management System (AMS). Under this Part, WaterNSW must also read each of its customer’s meters and carry out water monitoring functions as required by any agreement with the Minister or DPI Water.
- ▼ Customers (Part 5) – requirements to consult with valley-based customer service committees, and a Fish River Customer Council.
- ▼ Environmental management (Part 6) – requirements to develop and implement an Environmental Management System (EMS).

We did not audit clauses from Parts 2 (water quality), 7 (performance monitoring), 8 (end of term review), 9 (notices) or 10 (definitions and interpretation) this year, following the risk-based approach used in the auditing program.

The audit scope for this year included obligations for the WaterNSW (SCA) licence:

- ▼ Water quality (Part 2) – requirements to maintain and implement a Water Quality Management System.
- ▼ Water supply sufficiency (Part 3) – requirements to ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.
- ▼ Catchment (Part 4) – requirements to manage and protect the Catchment Area.
- ▼ Assets (Part 5) – requirements to develop and fully implement an Asset Management System.
- ▼ Environment (Part 7) – requirements to develop and fully implement an Environmental Management System.

We did not audit clauses from parts 1 (licence details), 6 (customers), 8 (performance monitoring), 9 (memoranda of understanding), 10 (end of term review), 11 (notices) or 12 (definitions and interpretations) this year, following the risk-based approach used in the auditing program.

We consulted with the Department of Primary Industries Water (DPI Water), the Environment Protection Authority (EPA) and the NSW Ministry of Health (NSW Health) and sought public submissions in determining the scope of the audit. The audit scopes are provided in Appendix B.

DPI Water was satisfied that WaterNSW (SCA) has met the conditions of its operating licence during 2016-17. DPI Water identified the following areas of interest¹ related to WaterNSW (State Water) which were included in the audit:

- ▼ advance notification of changes to flow release patterns not provided to DPI Water (considered in the audit of State Water licence clause 3.2.1).
- ▼ 2016-17 water balance report not submitted by the submission date (considered in the audit of State Water licence clause 3.3.1).
- ▼ Exclusion of DPI Water's representative in the Customer Service Committees by WaterNSW (considered in the audit of State Water licence clause 5.1.2).

The EPA did not raise any concerns.² The EPA commented that the Memorandum of Understanding (MoU) was effective and the involvement with WaterNSW was collaborative.

This year, NSW Health identified the following areas of interest³ related to WaterNSW (SCA) which were included in the audit:

- ▼ Concerns with implementation of water quality management system particularly incident management – oil spills and chemical hazards in the catchment area (considered in the audit of SCA licence clauses 2.1.1).
- ▼ Concerns with operation of infrastructure - inoperative aerator at Nepean Reservoir and failure of the biological monitor at Broughtons Pass (considered in the audit of SCA licence clause 2.1.2).

We sought submissions from the public on matters related to the licence prior to the audit interviews. We advertised for public submissions in the Sydney Morning Herald, Daily Telegraph, and Newcastle Herald on 3 May 2017 and The Land on 4 May 2017. We received one public submission from the NSW Irrigators' Council. The submission raised the following concerns:⁴

- ▼ Unclear roles and responsibilities for meter maintenance in the Bega/Bemboka system (considered in the audit of State Water licence clause 4.2.1).
- ▼ Need for greater clarity around determination of appropriate meter reading frequency, to enable appropriate implementation of water sharing plan obligations (considered in the audit of State Water licence clause 4.2.1).
- ▼ Lack of information and engagement by WaterNSW with its Customer Service Committees (considered in the audit of State Water licence clauses 5.1.1 and 5.1.3).

The NSW Irrigators' Council also raised some concerns that we considered are out of scope of this audit. Matters such as suggesting IPART review the Water Administration Ministerial Corporation (WAMC) price determination and pass on efficiency savings from the transfer of functions to irrigators, which could be considered in the next WAMC pricing review.

¹ Letter to IPART, Mr Frank Garofalow, Group Director Water Regulation, DPI Water, 23 August 2017.

² Email to IPART, Ms Alison Cochrane, Manager Executive Services, EPA, 25 August 2017.

³ Letter to IPART, Dr Kerry Chant PSM, Deputy Secretary Population and Public Health and Chief Health officer, NSW Health, 25th August 2017.

⁴ Letter to IPART, Ms Stefanie Schulte, Policy Manager, NSW Irrigators' Council, 19 May 2017.

1.3 The audit process

We monitor compliance with the licence through reporting requirements and a risk-based audit approach. 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 licence at least once during the 5-year term of the licence.

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

We engaged Cobbitty Consulting Pty Ltd (Cobbitty Consulting), in partnership with Water Futures Pty Ltd (Water Futures), to undertake the 2016-17 audit of WaterNSW. The auditor was required to undertake the following tasks:

1. Receive stakeholder submissions and comments for inclusion in the audit scope.
2. Prepare an information request (questionnaire), setting out all information and evidence requirements, at least two weeks prior to the commencement of audit interviews.
3. Review reports and documents provided by WaterNSW in response to the questionnaire.
4. Conduct face-to-face interviews with WaterNSW staff at its offices.
5. Conduct field verification and assess the implementation of WaterNSW's systems and procedures.
6. Assess the level of compliance WaterNSW achieved against each of the identified obligations of the licence (as per our risk-based audit scope), provide supporting evidence for this assessment and reporting on the level of compliance according to our compliance grades (Appendix A).
7. Assess and report on progress by WaterNSW in addressing any comments made by the relevant Minister and/or recommendations endorsed by us following previous audits, providing supporting evidence for these assessments.
8. Provide drafts of the audit report to us and address comments from WaterNSW and us regarding draft audit findings.
9. Prepare a final report outlining audit findings.

Our auditor adopted an audit methodology that was consistent with ISO 19011:2011 *Guidelines for Auditing Management Systems*. This guideline sets 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.

Where appropriate, the auditors also considered ASAE 3100 (2008) *Compliance Engagements, Auditing and Assurance Standard AUS 110 Assurance Engagements other than Audits or Reviews of Historical Financial Information*, and International Standard on Quality Control ISQC 2009.

Our auditor also carried out the audit according to our *Audit Guideline for Public Water Utilities May 2016*.⁵ Under this guideline, the auditor can 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 the auditor suggested opportunities for improvement, we take a different approach. WaterNSW can decide to implement an opportunity for improvement, 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 the auditor's suggested opportunities for improvement.

We held a project start up meeting with the auditor on 26 July 2017, to agree on the project milestones, audit timing, and outline our expectations. We also held an audit inception meeting with WaterNSW and the auditor on the first day of the audit interviews, on 25 September 2017. At this meeting, we agreed on the expectations and protocols for the conduct of the audit. All parties adhered to the agreed protocols throughout the audit.

Our auditor conducted audit interviews from 25 to 29 September 2017 at WaterNSW's office in Parramatta. From 26 to 27 September 2017, the auditor also undertook a site visit to the following locations:

- ▼ Nepean Dam and catchment
- ▼ Tombullen Storage
- ▼ Yanco Weir
- ▼ Gogeldrie Weir
- ▼ Berembed Weir
- ▼ Beavers Creek Regulator (and Fish Passage).

Our auditor assessed WaterNSW's compliance with the relevant requirements of the licence according to the compliance grades outlined in Appendix A.

⁵ Available on our website (www.ipart.nsw.gov.au).

2 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 2016-17 audit is the fourth audit of the State Water licence and the fifth audit of the SCA licence. Both licences are at the last year of their audit cycle because a new combined licence is effective from 1 July 2017.

Each section includes a table providing a comparison of WaterNSW's audit performance during its licence period. We abbreviate the compliance grades 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, if identified, any recommendations and opportunities for improvement.

2.1 WaterNSW's compliance with its State Water licence

Licence and Licence authorisation

Our auditor assigned WaterNSW Full Compliance for clause 1.4.2. We agree with this audit grade.

Part 1 of the licence, Licence and Licence authorisation, outlines the obligation for WaterNSW to exercise any functions conferred on it under this licence consistently with the *Water Management Act 2000* (NSW), the *Water Act 1912* (NSW), the *New South Wales – Queensland Border Rivers Act 1947* (NSW), any other relevant law and any relevant Water Management Plan. This is the first time we audited this part of the licence.

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

Clause	Requirement	Compliance grading			
		2013-14	2014-15	2015-16	2016-17
1	Licence and Licence authorisation				
1.4.2	Conferred functions	-	-	-	Full

Full compliance (clause 1.4.2) with exercising any functions conferred on it

Our auditor assigned WaterNSW Full Compliance for clause 1.4.2, which required WaterNSW to exercise any functions conferred on it consistently with the *Water Management Act 2000* (NSW), the *Water Act 1912* (NSW), the *New South Wales – Queensland Border Rivers Act 1947* (NSW), any other relevant law and any relevant Water Management Plan.

We agree with this audit grade, but note that the Water NSW (State Water) Operating Licence 2013-2018 only requires WaterNSW to exercise the conferred functions consistently with relevant legislation, and procedures and guidelines prepared by the Department of Industry. The relevant licence clause does not specify any performance level or outcomes in exercising the conferred functions, which limits our audit scope and its effectiveness.

Our auditor confirmed that those functions were exercised consistently with the relevant legislation, and procedures and guidelines prepared by the Department of Industry.

Our auditor audited a sample of conferred functions in the operating licence, which included two compliance functions and three metering functions. These conferred functions were conferred to WaterNSW on 1 July 2016 in the amended WaterNSW operating licences, with the exception of one metering function which was conferred to WaterNSW on 1 July 2013. The auditor found that WaterNSW demonstrated that it has exercised each of these conferred functions consistently with the relevant legislation and, where relevant, procedures and guidelines.

We sought and received comments from other agencies, but did not investigate or assess the operations of, other agencies such as the former DPI Water. It is outside of our audit scope to assess the adequacy of DPI Water’s performance – our audit is required to assess WaterNSW’s compliance with its operating licences only.

We make no recommendations for WaterNSW in relation to clause 1.4.2, based on the audit. However, our auditor identified two opportunities of improvement for WaterNSW to continue to integrate staff and procedures associated with its conferred functions through the implementation of an effective change management process, and to identify and implement measures to assess the effectiveness with which it exercises its conferred functions.

We note the findings from Ken Matthews AO in his Interim Report on his independent investigation into NSW water management and compliance.⁶ The Interim Report found overall that rural water access compliance and enforcement arrangements in NSW have been ineffectual and require significant structural reform. Ken Matthews’ Final Report assessed the Government’s progress to date in implementing the Interim Report’s

⁶ NSW Government, *Ken Matthews AO Independent investigation into NSW water management and compliance – Interim Report*, 8 September 2017.

recommendations and provided advice on how to implement further changes.⁷ The NSW Ombudsman tabled a special report to the Parliament on 15 November 2017.⁸ The report identified problems with compliance and enforcement roles.

Our audit found no evidence to dispute the findings from Ken Matthews' Interim Report or the NSW Ombudsman report, which both indicate mismanagement of water compliance and enforcement in NSW.

The findings in Ken Matthews' Interim Report in relation to the performance of the compliance and enforcement system relate to events that occurred prior to 2016-17, which is outside of our audit period. Prior to 1 July 2016, the majority of conferred compliance functions were undertaken by DPI Water, not WaterNSW whom we are auditing.

The Interim Report also made a number of recommendations in the form of a Ministerial package to address the findings including transferring the compliance and enforcement functions to a new independent regulator. The package included a recommendation to consolidate all compliance and enforcement functions between WaterNSW and DPI Water.

On 30 November 2017, the Natural Resource Access Regulator Bill 2017 was assented by the Governor of NSW. In the second reading speech, as the Minister for Regional Water you stated that the NSW Government proposes to move compliance functions from WaterNSW to the Natural Resources Access Regulator. After moving the conferred compliance and enforcement functions from WaterNSW to the Natural Resources Access Regulator, there might remain up to seven other categories of conferred functions in the Water NSW Operating Licence 2017-2022.

In light of findings from the recent Ken Matthews' Interim Report and the NSW Ombudsman's report, and the limitations found in undertaking our audit, we consider that there are shortcomings with current obligations imposed on WaterNSW with regard to the conferred functions. Unlike the Water NSW (State Water) Operating Licence 2013-2018, the conferred functions in Schedule A of the current Water NSW Operating Licence 2017-2022 are not subject to 'terms and conditions' which regulate the exercise of these functions. We therefore propose the following recommendations to the Minister.

Recommendations to the Minister

- 1 For any functions that remain conferred in the operating licence, the Minister revises the operating licence to include outcomes based performance measures to better define the standards to which WaterNSW should undertake these functions.
- 2 The Minister establishes (or requests the new regulator to establish) outcomes based performance measures in relation to the compliance and enforcement functions that are moved from WaterNSW to the Natural Resources Access Regulator.

⁷ NSW Government, *Ken Matthews AO Independent investigation into NSW water management and compliance – Final Report*, 24 November 2017.

⁸ NSW Ombudsman, *Investigation into water compliance and enforcement 2007-17*, November 2017.

Water quantity

Our auditor assigned WaterNSW Full Compliance for all of the six audited water quantity clauses in its operating licence. We agree with these audit grades.

Part 3 of the licence, Water quantity, outlines the obligation for WaterNSW to deliver water to customers, provide advance notification of changes to flow release patterns and prepare water balance reports. Under the risk-based auditing framework, we consider that this part of the licence poses a moderate to high risk with respect to consequence of non-compliance.

Table 2.2 Compliance with Part 3 of the State Water licence – Water quantity

Clause	Requirement	Compliance grading			
		2013-14 ^b	2014-15 ^b	2015-16 ^b	2016-17
3	Water quantity				
3.1.1	Processing water orders	Full	Full	Full	Full
3.1.2	Managing water orders and water delivery	Full	Full	Full	Full
3.1.3	Maintaining a Water Allocation Account for each licence issued	Full ^a	Full ^a	-	Full
3.1.4	Conserving water and minimising water losses	Full	Full	Full	Full
3.2.1	Maintaining an advance notification system	High	Full	Full	Full
3.3.1	Preparing water balance reports	Full	-	Full	Full

^a IPART, *WaterNSW Operational Audit 2014-15 – Report to the Minister – Compliance Report*, March 2016.

^b IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 3.1.1) with processing water orders

Our auditor assigned WaterNSW Full Compliance for clause 3.1.1, which required WaterNSW to take all reasonable steps to process all Water Orders promptly and efficiently. We agree with this audit grade.

Our auditor noted that WaterNSW demonstrated that it had in place, and implemented, a Water Ordering Procedure which provided a reasonable basis for ensuring that Water Orders were processed promptly and efficiently. The auditor found that customers were able to place orders online directly into WaterNSW's Water Account System, and that these were processed efficiently with in-built checks to minimise any errors. For other orders placed via the WaterNSW's customer help desk, the auditor noted that WaterNSW had clear guidelines in the Water Ordering Procedure for its officers to manage these orders.

Our auditor identified one opportunity for improvement for WaterNSW to finalise the review of the Water Ordering Procedure which was also under review as at the 2015-16 operational audit. Further details of the opportunities for improvement are available in the audit report in Appendix C.

Full compliance (clause 3.1.2) with managing water orders and water delivery

Our auditor assigned WaterNSW Full Compliance for clause 3.1.2, which required WaterNSW to take all reasonable steps to manage Water Orders so as to ensure the timely delivery of water to its Customers. We agree with this audit grade.

Our auditor noted WaterNSW demonstrated that it had taken reasonable steps to ensure the timely delivery of water to its customers, through the implementation of its Water Ordering Procedure and use of its water accounting management tool, the Computer Aided Improved River Operations. This tool can determine the amount of water to be released from storage to fulfil all water orders and takes into account evaporation and runoff from tributaries.

WaterNSW measured timeliness of delivery by the number of complaints received about orders outside of +1/-1 day of scheduled delivery. Based on the number of complaints received, the auditor noted WaterNSW ensured timely delivery of water for almost 100 percent of water orders.

Full compliance (clause 3.1.3) with maintaining the Water Allocation Accounts

Our auditor assigned WaterNSW Full Compliance for clause 3.1.3, which required WaterNSW to maintain a Water Allocation Account for each access licence under the *Water Management Act 2000* (NSW) and each licence issued under the *Water Act 1912* (NSW) held by a Customer. We agree with this audit grade.

Our auditor noted that WaterNSW effectively manages water accounts for all regulated, groundwater and unregulated sources in its Water Accounting System. WaterNSW had procedures in place to monitor and update the Water Allocation Accounts. The Water Allocation Account includes recording of water credits, water debits and other transactions. Customers who have registered can view their accounts online through the WaterNSW online water ordering system.

Full compliance (clause 3.1.4) with conserving water and minimising water losses

Our auditor assigned WaterNSW Full Compliance for clause 3.1.4, which required WaterNSW to take all reasonable steps to conserve water and minimise water losses that resulted from undertaking its operations under this Licence. We agree with this audit grade.

Our auditor noted examples of measures used by WaterNSW to conserve water and minimise losses. WaterNSW measured its performance of its river operations against a Water Delivery Operational Surplus Performance Indicator. It had a target of less than 5% operational surplus. During 2016-17, WaterNSW limited the release of operational surpluses to 3.46% across the state, demonstrating that it had taken reasonable steps to conserve water. WaterNSW secured funding under the State Infrastructure Strategy to assess alternative arrangements to reduce transition losses in valleys where high losses are recorded. It had also implemented an operational protocol for releases of water from Pindari Dam to conserve water and minimise losses. WaterNSW implemented block release strategies for the delivery of small volumes of water to minimise transmission losses.

Full compliance (clause 3.2.1) with maintaining an advance notification system

Our auditor assigned WaterNSW Full Compliance for clause 3.2.1, which required WaterNSW to maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes. We agree with this audit grade.

Our auditor noted that WaterNSW continued to maintain an automated Early Warning Network notification system to improve notification of dam and supply activities to the public. Through WaterNSW's website, interested parties can register to receive notification on their nominated dam(s) and the type of notifications required. There was a significant increase in subscriptions during late August and September 2016, a period during which there was extensive flooding. Notifications issued in the last three months are available on WaterNSW's Early Warning Network webpage.

During stakeholder consultation prior to the audit, DPI Water raised a concern about the lack of advance notification of changes to flow release patterns.⁹ The auditor noted that this concern appeared to have resulted from a misunderstanding within DPI Water of WaterNSW's requirements under the operating licence and those under Works Approvals. WaterNSW provided an extract from its Early Warning Network subscription list which identifies 19 DPI Water staff members that had registered for this service. This indicated that DPI Water would have received notification for which its staff members have subscribed during the audit period.

Full compliance (clause 3.3.1) with preparing water balance reports

Our auditor assigned WaterNSW Full Compliance for clause 3.3.1, which required WaterNSW to prepare water balance reports for each of the Valleys in which it operates, in accordance with the Reporting Manual. The Reporting Manual requires WaterNSW to complete final reports by 1 December following the end of the financial year and make the water balance reports available on its website and at its offices. We agree with this audit grade.

Our auditor noted that the water balance reports for 2015-16 were available on the WaterNSW website and included the required information according to the reporting manual (eg, an annual account of water delivery, including sources and distribution of water, breakdown by each major category of water user, the percentage of time that planned environmental water delivery requirements were met and water that is unaccounted water). The 2016-17 water balance reports were not available during the audit and are not required to be published until 1 December 2017.

In its submission to us, DPI Water noted that it has not yet received water balance information for 2016-17.¹⁰ We consider that since the 2016-17 water balance reports were not required to be available at the time of the DPI Water's submission or during the audit period, and the 2015-16 water balance reports are available on WaterNSW's website, WaterNSW has met its obligation in accordance with this licence clause. We note that the 2016-17 water balance reports were available on WaterNSW's website by 1 December 2017 as required.¹¹

⁹ Letter to IPART, Mr Frank Garofalow, Group Director Water Regulation, DPI Water, 23 August 2017.

¹⁰ Ibid

¹¹ Water balance, <http://www.waternsw.com.au/customer-service/news/balance>, accessed 28 November 2017.

Assets

Our auditor assigned WaterNSW Full Compliance for clauses 4.1.1, 4.1.2, 4.1.4, High Compliance for clause 4.2.1 and No Requirement for clause 4.2.2. We agree with these audit grades.

Part 4 of the licence, Assets, outlines the obligation for WaterNSW to develop, maintain and certify an Asset Management System and undertake water metering and monitoring functions. Under the risk-based auditing framework, we consider that this part of the licence poses a moderate to high risk with respect to consequence of non-compliance.

Table 2.3 Compliance with Part 4 of the State Water licence – Assets

Clause	Requirement	Compliance grading			
		2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
4	Assets				
4.1.1	Developing an Asset Management System by 30 June 2018	-	-	-	Full
4.1.2	Certifying the Asset Management System by 30 June 2018	-	-	-	Full
4.1.4	Implementing programs to manage risks to assets	Full	Full	Full	Full
4.2.1	Reading customer meters	Full	-	Full	High
4.2.2	Metering and Monitoring on behalf of DPI Water or the Minister	Full	-	Full	No Requirement

^a IPART, *WaterNSW Operational Audit 2015-16– Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 4.1.1) with developing an Asset Management System

Our auditor assigned Water NSW Full Compliance for clause 4.1.1, which required Water NSW, by 30 June 2018 to develop a Management System that is consistent with the *International Standard ISO 55001:2013 Asset Management – Management systems – Requirements*, or another asset management standard agreed to by IPART. We agree with this audit grade.

Our auditor noted that WaterNSW's asset management system was certified against the *International Standard ISO 55001:2014 Asset management – Management systems – Requirement* on 10 January 2017. On that basis, WaterNSW had developed an asset management system by the required date of 30 June 2018.

We note that the licence clause specified year 2013 in the international standard whereas WaterNSW had been certified to the 2014 standard. In 2013, when we drafted this licence condition as part of the operating licence review, the *ISO 55000* suite of standards was in development but was not released until 2014. We consider the 2014 standard the appropriate standard for WaterNSW to achieve.

Full compliance (clause 4.1.2) with certifying the Asset Management System

Our auditor assigned WaterNSW Full Compliance for clause 4.1.2, which required WaterNSW, by 30 June 2018, to certify its asset management system by an appropriate qualified third party to be consistent with the international standard *ISO 55001:2013* and once the Asset Management System is certified, the certification is maintained during the remaining term of this Licence. We agree with this audit grade.

Our auditor noted WaterNSW's asset management system was certified as being consistent with *ISO 55001:2014* on 10 January 2017 before the required date 30 June 2018. WaterNSW's Certificate of Registration was issued by BSI Group, which holds the required accreditation. WaterNSW also demonstrated that it had continued to implement the Asset Management System throughout the audit period through implementation of an effective training program, development of Maintenance Work Management process documents, implementation of a Change Management Process, undertaking Management Reviews of the Asset Management System, and implementing a program of internal and external audits.

We explain the difference in the year of the international standard specified in the licence clause and the year of the actual international standard in clause 4.1.1 above.

Our auditor identified an opportunity for improvement for WaterNSW to ensure that the record of each management review of the Asset Management System includes the date of the review, details of management representatives that had participated in undertaking the review and the date of the next planned review.

Full compliance (clause 4.1.4) with implementing programs to manage risks to assets

Our auditor assigned WaterNSW Full Compliance for clause 4.1.4, which required Water NSW to maintain programs to manage risks to its assets and maintain the appropriate levels of service of those assets, and ensure that all its activities are carried out in accordance with those programs, until the Asset Management System has been developed in accordance with clause 4.1.1 and certified in accordance with clause 4.1.2. We agree with this audit grade.

Our auditor noted that WaterNSW demonstrated that it continued to maintain and implement programs to manage risks to its rural (former State Water) assets and to maintain the appropriate levels of service of those assets. Risks to assets and levels of service were managed through a rigorous condition and reliability audit program, supported by the implementation of effective operation and maintenance practices. The auditor visited a number of assets in the Murrumbidgee Valley as part of the audit. The auditor noted the site operators demonstrated a high level of 'ownership' and pride in their work, and had clear understanding of their roles and responsibilities in asset management.

High compliance (clause 4.2.1) with reading customers' meters

Our auditor assigned WaterNSW High Compliance for clause 4.2.1, which required WaterNSW to read each of its customer's meters. We agree with this audit grade.

The auditor assessed compliance of WaterNSW's water meter reading obligations for three valleys, the Macquarie, Murrumbidgee and Barwon-Darling valleys.

The auditor found that WaterNSW had read the majority but not all of its customer's meters during the audit period. Assessment of data for the sample of valleys revealed that, on average, 90% of active meters had been read across all valleys, including regulated, groundwater and unregulated river sources. The auditor also found that the frequency of meter readings was less than the frequency outlined in its Meter Reading Procedure but acknowledged that the reduced frequency was at least in part due to flooding (and thereby limiting access) that occurred during the first half of the audit period.

On our recommendation, as the Minister for Regional Water, you amended the water metering and monitoring clauses for the Water NSW Operating Licence 2017-2022. The new metering clause requires WaterNSW to “determine the volume of water Extracted by, or Supplied to, each of its Customers, at least annually, for the purpose of accurate account management, billing and reporting.”

This new clause specifies that WaterNSW must determine the volume of water extracted, with the desired outcomes of better account management, billing and reporting, rather than only the process of reading meters. This approach in the new licence is more flexible and better reflects new technology and other circumstances such as remote collection of metered data.

With this new clause in mind, we make one recommendation based on the auditor’s recommendation. The auditor also identified two opportunities for improvement.

Recommendation to WaterNSW

- 1 By 30 June 2018, WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. (State Water licence clause 4.2.1)

The opportunities for improvement for WaterNSW include updating its Meter Reading Procedure to reflect the change in WaterNSW’s responsibilities with respect to water take measurement, and providing information to affected customers outlining the change in responsibilities and the action subsequently taken by WaterNSW.

We received a submission from the New South Wales Irrigators’ Council (NSWIC) about its members’ concern for the lack of clarity around the responsibilities for metering and repairs in the Bega/Bemboka system. Our auditor noted that WaterNSW was in the process of undertaking repairs for a number of telemetry linked meters installed by DPI Water which are now the responsibility of WaterNSW after metering functions were conferred to it on 1 July 2016. The auditor noted that, during the audit, these meters were functioning and recording.

We consider NSWIC’s request for greater clarity around determination of appropriate meter reading frequency should be sufficiently addressed via the new licence clause, which specified the meter reading frequency of at least once annually. The opportunities for improvement, if implemented, should also provide more clarity on WaterNSW’s responsibilities.

No requirement with (clause 4.2.2) with metering and monitoring in agreement with the Minister or DPI Water

Our auditor assigned WaterNSW No Requirement for clause 4.2.2, which required WaterNSW to read Metering Equipment, determine water extraction and carry out any other specified water monitoring functions at the locations and within the timeframes set out in any agreement with the Minister or DPI Water. We agree with this audit grade.

There was no requirement for WaterNSW to meet this clause during the audit period because DPI Water’s metering and monitoring functions were transferred to WaterNSW

from 1 July 2016 under the Deed of Business Transfer, and WaterNSW did not perform these functions as a service provider to DPI Water anymore.

Without other agreements that specified WaterNSW's requirements to undertake such functions at certain locations and within certain timeframes, we consider that there was no requirement for WaterNSW to meet. Prior to this audit period, there were Service Level Agreements between WaterNSW and DPI Water in respect of meter reading functions for unregulated river and groundwater sources. The auditor noted that these agreements no longer had effect following the transfer of responsibilities under the Deed of Business Transfer.

Customers

Our auditor assigned WaterNSW Full Compliance for all of the five audited Customers clauses. We disagreed with the auditor on the grade for one clause. We have assigned WaterNSW Full Compliance for four of the audited Customers clauses, and High Compliance for one of the audited Customers clauses (clause 5.1.2).

Part 5 of the licence, Customers, outlines the obligation for WaterNSW to consult with its valley-based customer service committees (CSCs) and a Fish River Customer Council. Under the risk-based auditing framework, we consider that this part of the licence poses a low to moderate risk with respect to consequence of non-compliance.

Table 2.4 Compliance with Part 5 of the State Water licence – Customers

Clause	Requirement	Compliance grading			
		2013-14	2014-15 ^a	2015-16 ^b	2016-17
5	Customers				
5.1.1	Consulting with valley-based customer service committees	-	-	Full	Full
5.1.2	Inviting members of the customer service committees	-	-	Full	High
5.1.3	Providing the customer service committees with information	-	-	Full	Full
5.3.1	Consulting with Fish River Customer Council	-	Full	-	Full
5.3.3	Providing the Fish River Customer Council with information	-	Full	-	Full

^a IPART, *WaterNSW Operational Audit 2014-15 – Report to the Minister – Compliance Report*, March 2016.

^b IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 5.1.1) with consulting with valley-based customer service committees

Our auditor assigned WaterNSW Full Compliance for clause 5.1.1, which required WaterNSW to regularly consult with Valley-based customer service committees (CSCs) to enable Customer involvement in issues relevant to the performance of WaterNSW's obligations to Customers under this Licence or the customer service charter referred to in clause 5.2 of this Licence. We agree with this audit grade.

Our auditor noted that WaterNSW demonstrated that it regularly consulted with the Valley-based CSCs during the audit period on issues relevant to the performance of WaterNSW's obligations to customers. There were eight CSCs and each CSC met at least twice during the audit period as required under the CSC Terms of Reference. The auditor also noted that based on the minutes of the meetings, WaterNSW had demonstrated it had discussed an extensive range of relevant operational matters related to its obligations under the Licence and the Customer Service Charter.

In its submission to us, NSWIC raised concerns WaterNSW's engagement with the CSCs regarding the timeliness and the level of detail of the information provided on asset management, capital expenditure and the tariff structures. The auditor noted that, after reviewing the meeting minutes, WaterNSW did inform and consult with the CSCs in relation to both the Operating Licence review and Pricing Determination referenced in the NSWIC's comments. The timing available for consultation, which was also identified as an issue, is likely to have been limited by review process timelines rather than WaterNSW's actions.

High Compliance (clause 5.1.2) with customer service committee memberships

Our auditor assigned WaterNSW Full Compliance for clause 5.1.2, which required WaterNSW to invite at least one representative from each of the groups or bodies to be a member of that customer service committee (CSC), including Customers which are Unregulated River water users, Customers which are groundwater users, the NSW environmental water entitlement holder, the Commonwealth Environmental Water Holder, Local Land Services and DPI Water. We disagree with this audit grade and have assigned a High Compliance grade.

In 2016-17, clause 5.1.2 of the licence relevantly provided:

"5.1.2 For each CSC, Water NSW must invite at least 1 representative from each of the groups or bodies identified in paragraphs (a) to (e) below to be a member of that CSC:

...

- e) Local Land Services; **and**
- f) DPI Water."** (our emphasis)

The words in bold were inserted into clause 5.1.2 as part of amendments made to the licence on 1 July 2016 but the reference to "paragraphs (a) to (e)" in the opening words of the clause was not updated. In our view, from 1 July 2016, clause 5.1.2 of the licence required WaterNSW to invite at least one representative from DPI Water to be a member of each CSC, notwithstanding this drafting oversight.

During stakeholder consultation prior to the audit, DPI Water raised a concern that WaterNSW had informed them that a representative is no longer required on the CSCs during the audit period.

The auditor found that WaterNSW invited DPI Water to meetings held during the first six months only but did not issue it with an invitation to DPI Water for the remaining CSC meetings. While WaterNSW did not invite DPI Water to all CSC meetings, the auditor found WaterNSW consulted with DPI Water through an alternative forum during the

second six-months of the audit period. We consider that WaterNSW did not fully meet the licence requirement to invite DPI Water to the CSCs the audit period.

The current Water NSW Operating Licence 2017-2022 replaced CSCs with Customer Advisory Groups, where DPI Water is not listed as a member as DPI Water is not a customer of WaterNSW. In our review of the operating licences, we considered that consultation between WaterNSW and DPI Water can occur without specifying the type and frequency of meetings. The current licence requires WaterNSW to agree in writing with DPI Water (now within the new Division of Crown Lands and Water) the roles and responsibilities regarding the conduct of conferred functions. This approach better reflects the customer engagement role for WaterNSW to discuss matters relevant to its operations.

We make no recommendation for WaterNSW to rectify this issue despite a less than Full Compliance. This is because there is no obligation to invite DPI Water to the customer advisory groups in the current Water NSW Operating Licence 2017-2022. However, WaterNSW is required to have a roles and responsibilities agreement with DPI Water.

Full compliance (clause 5.1.3) with providing the customer service committees with adequate information

Our auditor assigned WaterNSW Full Compliance for clause 5.1.3, which required WaterNSW to provide the customer service committees (CSCs) with adequate information within its possession or under its control to enable the CSC to discharge the tasks assigned to it, other than information or documents over which WaterNSW or another person claims confidentiality or legal professional privilege and subject to any limitations on disclosure of the information at law. We agree with this audit grade.

The auditor found that the WaterNSW provided a range of information to enable the CSCs to discharge the tasks assigned to it. Examples of information provided include Water Systems Operations Report, highlights from its customer research, regulatory update in respect of Water Charge Infrastructure Rules, pricing submission update, financial report and quarterly compliance reports. There were appropriate arrangements in place for confidentiality and privileged information.

In its submission, the NSWIC raised concern about the level of information provided to the CSCs on business cases and the costs of WaterNSW projects. The auditor noted that information which can be provided to the CSCs is generally limited to publicly available information or other non-public information at the discretion of the Manager Operations Assurance and Risk. As the provisions of this clause allow for WaterNSW to not provide confidential information, we are satisfied that WaterNSW has met the requirement. Additionally, there are new requirements in Water NSW Operating Licence 2017-2022 with respect to WaterNSW consulting with its Customer Advisory Groups.

Full compliance (clause 5.3.1) with consulting with Fish River Customer Council

Our auditor assigned WaterNSW Full Compliance for clause 5.3.1, which required WaterNSW to regularly consult with a Fish River Customer Council to enable Fish River Water Scheme Customer involvement in issues relevant to the performance of WaterNSW in its obligations to Fish River Water Scheme Customers under this Licence and any Fish River Customer Contract. We agree with this audit grade.

Our auditor noted that WaterNSW had met four times with the Fish River Customer Council during the audit period, which demonstrated that it had regularly consulted with the council. The auditor noted that from the meeting agendas, business papers and meeting minutes, WaterNSW consulted on a range of issues, such as major capital upgrade work, pricing determinations and planned shutdowns, to enable Fish River Water Scheme Customers involvement in issues relevant to the performance of WaterNSW.

Full compliance (clause 5.3.3) with providing the Fish River Customer Council adequate information

Our auditor assigned Water NSW Full Compliance for clause 5.3.3, which required WaterNSW to provide the Fish River Customer Council with adequate information within its possession or under its control so as to enable the Fish River Customer Council to discharge the tasks assigned to it, other than information or documents over which WaterNSW or another person claims confidentiality or privilege and subject to any limitations on disclosure of the information at law. We agree with this audit grade.

Our auditor noted that WaterNSW provided a range of information to enable the Fish River Customer Council to discharge the tasks assigned to it. An example of information provided includes an Operations Report which addressed rainfall and inflows, storage level in Oberon Dam, weekly water balance, water quality, outages, climate outlook and storage projections. The auditor also noted a request for information from a council member prior to the meeting had been addressed at the meeting. There were appropriate arrangements in place in respect of confidentiality and privileged information.

Environmental Management

Our auditor assigned WaterNSW Full Compliance for all three audited Environmental Management clauses. We agree with these audit grades.

Part 6 of the licence, Environmental Management, outlines the obligation for WaterNSW to develop, maintain and certify an Environmental Management System by 30 June 2018, and maintain programs to manage risks to the environment in the meantime.

Table 2.5 Compliance with Part 6 of the State Water licence – Environmental management

Clause	Requirement	Compliance grading			
		2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
6	Environmental management				
6.1.1	Developing an Environmental Management System by 30 June 2018	-	-	-	Full
6.1.2	Certifying the Environmental Management System by 30 June 2018	-	-	-	Full
6.1.4	Implementing programs to manage risks to the environment	Full	-	Full	Full

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 6.1.1) with developing an Environmental Management System

Our auditor assigned WaterNSW Full Compliance for clause 6.1.1, which required WaterNSW, by 30 June 2018, to develop a Management System that is consistent with the *Australian Standard AS/NZS ISO 14001:2004 Environmental Management Systems - Requirements with guidance for use*. We agree with this audit grade.

Our auditor noted that WaterNSW has an environmental management system that was certified against the *International Standard ISO 14001:2004* on 16 January 2017. On that basis, WaterNSW had developed an environmental management system by the required date of 30 June 2018.

We note that the licence clause specified the Australian standard whereas WaterNSW were certified to the international standard. As the Australian standard and the international standard were identical for this specific standard, we consider WaterNSW has achieved the required appropriate standard.

Full compliance (clause 6.1.2) with certifying the Environmental Management System

Our auditor assigned WaterNSW Full Compliance for clause 6.1.2, which required WaterNSW, by 30 June 2018, to certify its Environment Management system by an appropriate qualified third party to be consistent with the *Australian standard AS/NZS ISO 14001:2004* and once the Environmental Management System is certified, the certification is maintained during the remaining term of this Licence. We agree with this audit grade.

Our auditor noted WaterNSW's Environmental Management System was certified as being consistent with international standard *ISO 14001:2004* on 16 January 2017 before the required date 30 June 2018. WaterNSW's Certificate of Registration was issued by BSI Group, which holds the required accreditation. We note that the licence clause specified the Australian standard whereas WaterNSW were certified to the international standard. As the Australian standard and the international standard were identical for this specific standard, we consider WaterNSW has achieved the required appropriate standard.

WaterNSW also demonstrated that it continued to implement the Environment Management System throughout the audit period through implementation of an effective training program, and implementing a program of internal and external audits.

Full compliance (clause 6.1.4) with implementing programs to manage risks to the environment

Our auditor assigned WaterNSW Full Compliance for clause 6.1.4, which required WaterNSW to maintain programs to manage risks to the environment and ensure that all its activities are carried out in accordance with those programs, until the Environmental Management System has been developed in accordance with clause 6.1.1 and certified in accordance with clause 6.1.2. We agree with this audit grade.

Our auditor noted WaterNSW demonstrated that it continued to maintain and implement programs to manage risks to the environment supported by the implementation of the Environmental Management System.

2.2 WaterNSW's compliance with its SCA licence

Water Quality

Our auditor assigned WaterNSW Full Compliance for clause 2.1.1 and High Compliance for clause 2.1.2. We agree with these audit grades.

Part 2 of the licence, Water Quality, outlines the obligation for WaterNSW to maintain and fully implement a Water Quality Management System (WQMS) that is consistent with the Australian Drinking Water Guidelines (ADWG), and any amendments to the Guidelines made by NSW Health. All WaterNSW's relevant activities must be carried out in accordance with the WQMS and to the satisfaction of NSW Health. Under the risk-based auditing framework, we consider that this part of the licence poses a high risk with respect to consequence of non-compliance.

Table 2.6 Compliance with Part 2 of the SCA licence – Water Quality

Clause	Requirement	Compliance grading				
		2012-13 ^a	2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
2	Water Quality					
2.1.1	Maintaining a WQMS	High	High	High	High	Full
2.1.2	Implementing the WQMS	High	High	Full	Full	High

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 2.1.1) with maintaining a WQMS

Our auditor assigned WaterNSW Full Compliance for clause 2.1.1, which required WaterNSW to maintain a WQMS consistent with the ADWG and any amendments made to the Guidelines by NSW Health. We agree with this audit grade.

The WQMS is the principal document that describes WaterNSW's approach to manage water quality in a manner that is consistent with the framework prescribed by the ADWG. It is supported by a number of documents including the Water Monitoring Program and Water Quality Incident Response Plan (the Plan). The Plan was updated and responsibilities clarified during the audit period. The Plan was drafted by May 2017 and was amended in June 2017 (and July 2017) in response to the discovery that transformer oils had leaked into the catchment. The auditor noted that as of the date of the audit, NSW Health were yet to provide final feedback on the Plan, however, it had been discussed at a Strategic Liaison Group meeting with NSW Health.

The auditor found that in response to NSW Health's concerns about incident management,¹² WaterNSW added a section to its Water Quality Incident Response Plan to better manage and respond to spills in the catchment, particularly where they may be uncertainties. This includes notifying NSW Health and the customer early in the response process. WaterNSW is also working with the EPA to look at what chemicals are stored in the catchment that could pose a risk to water quality.

¹² Letter to IPART, Dr Kerry Chant PSM, Deputy Secretary Population and Public Health and Chief Health officer, NSW Health, 25th August 2017.

The auditor noted there is clear and credible accountability for water quality management. The senior officer with overall accountability is supported by a Water Quality Systems Officer and Water Quality Advisers.

Our auditor identified three opportunities for improvement:

- ▼ WaterNSW could move further towards best practice (rather than routine) monitoring methods for protozoan parasites in source waters.
- ▼ WaterNSW could consider ways to formalise a workforce and succession planning program.
- ▼ WaterNSW could undertake more monitoring, research and management interventions to fully understand the sources of bulk natural organic matter within its water sources, the fate and transport of bulk NOM through waterways and reservoirs, and the way that interventions can limit its export, transport and residence time.

Further details of the opportunities for improvement are available in the audit report in Appendix C.

High compliance (clause 2.1.2) with ensuring the WQMS is fully implemented

Our auditor assigned WaterNSW High Compliance for clause 2.1.2, which required WaterNSW to ensure the WQMS is fully implemented and that all relevant activities are carried out in accordance with the System. We agree with this audit grade.

Our auditor noted that most of the 12 elements documented in the WQMS were being implemented, including monitoring, incident management, communication and catchment management. There is a shortfall in Element 3 of the ADWG (ensuring preventative measures and multiple barriers are in place) due to the absence of a contingency plan or replacement for the faulty mixer at Nepean Reservoir. The mixer, in this case a compressed air diffuser, has not been working at the Nepean Reservoir since November 2016. As of the day of the audit, the asset had not been repaired nor was there any standby asset or rapid replacement plan in place.

During stakeholder consultation prior to the audit, NSW Health raised a concern about the inoperative aerator at the Nepean Reservoir. WaterNSW has identified 'artificial destratification' as a preventive measure as part of its multiple barrier drinking water supply system. The mixer is an important operational asset that prevents stratification and improves dissolved oxygen penetration within the reservoir. Without this, WaterNSW is unable to manage water quality by destratifying the storage if required.

NSW Health also raised a concern about the failure of the biological monitor (fish) at Broughton Pass in September 2016. NSW Health commented that this provided an opportunity to review the protocols for this monitoring system. This issue was not specifically assessed as part of the audit as our auditor considered that the use of live fish to monitor raw water quality was an analytical tool that is still generally applied in research rather than a monitoring approach routinely expected to be in place under the ADWG. The auditor considered that application of this monitoring approach did not have any impact on compliance with ADWG as it is not required in the ADWG.

We make three recommendations in relation to clause 2.1.2, based on the auditor’s recommendations.

Recommendations to WaterNSW

- 2 By 30 June 2018, WaterNSW repairs or replaces the failed Nepean Reservoir mixer. (SCA licence clause 2.1.2)
- 3 By 30 June 2018, WaterNSW undertakes a risk assessment to determine appropriate strategies and controls to address any current reliability concerns or potential failure of all such mixer or aerator assets within its portfolio. (SCA licence clause 2.1.2)
- 4 By 31 December 2018, WaterNSW implements appropriate strategies and controls to address any reliability concerns or potential failure of all such mixer or aerator assets within its portfolio. (SCA licence clause 2.1.2)

Water Supply Sufficiency

Our auditor assigned WaterNSW Full Compliance for clause 3.1.1.

Part 3 of the licence, Water Supply Sufficiency, outlines the obligation for WaterNSW to ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria. Under the risk-based auditing framework, we consider that this part of the licence poses a high risk with respect to consequence of non-compliance.

Table 2.7 Compliance with Part 3 of the SCA licence – Water Supply Sufficiency

Clause	Requirement	Compliance grading				
		2012-13 ^a	2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
3	Water Supply Sufficiency					
3.1.1	Catchment infrastructure management	Full	Full	Full	Full	Full

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 3.1.1) with Catchment Infrastructure management

Our auditor assigned WaterNSW Full Compliance for clause 3.1.1. Our auditor noted that WaterNSW had continued to operate and manage the Catchment Infrastructure consistent with the Design Criteria, and that it implements a set of operating rules based on the system model to guide its work. We agree with this audit grade.

Catchment Infrastructure includes water storages, water mains, or connected or associated works. Design Criteria are the levels of service for security, robustness and reliability of water available for raw water supply to customers as defined in the licence. The operating rules aim to keep all storages in balance while taking account of the likelihood of spills. The auditor sighted the system model that simulates system operation and yield over 2,000 one hundred year scenario sequences. WaterNSW used this to assess long term system performance against the Design Criteria. WaterNSW also provided evidence on its medium term (12 months) system planning tool, and a sample of short term (two weeks) flow release schedules.

Our auditor identified one opportunity for improvement. In the absence of actual water treatment cost information, WaterNSW may be able to identify/obtain indicative (or surrogate) cost information that could be used to optimise system operation on the basis of total cost of water supplied to the consumer.

Catchment

Our auditor assigned WaterNSW Full Compliance for clause 4.1.1. We agree with this audit grade.

Part 4 of the licence, Catchment, outlines the obligation for WaterNSW to manage and protect the Catchment Area consistent with the objectives and functions of the *Water NSW Act 2014* (the Act). Under the risk-based auditing framework, we consider that this part of the licence poses a high risk with respect to the consequence of non-compliance.

Table 2.8 Compliance with Part 4 of the SCA licence – Catchment

Clause	Requirement	Compliance grading				
		2012-13 ^a	2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
4	Catchment					
4.1.1	Catchment management	Full	Full	Full	Full	Full

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 4.1.1) with managing and protecting the Catchment Area

Our auditor assigned WaterNSW Full Compliance for clause 4.1.1, which required WaterNSW to manage and protect the Catchment Area consistent with the objectives and functions of the Act. We agree with this audit grade.

The auditor found that WaterNSW had effective catchment management strategies through its:

- ▼ water quality policy and source water protection framework
- ▼ land use controls to manage both point and diffuse pollution sources
- ▼ industry benchmark test (neutral or beneficial effect test) to prevent catchment from degradation from new development applications
- ▼ consultation with relevant agencies such as Department of Planning and Environment, Department of Premier and Cabinet, Environment Protection Authority
- ▼ annual catchment protection work program that identified actions to reduce risks to water quality, and
- ▼ water quality monitoring program.

Our auditor identified one opportunity for improvement. In order to ensure problem flora and fauna are adequately controlled, WaterNSW should review current maintenance systems, processes and resources used for implementation of pest and weed management on WaterNSW owned land.

Assets

Our auditor assigned WaterNSW Full Compliance for clauses 5.1.1 and 5.1.2. We agree with these audit grades.

Part 5 of the licence, Assets, outlines the obligation for WaterNSW to develop an Asset Management System by 30 June 2015 and fully implement the Asset Management System by 1 July 2015. Under the risk-based auditing framework, we consider that this part of the licence poses a high risk with respect to consequence of non-compliance.

Table 2.9 Compliance with Part 5 of the SCA licence – Assets

Clause	Requirement	Compliance grading				
		2012-13 ^a	2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
5	Assets					
5.1.1	Develop an Asset Management System	No Requirement	No Requirement	-	Non-Compliant	Full
5.1.2	Implement an Asset Management System	No Requirement	No Requirement	No Requirement	Non-Compliant	Full

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 5.1.1) with developing an Asset Management System

Our auditor assigned WaterNSW Full Compliance for clause 5.1.1, which required WaterNSW, by 30 June 2015, to develop an Asset Management System consistent with the *BSI PAS 55:2008 Asset Management standard*, or the Water Services Association of Australia's Aquamark benchmarking tool, or another asset management standard agreed to by IPART. We agree with this audit grade despite WaterNSW did not meet the required date of 30 June 2015, which is explained below.

In the 2015-16 audit, WaterNSW declared a 'self-imposed non-compliance' for this clause. WaterNSW notified IPART of a delay in developing an Asset Management System by 30 June 2015 due to the merger of the SCA and State Water in early 2015. It was no longer meaningful for WaterNSW to continue to develop an Asset Management System that only covered WaterNSW's functions under the SCA licence. IPART recommended to the Minister that "WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016."¹³ WaterNSW met the revised date of 31 December 2016 in developing, implementing and certifying the Asset Management System and we consider it fully compliant with this clause.

The asset management standard agreed to by IPART was the international standard *ISO 55001*. In 2015, WaterNSW advised IPART of their intention to certify their Asset Management System to the international standard *ISO 55001*.¹⁴ Further, in our 2013 review of the State Water Corporation Operating Licence, we recommended that the Asset Management System be implemented consistent with the *ISO 55000* suite of standards.¹⁵ *ISO 55001* is part of the *ISO 55000* series. It contains the required specification for an integrated, effective management system for asset management and was published in 2014.

¹³ IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016, p 50.

¹⁴ Letter to IPART, Mr David Harris, CEO and Terry Charlton, Chairman, 1 September 2015.

¹⁵ IPART, *State Water Corporation Operating Licence – Report to the Minister – End of Term Review*, May 2013, p 13.

Our auditor noted that WaterNSW's asset management system was audited against international standard *ISO 55001:2014* and found to be compliant in November 2016, and a Certificate of Registration was issued effective 10 January 2017. The auditor noted this meant that WaterNSW was in effect compliant with the clause by the target date of 31 December 2016.

Full compliance (clause 5.1.2) with fully implementing the Asset Management System

Our auditor assigned WaterNSW Full Compliance for clause 5.1.2, which required WaterNSW, by 1 July 2015, to fully implement the Asset Management System and ensure that all relevant activities are carried out in accordance with the System. We agree with this audit grade despite WaterNSW did not meet the required date of 1 July 2015, which is explained below.

As noted in clause 5.1.1, IPART recommended to the Minister that "WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016."¹⁶ WaterNSW met the revised date of 31 December 2016 in developing, implementing and certifying the Asset Management System and we consider it fully compliant with this clause this year.

Our auditor noted that WaterNSW's Asset Management System was audited against international standard *ISO 55001:2014* and found to be compliant in November 2016. A Certificate of Registration was issued for *ISO 55001:2014* on 10 January 2017. The auditor noted this means that WaterNSW was in effect compliant with the clause by the target date of 31 December 2016.

The auditor observed that operators had clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role during site inspection at the Nepean Dam, outlet structure, offtake structure and its catchment. The objective of site inspection was to assess the field implementation of asset management practices.

NSW Health raised a concern about the inoperative mixer/aerator at the Nepean Reservoir. It is an asset management issue which could have implications on water quality. We have made a recommendation regarding the mixer under the water quality clause 2.1.2 to address the ultimate concern about water quality.

The auditors commented on the delay in raising a maintenance work order, and have identified an opportunity for improvement to address when maintenance orders are elevated to project status. Further details of the opportunity for improvement are available in the audit report in Appendix C.

Environment

Our auditor assigned WaterNSW Full Compliance for clauses 7.1.1, 7.1.2, 7.1.3 and 7.1.4. We agree with these audit grades.

Part 7 of the licence, Environment, outlines the obligation for WaterNSW to develop an Environmental Management System (EMS) by 30 June 2015 and fully implement the EMS by

¹⁶ IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016, p 50.

1 July 2015. The EMS must be certified by 30 June 2017. Until the EMS has been implemented, WaterNSW must maintain programs to manage risks to the environment. Under the risk-based auditing framework, we consider that this part of the licence poses a moderate-high risk with respect to likelihood and consequence of non-compliance.

Table 2.10 Compliance with Part 7 of the SCA licence – Environment

Clause	Requirement	Compliance grading				
		2012-13 ^a	2013-14 ^a	2014-15 ^a	2015-16 ^a	2016-17
7	Environment					
7.1.1	Developing an EMS	No Requirement	No Requirement	-	Non-Compliant	Full
7.1.2	Implementing the EMS by 1 July 2015	No Requirement	No Requirement	No Requirement	Non-Compliant	Full
7.1.3	Certifying the EMS by 30 June 2017	-	-	-	-	Full
7.1.4	Maintaining programs to manage risks	Full	Full	No Requirement	Full	Full

^a IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

Full compliance (clause 7.1.1) with developing an EMS

Our auditor assigned WaterNSW Full Compliance for clause 7.1.1, which required WaterNSW, by 30 June 2015, to develop an EMS consistent with *Australian Standard AS/NZS ISO 14001:2004: Environmental management systems – Requirements with guidance for use*. The EMS was to have been developed by 30 June 2015, which was effectively extended to 31 December 2016 following the merger of the SCA and State Water. We agree with this audit grade despite WaterNSW not meeting the required date of 30 June 2015, which is explained below.

In the 2015-16 audit, WaterNSW declared a ‘self-imposed non-compliance’ for this clause. WaterNSW notified IPART of a delay in developing an EMS by 30 June 2015 due to the merger of the SCA and State Water in early 2015. It was no longer meaningful for WaterNSW to continue to develop an EMS that only covered WaterNSW’s functions under the SCA licence. IPART recommended to the Minister that “WaterNSW should finalise its development and certification of the Environmental Management system and fully implement it by or before 31 December 2016.”¹⁷ WaterNSW met the revised date of 31 December 2016 in developing and certifying the EMS, and we consider it fully compliant with this clause this year.

The EMS that WaterNSW was certified to was the international standard *ISO 14001:2004*. We note that this international standard and the Australian standard *AS/NZS ISO 14001:2004* are equivalent. We consider WaterNSW had satisfied the required licence obligation.

Our auditor noted that WaterNSW’s EMS was audited against international standard *ISO 14001:2004* and found to be compliant in December 2016, and a Certificate of Registration was issued effective 16 January 2017. The auditor noted this means that WaterNSW was in effect compliant with the clause by the target date of 31 December 2016.

¹⁷ IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016, p 54.

Full compliance (clause 7.1.2) with fully implementing an EMS

Our auditor assigned WaterNSW Full Compliance for clause 7.1.2, which required WaterNSW, by 1 July 2015, to fully implement the EMS and that all relevant activities are carried out in accordance with the System. We agree with this audit grade despite WaterNSW not meeting the required date of 1 July 2015, which is explained below.

As noted in clause 7.1.1, in the 2015-16 audit, IPART recommended to the Minister that “WaterNSW should finalise its development and certification of the Environmental Management system and fully implement it by or before 31 December 2016.”¹⁸ WaterNSW met the revised date of 31 December 2016 in fully implementing the EMS, and we consider it fully compliant with this clause this year.

Full compliance (clause 7.1.3) with certifying an EMS

Our auditor assigned WaterNSW Full Compliance for clause 7.1.3, which required WaterNSW to have its EMS certified by 30 June 2017, and maintain certification during the term of the Licence. We agree with this audit grade.

Our auditor noted that WaterNSW’s EMS was audited against international standard *ISO 14001:2004* and found to be compliant in December 2016 and a Certificate of Registration was issued effective 16 January 2017. The auditor noted this means that WaterNSW was in effect compliant with the clause by the target date of 30 June 2017. Certification was maintained through the remainder of licence period.

Full compliance (clause 7.1.4) with managing risks to the environment

Our auditor assigned WaterNSW Full Compliance for clause 7.1.4, which required WaterNSW to, until the EMS has been developed and implemented, maintain programs to manage risk to the environment from carrying out its activities and must ensure that all its activities are carried out in accordance with those programs. We agree with this audit grade.

Our auditor noted that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities. The auditor found that WaterNSW meets target actions to promote an environmentally responsible culture and minimise the environmental impact of infrastructure.

¹⁸ IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016, p 54.

3 Progress on previous audit recommendations

Previous audits in years 2014-15 and 2015-16 identified areas where WaterNSW's performance with its licence obligations did not receive Full Compliance. We previously made recommendations to the Minister to address these issues.¹⁹ The following table outlines WaterNSW's progress in implementing these recommended actions.

WaterNSW completed all five ongoing recommendations from previous audits in the audit period. There are no ongoing recommendations.

Table 3.1 WaterNSW's progress in 2016-17 to address our recommendations from the previous audits

	Recommendation	Progress
2014/15-01	<p>Water quality, SCA clause 2.1.1 WaterNSW should develop and maintain a Water Quality Management System (WQMS) that documents a consistent approach to managing risks, protecting water quality, and public health, across the range of WaterNSW's functions under the Sydney Catchment Authority licence. The WQMS should be consistent with the requirements of the Australian Drinking Water Guidelines 2011.</p>	<p>Complete The auditor found that WaterNSW has comprehensively updated the WQMS consistent with the ADWG 2011.</p>
2015/16-01	<p>Water quality, SCA clause 2.1.1 WaterNSW should improve its processes for reviewing its Water Quality Management System (WQMS), as set out in the Australian Drinking Water Guidelines (ADWG). WaterNSW could achieve this by implementing the following:</p> <ul style="list-style-type: none"> ▼ WaterNSW should undertake, at a minimum, annual reviews of the WQMS to check that it accurately reflects WaterNSW's current operations and operational environment, including any changes that may occur to these and any outcomes/lessons learnt. (The first review should be completed by 30 June 2017.) ▼ WaterNSW should document its review processes in the WQMS specifying the processes to be undertaken and the review frequencies. (This should be completed by 30 June 2017.) 	<p>Complete The auditor found that WaterNSW has undertaken the review and the WQMS updated to document review components and the annual review process. The WQMS clearly states reviews frequencies for the various components of the WQMS.</p>

¹⁹ IPART, *WaterNSW Operational Audit 2014-15 – Report to the Minister – Compliance Report*, December 2015 and IPART, *WaterNSW Operational Audit 2015-16 – Report to the Minister – Compliance Report*, December 2016.

	Recommendation	Progress
2015/16-02	<p>Water quality, SCA clause 2.1.1</p> <p>WaterNSW should undertake, at a minimum, two yearly comprehensive reviews of the WQMS to check that it is fully consistent with each element of the ADWG.</p> <p>(The first review [the Water Quality Management System Review Project] should be completed by 30 June 2018.)</p>	<p>Complete</p> <p>The auditor found that WaterNSW has undertaken the first review of the WQMS in order to produce the updated WQMS.</p>
2015/16-03	<p>Assets, SCA clauses 5.1.1, 5.1.2</p> <p>WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.</p>	<p>Complete</p> <p>The auditor found that WaterNSW had effectively implemented and certified its Asset Management System by 31 December 2016 (although the Certificate of Registration was not issued until 10 January 2017).</p>
2015/16-04	<p>Environment, SCA clauses 7.1.1 and 7.1.2</p> <p>WaterNSW should finalise its development and certification of the Environmental Management system and fully implement it by or before 31 December 2016.</p>	<p>Complete</p> <p>The auditor found that WaterNSW had effectively implemented and certified its EMS by 31 December 2016 (although the Certificate of Registration was not issued until 16 January 2017).</p>

Source: Cobbitty Consulting and Water Futures, *2016/17 Operational Audit of WaterNSW*, Final Audit Report, November 2017.

Our auditor found that all five previous recommendations were complete.

- ▼ Two of the five recommendations, 2014/15-01 and 2015/16-01 were completed during 2016-17 as planned in accordance with the due dates.
- ▼ One recommendation, 2015/16-02, was completed ahead of its 30 June 2018 due date.
- ▼ Two of the five recommendations, 2015/16-03 and 2015/16-04, were completed shortly after the due dates.

WaterNSW demonstrated reasonable effort in completing the audit recommendations.










Appendices

A Compliance grades

Compliance grades for public utilities

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

B 2016-17 audit scopes



2016-17 Operational Audit scope Water NSW (State Water Corporation) Operating Licence

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Attachment A Conferred functions for auditing

2016-17 audit scope

This scope is based on the five year audit program for WaterNSW's 2012-2017 State Water Corporation Operating Licence. Auditors should note any directions in the comments column of Table 2.

Previous recommendations

Table 4 outlines outstanding audit recommendations. These recommendations are reviewed to determine progress and are reported on separately within the audit report.

Statement of compliance

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


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

Development and implementation of management systems

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

This applies to WaterNSW's State Water licence as follows:

- ▼ the development and certification of an Asset Management System (AMS) and Environmental Management System (EMS) by 30 June 2018.



The auditor should note that WaterNSW was in the process of implementing a certified AMS and EMS by 31 December 2016 that addresses its functions under both the Sydney Catchment Authority (SCA) and State Water licences. These systems were being developed following the Government imposed merger of the previous SCA and State Water Corporation in January 2015.

We request that the auditor provides a summary of WaterNSW's completion of developing, certifying and implementing the management systems. This should be provided in the cover letter to the audit report.

Table 1 Key

Requirement	Meaning
Audit/Review	Audit/review clause in 2016-17
SC	We will rely on the utility's Statement of Compliance. All clauses require a Statement of Compliance unless there is a "no requirement" designation.
NR	No requirement (for audit or statement of compliance).

Table 2 2016-17 audit scope for WaterNSW (State Water Corporation Operating Licence)

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
1	Licence and licence authorisation		
1.1	Purpose of this Licence		
1.1.1	<p>This Licence is granted to enable and require Water NSW to carry out its functions within its Area of Operations on the terms and conditions set out in this Licence. This Licence sets out the terms and conditions under which Water NSW is to:</p> <ul style="list-style-type: none"> a) meet the objectives and other requirements imposed on it in the Act and other applicable law; b) provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems and services to capture, store and release water; c) comply with the performance standards specified in this Licence; d) comply with the reporting obligations set out in the Reporting Manual; e) be subject to Operational Audits; and f) where conferred on Water NSW by this Licence, undertake specified functions of: <ul style="list-style-type: none"> i) the Minister administering the Water Management Act 2000 (NSW) and the Water Act 1912 (NSW); and ii) the Ministerial Corporation under any Act or law. 	NR	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
1.1.2	To the extent permitted by any applicable law, this Licence authorises Water NSW to carry out its functions: <ul style="list-style-type: none"> a) outside the State; and b) within the area of operations of: <ul style="list-style-type: none"> i) Water NSW; ii) Sydney Catchment Authority; iii) Hunter Water Corporation; or iv) a Water Supply Authority, subject to Water NSW obtaining the written agreement of the relevant body.	NR	
1.2 Duration of this Licence			
1.2.1	The term of this Licence is 5 years from the Commencement Date. [Note: This Licence starts on 1 July 2013, which means that it will end on 30 June 2018.]	NR	
1.3 Availability of Licence			
1.3.1	Water NSW must make this Licence available free of charge: <ul style="list-style-type: none"> a) on its website for downloading by any person; and b) to the public on request. 	SC	
1.4 Conferred functions			
1.4.1	In accordance with section 12(4) of the Act this Licence confers on Water NSW the functions specified in Schedule A to this Licence.	NR	
1.4.2	Water NSW must exercise any functions conferred on it under this Licence consistently with the <i>Water Management Act 2000</i> (NSW), the <i>Water Act 1912</i> (NSW), the <i>New South Wales – Queensland Border Rivers Act 1947</i> (NSW), any other relevant law and any relevant Water Management Plan.	Audit	The scope of the audit for this obligation is limited to the compliance functions under sections 327, 329(2) and 372(1)(a), (a1) of the <i>Water Management Act 2000</i> (NSW), which are specified in Schedule A to the licence under the heading “Compliance Functions” (pp. 42, 43 and 44), and the metering functions under sections 91I(3), 326(1) and 372A(1) of the <i>Water Management Act 2000</i> (NSW), which are specified in Schedule A to the licence under the heading “Metering Functions” (p. 46). The auditor should focus on three valleys, including the Barwon-Darling valley. See Attachment A for potential questions on the conferred functions.

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
1.4.3	<p>By 1 October 2013, Water NSW must publish a statement setting out any agreed roles and responsibilities regarding the functions conferred on it under clause 1.4.1 and Schedule A, as agreed with DPI Water, the Ministerial Corporation or any other relevant government departments or agencies.</p> <p><i>[Note: this obligation could be fulfilled by publishing those parts of any agreements (including memoranda of understanding) entered into by Water NSW and other government departments or agencies with which it shares the functions, which document roles and responsibilities regarding conferred functions.]</i></p>	SC	Note: the conferred functions were amended 1 July 2016. WaterNSW's published statement relates to the conferred functions prior to 1 July 2016.
1.4.4	<p>Water NSW must make the statement described in clause 1.4.3 available free of charge:</p> <ul style="list-style-type: none"> a) on its website for downloading by any person; and b) to the public on request. 	SC	
2	Water quality		
2.1	Bulk Water supplied to Local Water Utilities for Drinking Water purposes		Note: The purpose of clause 2.1 is to ensure that there are mechanisms in place for WaterNSW to share information which it currently collects with interested Local Water Utilities, where that information could usefully inform a Local Water Utility's Drinking Water quality assurance program.
2.1.1	<p>Water NSW must maintain a register of all Local Water Utilities:</p> <ul style="list-style-type: none"> a) for which Water NSW maintains a Water Allocation Account; and b) to which Water NSW delivers water that will be used for the purposes of Drinking Water (Local Water Utility Customers). <p>The register must include contact details for each Local Water Utility Customer, and the Valley and approximate location from which each Local Water Utility Customer extracts water.</p>	SC	
2.1.2	<p>By 1 October 2013, Water NSW must develop and implement a procedure for providing information when requested by any Local Water Utility to inform that utility's Drinking Water quality assurance program (LWU Information Request Procedure).</p>	SC	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
2.1.3	Water NSW's LWU Information Request Procedure under clause 2.1.2 above must: <ul style="list-style-type: none"> a) describe how a Local Water Utility is to request information; b) describe how Water NSW will respond to the request in a timely manner; and c) define any fees or charges that will be charged by Water NSW to recover reasonable costs incurred for responding to an information request, how these will be calculated, and how they are to be paid. 	SC	
2.1.4	Water NSW must make details of the LWU Information Request Procedure free of charge: <ul style="list-style-type: none"> a) on its website for downloading by any person; and b) to the public on request. 	SC	
3	Water quantity		
3.1	Delivery of water to Customers		
3.1.1	Water NSW must take all reasonable steps to process all Water Orders promptly and efficiently. <p>[Note: Where a Customer places an incomplete or incorrect Water Order, WaterNSW could fulfil this obligation by notifying that Customer promptly and efficiently of the error, and how to rectify it.]</p>	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
3.1.2	Water NSW must take all reasonable steps to manage Water Orders so as to ensure the timely Delivery of water to its Customers.	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
3.1.3	Water NSW must maintain a Water Allocation Account for each access licence issued under the <i>Water Management Act 2000</i> (NSW) and each licence issued under the <i>Water Act 1912</i> (NSW) held by a Customer.	Audit	This clause was last audited in 2014-15 and was awarded Full Compliance in that audit.
3.1.4	Water NSW must take all reasonable steps to conserve water and minimise water losses that result from undertaking its operations under this Licence. <p>[Note: The obligations imposed on Water NSW by this clause 3.1 are subject to the requirements of any water sharing plans or water management work approvals.]</p>	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
3.2	Advance notification of changes to flow release patterns		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
3.2.1	Water NSW must maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes.	Audit	For any significant changes to flow release patterns, auditor should investigate the issues related to WaterNSW maintaining an effective system to notify registered stakeholders as raised in the DPI Water's submission, 23 August 2017.
3.3	Water balance reporting		
3.3.1	Water NSW must prepare water balance reports for each of the Valleys in which it operates, in accordance with the Reporting Manual.	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
4	Assets		
4.1	Asset Management System		
4.1.1	By 30 June 2018, Water NSW must develop a Management System that is consistent with: <ul style="list-style-type: none"> a) the International Standard ISO 55001: 2013 Asset Management – Management systems - Requirements; or b) another asset management standard agreed to by IPART, (Asset Management System).	Audit	In its 31 March 2017 report WaterNSW indicated it had achieved certification of its Assessment Management System in January 2017.
4.1.2	In the case of an Asset Management System which is developed under the <i>International Standard ISO 55001: 2013 Asset Management – Management systems – Requirements</i> , Water NSW must ensure that: <ul style="list-style-type: none"> a) by 30 June 2018, the Asset Management System is certified by an appropriately qualified third party to be consistent with the International standard ISO 55001:2013: Asset Management – Management systems - Requirements; and b) once the Asset Management System is certified under clause 4.1.2(a) above, the certification is maintained during the remaining term of this Licence. 	Audit	In its 31 March 2017 report, WaterNSW indicated it had achieved certification of its Asset Management System in January 2017.
4.1.3	Water NSW must ensure that, by 30 June 2018, the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the system.	NR	Cannot be audited until 2017-18. Verbal update on progress to be provided at audit interviews.

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
4.1.4	<p>Until the Asset Management System has been developed in accordance with clause 4.1.1 and certified in accordance with clause 4.1.2 (if applicable), Water NSW must:</p> <ul style="list-style-type: none"> a) maintain programs to manage risks to its assets and to maintain the appropriate levels of service of those assets; and b) ensure that all its activities are carried out in accordance with those programs. 	Audit	<p>This clause was last audited in 2015-16 and was assigned Full Compliance in that audit.</p> <p>Auditor to also investigate the roles and responsibilities for meter maintenance in the Bega/Bemboka system raised in NSW Irrigators' Council (NSWIC) submission 19 May 2017.</p>
4.1.5	Once the Asset Management System is certified in accordance with clause 4.1.2 (if applicable), Water NSW must notify IPART of any significant changes that it proposes to make to the Asset Management System in accordance with the Reporting Manual.	NR	
4.2	Water metering		Note: This clause 4.2 enables Water NSW to perform the metering functions set out in this clause for the purposes of section 22A(1) of the Act, subject to the terms and conditions of this Licence.
4.2.1	Water NSW must read each of its Customers' meters.	Audit	The auditor should focus on three valleys, including the Barwon-Darling valley.
4.2.2	<p>Where provided for in any agreement between Water NSW and the Minister or DPI Water, Water NSW must:</p> <ul style="list-style-type: none"> a) read Metering Equipment (if applicable); b) determine water extraction; and c) carry out any other specified water monitoring functions; <p>at the locations and within the timeframes set out in the agreement.</p>	Audit	<p>The auditor should focus on three valleys, including the Barwon-Darling valley.</p> <p>Clause amended 1 July 2016. Sub-clause 4.2.2(c) added.</p>
4.2.3	Water NSW must provide any data obtained when carrying out its obligations under any agreement described in 4.2.2 to DPI Water in the timeframe and format specified in the agreement.	SC	New clause added to the Licence on 1 July 2016
4.2.4	Water NSW may operate, replace, repair, maintain, remove, connect, disconnect or modify Metering Equipment installed under a government-funded meter program.	SC	<p>This clause confers powers and does not need to be audited.</p> <p>The numbering of this clause was amended on 1 July 2016. It was previously clause 4.2.3.</p>
5	Customers		
5.1	Valley-based customer service committees (excluding Fish River Water Scheme Customers)		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.1.1	Water NSW must regularly consult with Valley-based customer service committees (CSCs) to enable Customer involvement in issues relevant to the performance of Water NSW's obligations to Customers under this Licence or the customer service charter referred to in clause 5.2 of this Licence.	Audit	Auditor should investigate the issues related to WaterNSW's consultation with and information provision to CSCs as raised in NSWIC submission, 19 May 2017.
5.1.2	For each CSC, Water NSW must invite at least 1 representative from each of the groups or bodies identified in paragraphs (a) to (e) below to be a member of that CSC: <ul style="list-style-type: none"> a) Customers which are Unregulated River water users; b) Customers which are groundwater users; c) the NSW environmental water entitlement holder; d) the Commonwealth Environmental Water Holder; e) Local Land Services; and f) DPI Water. For the purposes of this clause 5.1.2, Customer does not include a Fish River Water Scheme Customer.	Audit	Clause amended 1 July 2016. Sub-clause 5.1.2(f) added. Auditor should investigate the issues related to DPI Water's membership in the CSCs raised in DPI Water's submission, 23 August 2017.
5.1.3	Water NSW must provide the CSCs with adequate information within its possession or under its control to enable the CSC to discharge the tasks assigned to it, other than information or documents over which Water NSW or another person claims confidentiality or legal professional privilege and subject to any limitations on disclosure of the information at law.	Audit	Auditor should investigate the issues related to WaterNSW's consultation with and information provision to CSCs as raised in NSWIC submission, 19 May 2017.
5.2	Customer Service Charter (excluding Fish River Water Scheme Customers)		
5.2.1	Water NSW must, in consultation with the CSCs, establish and maintain a customer service charter (Customer Service Charter).	SC	
5.2.2	The Customer Service Charter must set out the mutual responsibilities and obligations of Water NSW and its Customers (excluding Fish River Water Scheme Customers) consistently with this Licence, the Act, the <i>Water Management Act 2000</i> (NSW), the <i>Water Act 1912</i> (NSW) and any other applicable law.	SC	
5.2.3	Water NSW must make the Customer Service Charter available free of charge: <ul style="list-style-type: none"> a) on its website for downloading by any person; and b) to the public on request. 	SC	
5.3	Fish River Customer Council		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.3.1	Water NSW must regularly consult with a Fish River Customer Council to enable Fish River Water Scheme Customer involvement in issues relevant to the performance of Water NSW in its obligations to Fish River Water Scheme Customers under this Licence and any Fish River Customer Contract.	Audit	This clause was last audited in 2014-15 and was awarded Full Compliance. The auditor should communicate with the Customer Council to inform the audit.
5.3.2	Water NSW must invite at least 1 representative from each of the entities identified in paragraphs (a) to (d) below to be a member of the Fish River Customer Council: <ul style="list-style-type: none"> a) Lithgow City Council; b) Oberon Council; c) Delta Electricity, a statutory State owned corporation constituted under the Energy Services Corporations Act 1995 (NSW); and d) Sydney Catchment Authority, a statutory corporation constituted under the Sydney Water Catchment Management Act 1998 (NSW), (Fish River Customer Council). 	SC	This clause was last audited in 2015-16 and was assigned Full Compliance in that audit.
5.3.3	Water NSW must provide the Fish River Customer Council with adequate information within its possession or under its control so as to enable the Fish River Customer Council to discharge the tasks assigned to it, other than information or documents over which Water NSW or another person claims confidentiality or privilege and subject to any limitations on disclosure of the information at law.	Audit	This clause was last audited in 2014-15 and was awarded Full Compliance. The auditor should communicate with the Customer Council to inform the audit.
5.4	Fish River Customer Contracts		
5.4.1	Water NSW must enter into and maintain an agreement with each of its Fish River Water Scheme Customers during the term of this Licence, for the water supply arrangements for the Fish River Water Supply Scheme.	SC	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.4.2	<p>The terms of the agreements must, as a minimum, include provisions on:</p> <ul style="list-style-type: none"> a) the standard of the quality of water to be supplied by Water NSW; b) the continuity of water to be supplied by Water NSW (that is, provisions relating to interruption, disconnection and reconnection to supply); c) the metering arrangements; d) the costs to be paid by Fish River Water Scheme Customers for the supply of water and other services to them; and e) any other terms agreed between Water NSW and its Fish River Water Scheme Customers. 	SC	
5.5 Code of practice on payment difficulties			
5.5.1	<p>Water NSW must develop, maintain and fully implement a code of practice (the Code) relating to Customers having payment difficulties, which must:</p> <ul style="list-style-type: none"> a) provide for deferred payment or payment by instalment for Customers who are required to pay Bills and who are experiencing payment difficulties; and b) identify the circumstances under which Water NSW may suspend water access licences, and an overview of the process that must be followed prior to suspension. 	SC	
5.5.2	<p>Water NSW must set out details of the Code in the Customer Service Charter.</p>	SC	
5.5.3	<p>Water NSW must provide information on the Code free of charge:</p> <ul style="list-style-type: none"> a) to Customers, at least once annually with their Bills; b) on its website for downloading by any person; and c) to the public on request. 	SC	
5.6 Internal Complaints Handling Procedure			
5.6.1	<p>Water NSW 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) (Internal Complaints Handling Procedure).</p>	SC	
5.6.2	<p>Water NSW must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure.</p>	SC	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.6.3	Water NSW must provide information on the Internal Complaints Handling Procedure which explains how to make a Complaint and how the Internal Complaints Handling Procedure works free of charge: <ul style="list-style-type: none"> a) to Customers, at least once annually with their Bills; b) on its website for downloading by any person; and c) to the public on request. 	SC	
5.7 External dispute resolution scheme			
5.7.1	Water NSW must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Water NSW and its Customers.	SC	
5.7.2	Water NSW must provide free of charge information that explains the operation of the dispute resolution service provided by the Energy and Water Ombudsman NSW (including any rights to have a Complaint or dispute referred to the Energy and Water Ombudsman NSW and how the dispute resolution service can be accessed): <ul style="list-style-type: none"> a) to Customers, at least once annually with their Bills; b) on its website for downloading by any person; and c) to the public on request. 	SC	
6 Environmental management			
6.1 Environmental management			
6.1.1	By 30 June 2018, Water NSW 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> .	Audit	In its 31 March 2017 report, WaterNSW indicated it had achieved certification of its Environmental Management System in January 2017.
6.1.2	Water NSW must ensure that: <ul style="list-style-type: none"> a) by 30 June 2018, the Environmental Management System is certified by an appropriately qualified third party to be consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental Management Systems - Requirements with guidance for use; and b) once the Environmental Management System is certified under clause 6.1.2(a), the certification is maintained during the remaining term of this Licence. 	Audit	In its 31 March 2017 report, WaterNSW indicated it had achieved certification of its Environmental Management System in January 2017.

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
6.1.3	Water NSW must ensure that by 30 June 2018, the Environmental Management System is fully implemented and that all relevant activities are carried out in accordance with the system.	NR	
6.1.4	Until the Environmental Management System has been developed and certified in accordance with clauses 6.1.1 and 6.1.2, Water NSW must: <ul style="list-style-type: none"> a) maintain programs to manage risks to the environment from carrying out its activities; and b) ensure that all its activities are carried out in accordance with those programs. 	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
6.1.5	Once the Environmental Management System is certified in accordance with clause 6.1.2, Water NSW must notify IPART of any significant changes that it proposes to make to the Environmental Management System in accordance with the Reporting Manual.	SC	Audit following any notice of change.
7	Performance monitoring		
7.1	Operational Audits		
7.1.1	IPART may undertake, or may appoint an Auditor to undertake, an audit on Water NSW's compliance with: <ul style="list-style-type: none"> a) this Licence; b) the Reporting Manual; and c) any matters required by the Minister, (Operational Audit). 	NR	
7.1.2	Water NSW must provide IPART or any Auditor with all information in its possession, or under its custody or control, which is necessary to conduct the Operational Audit, including whatever information is reasonably requested by IPART or an Auditor.	NR	
7.1.3	Water NSW must provide the information requested under clause 7.1.2 within a reasonable time of it being requested.	NR	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
7.1.4	<p>For the purposes of any Operational Audit or verifying a report on an Operational Audit, Water NSW 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"> a) have access to any works, premises or offices occupied by Water NSW; b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices; c) take on to any such premises, works or offices any person or equipment necessary for the purposes of performing the Operational Audit or verifying any report on the Operational Audit; d) inspect and make copies of, and take extracts from, any books and records of Water NSW that are maintained in relation to the performance of Water NSW's obligations under this Licence (including under the Reporting Manual); and e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Water NSW, including any of Water NSW's officers and employees. 	NR	
7.2 Reporting			
7.2.1	<p>Water NSW must comply with its reporting obligations set out in this Licence and in the Reporting Manual, which include:</p> <ul style="list-style-type: none"> a) reporting to IPART in accordance with the Reporting Manual and this Licence, and b) making reports and other information publicly available, <p>in the manner set out in the Reporting Manual.</p>	SC	
7.2.2	<p>Water NSW must maintain sufficient record systems that enable it to report accurately in accordance with this Licence and the Reporting Manual (including its performance against the performance indicators specified in the Reporting Manual).</p>	SC	
7.2.3	<p>In the case of any ambiguity in the interpretation or application of any performance indicators specified in the Reporting Manual, IPART's interpretation or assessment of the indicators will prevail.</p>	NR	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
7.2.4	Water NSW must maintain sufficient record systems to enable it to measure accurately its performance against any system performance indicators specified in any instruments that give effect to the National Water Initiative.	NR	<i>This obligation is no longer relevant as the National Water Initiative Rural National Performance Report is no longer produced.</i>
7.3	Provision of information		
7.3.1	If IPART requests that Water NSW provide information relating to the performance of its obligations under clause 7.2, Water NSW must provide the information requested within a reasonable time of IPART's request, including providing IPART with physical and electronic access to the records required to be kept under clause 7.2.2.	NR	
7.3.2	Water NSW must provide IPART with such information as is reasonably required to enable IPART to conduct any review or investigation of Water NSW's obligations under this Licence.	NR	
7.3.3	If Water NSW 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 7 as if that third party were Water NSW.	NR	
7.3.4	If IPART or an Auditor requests information under this clause 7 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 is not disclosed to third parties, without the consent of Water NSW.	NR	
8	End of term review		
8.1	End of Term Review		
8.1.1	In or around the first quarter of 2017, a review of this Licence will commence to investigate: <ul style="list-style-type: none"> a) whether this Licence is fulfilling its objectives; and b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence, (End of Term Review).	NR	
8.1.2	Water NSW 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 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2015-16 audit findings, and status as reported by utility on 31 March 2017 ^a	Guidance for 2016-17 audit
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NA^a

^a The auditor assigned Full Compliance for all licence clauses audited and previous recommendations and consequently did not make any new recommendations this year

Source: Cobbitty Consulting and Viridis, 2015/16 Operational Audit of WaterNSW, Final Audit Report, November 2016.

Table 4 Previous field verification locations for WaterNSW (State Water Corporation Operating Licence)

Audit year	Location	Facility
2016-17	Griffith - Murrumbidgee, Beavers Creek, Tombullen Creek	Weirs, Outlet
2015-16	Burrinjuck Dam	Infrastructure
2014-15	Fish River	Water Supply
2013-14	Warren	Marebone Weir fishway
	Dubbo	Burrendong Dam floating curtain
<i>Previous licence</i>		
2012-13	Dubbo	Burrendong Dam
	Macquarie River near Dubbo	Metering sites
2011-12	Fish River	Water Supply
	Duckmaloi	Water Treatment Plant
2010-11	Nil	-

Note: Locations and facilities for the 2016-17 WaterNSW (State Water Corporation Operating Licence) operational audit will be confirmed with the utility and successful auditor.

A Conferred functions for auditing

Conferred compliance functions

For all conferred compliance functions, auditor to consider whether WaterNSW has:

1. exercised the functions conferred on it in Schedule A consistently with the relevant legislation
2. exercised the function in accordance with the Compliance Procedures Guidelines issued by the Department of Industry, which include:
 - a) DPI Office of Water - Compliance Policy - May 2015
 - b) DPI Office of Water - Managing and investigating alleged breaches v3 - July 2012
 - c) DPI Office of Water - Taking a compliance action v4 - June 2013

Table 5 Relevant WaterNSW conferred compliance functions for audit

Section	Function	Comment
Water Management Act 2000		
327	<p>Stop work order regarding unlawful construction or use of water management work</p> <p>(1) This section applies to a water management work that, in the Minister’s opinion, is being constructed or used, or is about to be constructed or used, in contravention of this Act.</p> <p>(2) The Minister may, by order in writing served on any person having control or management of the water management work, direct the person to take specified measures:</p> <p>(a) to prohibit or discontinue its construction or use, or</p> <p>(b) to construct or use the work only as specified.</p> <p>(3) Without limiting subsection (2), the landholder on whose land the water management work is situated, or is proposed to be situated, is taken to have control and management of the work.</p>	<p>Audit</p> <p>Auditor to consider the circumstances in which WaterNSW has implemented this function.</p> <p>Auditor to consider any improvements to WaterNSW’s processes for forming opinions that a water management work is being constructed or used, or is about to be constructed or used, in contravention of the Act.</p>
329(2)	<p>Removal of unlawful water management works</p> <p>(2) The Minister may, by order in writing served on any person having control or management of the work, direct the person to take specified measures to demolish, remove, modify or dismantle the work or otherwise render it ineffective.</p>	<p>Audit</p> <p>Auditor to consider the circumstances in which WaterNSW has implemented this function.</p> <p>Auditor to consider any improvements to WaterNSW’s processes for deciding whether to direct a person to take specific measures to demolish, remove, modify or dismantle a water management work.</p>

Note: The conferred compliance functions require WaterNSW to perform the functions according to the Compliance Procedures Guidelines as per pp 41-42

Source: WaterNSW (State Water) operating licence pp 42-44.

Conferred metering functions

Schedule A does not specify that WaterNSW must follow any specific guidelines in undertaking metering functions.

Table 6 Relevant WaterNSW conferred metering functions for audit

Section	Function	Comment
Water Management Act 2000		
91I(3)	<p>Taking water when metering equipment not working</p> <p>(a) the person is authorised by the Minister in writing to take water by means of a metered work while its metering equipment is not operating properly or is not operating, and</p> <p>(b) the water is taken in accordance with any conditions specified in the authorisation and any requirements prescribed by the regulations for the purposes of this subsection</p>	<p>Audit</p> <p>Auditor to consider whether WaterNSW authorised any person while its metering equipment was not operating properly or was not operating, and what were the conditions specified in the authorisation.</p> <p>Auditor to consider the circumstances in which WaterNSW has implemented this function.</p> <p>Auditor to consider improvements to WaterNSW's processes for authorising a person to take water when metering equipment is not operating properly or is not operating.</p>
326(1)	<p>Directions to install and maintain metering equipment</p> <p>(1) The Minister may, by order in writing served on:</p> <p>(a) a landholder on whose land is situated a water supply work, or</p> <p>(b) any person having the control and management of such a work, direct the landholder or person to take specified measures to install, replace or to properly maintain metering equipment for use in connection with that work.</p>	<p>Audit</p> <p>Auditor to consider whether WaterNSW directed by order, any landholder or other person to take specified measures to install, replace or to properly maintain metering equipment.</p> <p>[Note: Any direction includes the power to specify the circumstances, the order and the manner of those measures to be taken (section 323(2)(a) of the <i>Water Management Act 2000</i>.)]</p> <p>Auditor to consider the circumstances in which WaterNSW has implemented this function.</p> <p>Auditor to consider improvements to WaterNSW's processes for directing a landholder or any person to take specified measures to install, replace or to properly maintain metering equipment.</p>
372A(1)	<p>Metering equipment functions</p> <p>(1) Conferral of metering equipment functions The Ministerial Corporation may install, test and remove metering equipment.</p>	<p>Audit</p> <p>Auditor to consider whether WaterNSW has installed, tested or removed metering equipment.</p> <p>Auditor to consider the circumstances in which WaterNSW has implemented this function.</p> <p>Auditor to consider improvements to WaterNSW's processes for installing, testing and removing metering equipment.</p>

Note: The conferred metering functions differ from the conferred compliance functions and do not require WaterNSW to perform the functions with respect to the Compliance Procedures Guidelines as per pp 41-42. WaterNSW must exercise the conferred functions consistently with any law as per clause 1.4.2.

Source: WaterNSW (State Water) operating licence pp 46-47.

2016-17 Operational Audit scope WaterNSW (Sydney Catchment Authority) Operating Licence

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2016-17 Audit scope

This scope is based on the 5-year audit program for WaterNSW's 2012-2017 Sydney Catchment Authority Operating Licence. Auditors should note any directions in the comments column of Table 2.

Previous recommendations

Table 3 outlines outstanding audit recommendations. These recommendations are reviewed to determine progress and are reported on separately within the audit report.

Statement of compliance

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

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

Development and implementation of management systems

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

This applies to WaterNSW's SCA licence as follows:

- ▼ the development of an Asset Management System (AMS) and Environmental Management System (EMS) by 30 June 2015, and
- ▼ certification of the EMS by 30 June 2017.

Due to the Government imposed merger of SCA and State Water Corporation, WaterNSW has previously identified that the AMS and EMS was not fully developed by 30 June 2015. WaterNSW was in the process of implementing a certified AMS and EMS by 30 December 2016. These systems address WaterNSW's functions under both SCA and State Water licences.

We request that the auditor provides a summary of WaterNSW's completion of developing, certifying and implementing the management systems. This should be provided in the cover letter to the audit report.

Table 1 Key

Requirement	Meaning
Audit/Review	Audit/review clause in 2016-17
SC	We will rely on the utility's Statement of Compliance. All clauses require a Statement of Compliance unless there is a "no requirement" designation.
NR	No requirement (for audit or statement of compliance).

Table 2 2016-17 Audit scope for WaterNSW (Sydney Catchment Authority Operating Licence)

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
1	Licence details		
1.1	Objectives of this Licence		
1.1.1	The objective of this Licence is to set out the terms and conditions under which Water NSW is to: <ul style="list-style-type: none"> a) meet the objectives and other requirements imposed on it in the Act; b) provide, construct, operate, manage and maintain efficient and co-ordinated viable systems and services for supplying Raw Water; c) comply with the quality and performance standards specified in this Licence; d) compile and report against indicators on the direct impact of its activities on the environment, or other matters as determined by IPART; e) recognise the rights given to Customers; and f) be subject to Operational Audits. 	NR	
1.2	Duration of Licence		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
1.2.1	The term of this Licence is 5 years from the Commencement Date. [Note: This Licence starts on 1 July 2012, which means that it will end on 30 June 2017.]	NR	
1.3	Non-exclusive Licence		
1.3.1	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.	NR	
1.4	Availability of Licence		
1.4.1	Water NSW 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	
1.5	Area of Operations		
1.5.1	This Licence enables Water NSW to exercise its functions in or in respect of an area in or outside the Area of Operations.	NR	
1.6	Conferred Functions		
1.6.1	In accordance with section 12(4) this Licence confers on Water NSW the functions specified in Schedule 2 to this Licence.	NR	This is a new clause added to the Licence on 1 July 2016.
1.6.2	Water NSW must exercise any function conferred on it under this Licence consistently with the Water Management Act 2000 (NSW), the Water Act 1912 (NSW), the New South Wales – Queensland Border Rivers Act 1947 (NSW), any other relevant law and any relevant Water Management Plan.	SC	This is a new clause added to the Licence on 1 July 2016.
2	Water Quality		
2.1	Water Quality Management System		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
2.1.1	<p>Water NSW must maintain a Management System that is consistent with:</p> <ul style="list-style-type: none"> 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 Water NSW, the Australian Drinking Water Guidelines as amended or added to by NSW Health, <p>(Water Quality Management System).</p> <p>[Note: It is generally expected that Water NSW 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 Water NSW's circumstances and/or Drinking Water quality policy and practices within New South Wales.</p> <p>Water NSW must also manage the Raw Water Supply System in light of its knowledge of the Drinking Water Supply System. That is, Water NSW 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.]</p>	Audit	<p>This clause was last audited in 2015-16 and was awarded High Compliance in that audit.</p> <p>The 2015-16 audit found that WaterNSW maintained a Water Quality Management Framework (WQMF) that was generally consistent with the ADWG. There were adequate systems in place to manage raw water quality and risk across the drinking water supply chain.</p> <p>The auditor noted that the WQMF needs to be kept up to date to reflect the changes and improvements made</p> <p>Further, the auditor found that the WQMF's supporting documents, processes and procedures need to be better integrated and referenced.</p> <p>Auditor should investigate the issues related to incident management raised in the NSW Health's submission 25 August 2017.</p>
2.1.2	<p>Water NSW 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.</p>	Audit	<p>This clause was last audited in 2015-16. WaterNSW was awarded Full Compliance in that audit.</p> <p>Audit the adequacy and implementation of the WQMS.</p> <p>Auditor should investigate the issues related to incident management raised in the NSW Health's submission 25 August 2017.</p>
2.1.3	<p>Water NSW must obtain NSW Health's approval for any significant changes that Water NSW proposes to make to the Water Quality Management System before implementing or carrying out its activities in accordance with them</p>	SC	<p>Audit following notice of change,</p>

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
2.1.4	Water NSW 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	
3	Water Supply Sufficiency		
3.1	Catchment Infrastructure management		
3.1.1	Water NSW must ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
3.1.2	Water NSW must make the Design Criteria available to the public in accordance with the Reporting Manual.	SC	
3.2	Re-calculating Water Supply System Yield		
3.2.1	Water NSW must re-calculate the Water Supply System Yield on the occurrence of any one or more of the following events: <ul style="list-style-type: none"> a) the conclusion of any drought event; 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 Water NSW's supply of water; c) any material change to the operating rules of the Catchment Infrastructure; or any material change to the Design Criteria. 	SC	Audit following any notice of change. Audit if triggered by a recalculation of yield. WaterNSW to advise date of last recalculation and to advise if these events have occurred since the last calculation.
3.2.2	Water NSW must advise the Minister: <ul style="list-style-type: none"> 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 condition 3.2.1; or b) if Water NSW considers that future demand for Raw Water may exceed the Water Supply System Yield, in accordance with the Reporting Manual.	SC	Audit following any notice of change.
3.2.3	As soon as practicable after advising the Minister of any changes to the Water Supply System Yield under condition 3.2.2(a), Water NSW must make those changes and reasons for those changes available to the public in accordance with the Reporting Manual.	SC	Audit following any notice of change.
3.3	Reviewing the model for Water Supply System Yield		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
3.3.1	By 30 June 2016, Water NSW must retain an independent expert to: <ul style="list-style-type: none"> 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 condition 3.2.1; and c) advise Water NSW on whether it should re-calculate the Water Supply System Yield based on the findings of the test conducted in condition 3.3.1(b). 	SC	
3.3.2	During the independent expert's review under condition 3.3.1, Water NSW must consult with: <ul style="list-style-type: none"> a) Sydney Water; b) stakeholders and regulators as agreed with IPART; and c) any other persons reasonably expected to have an interest in the review of the model under condition 3.3.1. 	NR	
3.3.3	Water NSW must report: <ul style="list-style-type: none"> a) the findings of the independent expert's review under condition 3.3.1; and b) Water NSW's response to those findings, in accordance with the Reporting Manual.	NR	
4	Catchment		
4.1	Catchment management		
4.1.1	Water NSW must manage and protect the Catchment Area consistent with its objectives and functions under the Act.	Audit	This clause was last audited in 2015-16 and was awarded Full Compliance in that audit.
4.2	Information on Catchment Area		
4.2.1	Water NSW must: <ul style="list-style-type: none"> a) make available information collected by Water NSW 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. 	SC	
5	Assets		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.1	Asset Management System		
5.1.1	By 30 June 2015, Water NSW must develop a Management System that is consistent with: <ul style="list-style-type: none"> a) the BSI PAS 55:2008 (PAS 55) Asset Management standard; b) the Water Services Association of Australia's Aquamark benchmarking tool; or c) another asset management standard agreed to by IPART, (Asset Management System). 	Audit	Imposed non-compliance due to WaterNSW amalgamation In March 2017 report, WaterNSW indicated it had achieved certification in January 2017.
5.1.2	Water NSW 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.	Audit	Imposed non-compliance due to WaterNSW amalgamation. The 2015-16 Audit found the Asset Management System was in place by June 2016. The auditor should separately review whether WaterNSW has implemented an AMS consistent with ISO55001 and that relevant activities are carried out in accordance with system. Auditor should investigate the issues related to asset management of aerator at Lake Nepean raised in the NSW Health's submission 25 August 2017. See also recommendation 2015/16-03.
5.1.3	Until the Asset Management System has been developed in accordance with condition 5.1.1, Water NSW must take steps towards developing a Management System that will meet the requirements of condition 5.1.1 by 30 June 2015.	NR	
5.2	Water metering and monitoring		
5.2.1	Water NSW must read each of its Customers' meters.	SC	This is a new clause added to the Licence on 1 July 2016.

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
5.2.2	<p>Where provided for in any agreement between Water NSW and the Minister or DPI Water, Water NSW must</p> <ul style="list-style-type: none"> a) read Metering Equipment (if applicable); b) determine water extraction; and c) carry out any other specified water monitoring functions; <p>at the locations and within the timeframes set out in the agreement.</p>	SC	This is a new clause added to the Licence on 1 July 2016.
5.2.3	Water NSW must provide any data obtained when carrying out its obligations under any agreement described in 4.2.2 to DPI Water in the timeframe and format specified in the agreement.	SC	This is a new clause added to the Licence on 1 July 2016.
5.2.4	<p>Water NSW may operate, replace, repair, maintain, remove, connect, disconnect or modify Metering Equipment installed under a government-funded meter program.</p> <p>[Note: This clause 4.2 enables Water NSW to perform the metering functions set out in this clause for the purposes of section 31(1) of the Act, subject to the terms and conditions of this Licence.]</p>	SC	This is a new clause added to the Licence on 1 July 2016.
6	Customers		
6.1	Customer agreement – Customers other than Sydney Water		
6.1.1	Water NSW 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 condition 6.1.1 must at a minimum include:</p> <ul style="list-style-type: none"> a) the standard of the quality of the water supplied; b) the continuity of the water supplied; c) the costs to be paid by the Customers for the supply of water to them; and d) dispute resolution and complaint handling procedures. <p>[Note: Water NSW must enter into arrangements with Sydney Water regarding the terms and conditions of supply of water under section 22 of the Act.]</p>	SC	The note regarding section 22 of the Act refers to the Bulk Water Agreement.
6.2	Complaints		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
6.2.1	Water NSW must maintain a procedure for receiving, responding to, and resolving Complaints, which is consistent with the Australian Standard AS ISO 10002-2006: Customer satisfaction – Guidelines for complaints handling in organizations (ISO 10002:2004, MOD) (Complaints Handling Procedure).	SC	
6.2.2	Water NSW must provide to Customers information concerning the Complaints Handling Procedure which explains how to make a Complaint and how Complaints are managed. Water NSW must make the information available free of charge: <ul style="list-style-type: none"> 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	
7	Environment		
7.1	Environment management		
7.1.1	By 30 June 2015, Water NSW must develop a Management System which is consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental management systems – Requirements with guidance for use (Environmental Management System).	Audit	Imposed non-compliance due to WaterNSW amalgamation. In March 2017 report, WaterNSW indicated it had achieved certification in January 2017.
7.1.2	Water NSW 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.	Audit	Imposed non-compliance due to WaterNSW amalgamation. In March 2017 report, WaterNSW indicated it had achieved certification in January 2017. The auditor should separately review whether WaterNSW has implemented an EMS consistent with ISO14001 and if relevant activities were carried out in accordance with system. See also recommendation 2015/16-04

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
7.1.3	Water NSW must ensure that: <ul style="list-style-type: none"> a) by 30 June 2017, the Environmental Management System is certified by an appropriately qualified third party to be consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental management systems – Requirements with guidance for use; and b) once the Environmental Management System is certified under condition 7.1.3(a), the certification is maintained during the remaining term of this Licence. 	Audit	In March 2017 report, WaterNSW indicated it had achieved certification in January 2017. Auditor to check if certification meets requirements. See also recommendation 2015/16-04
7.1.4	Until the Environmental Management System has been developed and implemented in accordance with conditions 7.1.1 and 7.1.2, Water NSW 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	If certification has been obtained, check for period prior to certification.
7.2	Environmental Indicators		
7.2.1	Water NSW must: <ul style="list-style-type: none"> a) monitor, record and compile data on the Environmental Indicators; and b) report on the Environmental Indicators in accordance with the Reporting Manual. 	SC	
8	Performance monitoring		
8.1	Operational Audits		
8.1.1	<ul style="list-style-type: none"> a) IPART may undertake, or may appoint an Auditor to undertake, an audit on Water NSW's compliance with: this Licence; b) the Reporting Manual; c) and any matter required by the Minister, (Operational Audit). 	NR	
8.1.2	Water NSW 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	Water NSW must provide any information requested under condition 8.1.2 within a reasonable time of it being requested.	NR	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
8.1.4	<p>For the purposes of any Operational Audit or verifying a report on an Operational Audit, Water NSW 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"> a) have access to any works, premises or offices occupied by Water NSW; b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;: c) take on to any such premises, works or offices any person or equipment necessary for the purposes of performing the Operational Audit or verifying any report on the Operational Audit; d) inspect and make copies of, and take extracts from, any books and records of Water NSW that are maintained in relation to the performance of Water NSW's obligations under this Licence; and e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Water NSW, including any of Water NSW's officers and employees. 	NR	
8.2 Reporting			
8.2.1	<p>Water NSW must comply with its reporting obligations set out in the Reporting Manual, which include:</p> <ul style="list-style-type: none"> a) reporting to IPART, NSW Health, the Minister, and the Catchment Auditor; and b) making reports and other information publicly available, in the manner set out in the Reporting Manual. 	SC	NSW Health will be contacted by IPART to comment on compliance with this clause.
8.2.2	Water NSW must maintain sufficient record systems that enable it to report accurately in accordance with condition 8.2.1.	SC	
8.3 Provision of information			
8.3.1	If IPART requests that Water NSW provide information relating to the performance of its obligations under condition 8.2, Water NSW 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 condition 8.2 and providing physical and/or electronic records.	NR	

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
8.3.2	Water NSW must provide IPART with such information as is reasonably required to enable IPART to conduct any review or investigation of Water NSW's obligations under this Licence.	NR	
8.3.3	If Water NSW 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 condition 8 as if that third party were Water NSW	NR	
8.3.4	If IPART or an Auditor requests information under this condition 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	
9	Memorandum of Understanding		
9.1	Memorandum of Understanding		
9.1.1	Water NSW must maintain a Memorandum of Understanding in accordance with section 36 of the Act, with each of the following: a) Secretary of the Ministry of Health; and b) Environment Protection Authority. [Note: Section 36(1) of the Act requires Water NSW 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.]	SC	This clause was amended on 1 July 2016, changed reference to 'Secretary' instead of 'Director General' of the Ministry of Health. NSW Health and the EPA will be contacted by IPART to comment on compliance with this clause.
9.1.2	The purpose of a Memorandum of Understanding is to form the basis for co-operative relationships between the parties to the memorandum. In particular: 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. 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.	NR	
10	End of term review		

Licence clause	Operating Licence obligation	2016-17 audit requirement	Comments
10.1	End of term review		
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"> a) whether this Licence is fulfilling its objectives; and b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence, <p>(End of Term Review).</p> <p>[Note: In the event that IPART undertakes the End of Term review, IPART intends to:</p> <ul style="list-style-type: none"> a) commence the end of term review (including undertaking public consultation) in the first quarter of 2016; b) report to the Minister by 30 May 2017 on: <ul style="list-style-type: none"> i. the findings of the End of Term Review, ii. any recommendations for conditions to be included in a new licence, and iii. any recommendations for amending any law that adversely impacts on this Licence; and c) make the report to the Minister publicly available after the End of Term Review.] 	NR	This clause was amended on 1 July 2016 to change the dates in the clause.
10.1.2	Water NSW 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 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2015-16 audit findings, and status as reported by utility on 31 March 2017a	Guidance for 2016-17 audit
2014/15-01	2.1.1	WaterNSW should develop and maintain a Water Quality Management System (WQMS) that documents a consistent approach to managing risks, protecting water quality, and public health, across the range of WaterNSW's functions under the Sydney Catchment Authority licence (by 30 September 2016). The WQMS should be consistent with the requirements of the Australian Drinking Water Guidelines 2011 (clause 2.1.1 of SCA licence).	<p>Ongoing</p> <p>The auditor found that WaterNSW's Water Quality Management Framework (WQMF) did not consistently reference its associated processes and documents.</p> <p>Further, the auditor considered that some of these associated processes and documents needed to be strengthened to be consistent with the Australian Drinking Water Guidelines.</p> <p>WaterNSW is continuing to address this recommendation.</p>	Auditor to check completeness
2015/16-01	2.1.1	<p>WaterNSW should improve its processes for reviewing its Water Quality Management System (WQMS), as set out in the Australian Drinking Water Guidelines (ADWG). WaterNSW could achieve this by implementing the following:</p> <ul style="list-style-type: none"> ▼ WaterNSW should undertake, at a minimum, annual reviews of the WQMS to check that it accurately reflects WaterNSW's current operations and operational environment, including any changes that may occur to these and any outcomes/lessons learnt. (The first review should be completed by 30 June 2017.) ▼ WaterNSW should document its review processes in the WQMS specifying the processes to be undertaken and the review 	<p>In Progress</p> <p>WaterNSW has prepared a project plan for review of the Water Quality Management Framework (WQMF) by 30 June 2017. The revised document will be in the form of a manual, with links to all relevant documentation and procedures, and documenting the strategy for validating and reviewing those linked items. The review is underway and on track to meet the project plan milestones.</p> <p>Element 12 of the WQMF will describe the process for annual reviews of the WQMS and Water Quality Improvement Plan, taking into account changes to WaterNSW's operations or environment, emerging risks or any other opportunities for improvement.</p>	Auditor to check completeness

		frequencies. (This should be completed by 30 June 2017.)		
2015/16-02	2.1.1	WaterNSW should undertake, at a minimum, two yearly comprehensive reviews of the WQMS to check that it is fully consistent with each element of the ADWG. (The first review [the Water Quality Management System Review Project] should be completed by 30 June 2018.)	In Progress Following the current review of the WQMF as described above, WaterNSW intends to commission an independent review of the system, incorporate findings and address any gaps as part of a further comprehensive review to be completed by 30 June 2018.	Auditor to check progress
2015/16-03	5.1.1,5.2.2	WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.	Complete WaterNSW was successful in achieving certification of its Asset Management System. Fieldwork for the certification audit was completed on 9 December 2016, with the subsequent report recommending WaterNSW for certification by the Auditors. During the 2015-16 operating licence audit, the auditors observed and noted that WaterNSW had developed and implemented its AMS and was awaiting certification. The certificate of registration for the AMS is effective as at 10 January 2017.	Auditor to check completeness
2015/16-04	5.1.1, 5.2.2	WaterNSW should finalise its development and certification of the Environmental Management system and fully implement it by or before 31 December 2016.	Complete WaterNSW has been successful in achieving certification of the EMS. Fieldwork for the certification audits was completed on 9 December 2016, with the subsequent reports recommending WaterNSW for certification by the Auditors. During the 2015-16 operating licence audit, the auditors observed and noted that WaterNSW had developed and implemented its EMS and was awaiting certification. The certificate of registration for the EMS is effective as at 16 January 2017.	Auditor to check completeness

Table 4 Previous field verification locations for WaterNSW (Sydney Catchment Authority Operating Licence)

Audit year	Location	Facility
2016-17	Nepean	Catchment Areas
2015-16	Brayton	Catchment Areas
	Goulburn	Bradley Street Sewage Pumping Station
2014-15	Leura Falls	Catchment works
2013-14	Cataract Dam	Chemical dosing facility
		Outlet works
	Broughton's Pass	Weir
	Prospect Reservoir	Warragamba Pipeline Outlet Works
		Prospect RWPS (WP0903)
2012-13	Broughton's Pass to Prospect Reservoir	Upper Canal
	Prospect Reservoir	Prospect Reservoir
2011-12	Nil	-
2010-11	Nil	-

Note: Locations and facilities for the 2016-17 operational audit will be confirmed with the utility and successful auditor.

C Auditor's operational audit report 2016-17 –
WaterNSW





2016/17 Operational Audit of WaterNSW

Final Audit Report

#14042-10-001 Version 3.0

Independent Pricing and Regulatory Tribunal

November 2017

Document History

2016/17 Operational Audit of WaterNSW

Final Audit Report

Independent Pricing and Regulatory Tribunal

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Glossary

Acronym/Term	Description
ADWG (2011)	<i>Australian Drinking Water Guidelines, 2011</i>
AMP	Asset Management Plan
ANCOLD	Australian National Committee on Large Dams
ARK	Archives of Records and Knowledge
ATS	Approval to Spend
AWD	Available Water Determination
C2T	Catchment to tap risk assessment
CAIRO	Computer Aided Improved River Operations
CARM	Computer Aided River Management
CCP	Critical Control Point
CEO	Chief Executive Officer
CFO	Customer Field Officer
CMMS	Computerised Maintenance Management System
CSO	Customer Service Officer
DA	Development Application
DBP	Disinfection By-Product
DPI Water	The regulatory and water policy branch within the NSW Department of Primary Industry (formerly the Office of Water)
EWN	Early Warning Network
HYDSTRA	A hydrological data management system
IIMM	International Infrastructure Management Manual
IPART	The Independent Pricing and Regulatory Tribunal (NSW)
IRC	Investment Review Committee
iSMART	Integrated surveillance, monitoring, automation and remote telemetry
iWAS	Internet Water Accounting System
JOG	Joint Operating Group
ML	Megalitre (1 million litres)
MOAR	Manager Operations Assurance and Risk
NATA	National Association of Testing Authorities
NOM	Natural organic matter
NorBE	Neutral or Beneficial Effect
OFI	Opportunity for Improvement
O&M	Operations and Maintenance
pH	A measure of acidity or alkalinity of water

Acronym/Term	Description
PSAT	Pollution Source Assessment Tool
QAP	Quality Assurance Plan
RFS	NSW Rural Fire Service
SASPoM	Special Areas Strategic Plan of Management
SCA	Sydney Catchment Authority
SCADA	Supervisory Control and Data Acquisition
SLG	Strategic Liaison Group
Tickit	Computer software for risk, compliance, incident and audit management used by WaterNSW
TRIM	Total Records and Information Management
WAL	Water Access Licence
WAS	Water Accounting System
WATHNET	Water Headworks Network simulation model
WFP	Water Filtration Plant
WLS	Water Licensing System
WQIRP	Water Quality Incident Response Plan
WQMS	Water Quality Management System
WSP	Water Sharing Plan

Executive Summary

Auditor Declaration

This report presents the findings of an Operational Audit of WaterNSW's compliance with the requirements of its Operating Licences (the *State Water Operating Licence* and *Sydney Catchment Authority Operating Licence*) during the period 1 July 2016 to 30 June 2017. The audit was undertaken by Cobbitty Consulting, in association with Water Futures, for the Independent Pricing and Regulatory Tribunal (IPART).

The audit team confirms that:

- the auditors have seen sufficient evidence on which to base their conclusions;
- the audit findings accurately reflect the professional opinion of the auditors;
- the lead auditor and team members have conducted the audit, determined audit findings and prepared this report in accordance with the requirements of the *Audit Guideline – Public Water Utilities*¹ and IPART's *Request for Quote*.²
- the audit findings have not been unduly influenced by the utility and/or any of its associates.

Major Findings

The audit team found that WaterNSW had performed well against the audited obligations over the audit period. Thirty (30) clauses of the two Operating Licences were audited, the findings in respect of which can be summarised as follows:

- It was found that there was no requirement for compliance in respect of one (1) of the audited clauses during the audit period;
- High compliance has been assigned to two (2) clauses; and
- Full compliance has been awarded to all of the remaining twenty seven (27) audited clauses.

The identified shortcomings relate to Water Metering and Monitoring under the provisions of the *State Water Operating Licence* and Water Quality under the provisions of the *Sydney Catchment Authority Operating Licence*.

The findings of the audit of performance against the audited Licence obligations are summarised in **Table E.1**. The assessment of progress in respect of previous audit recommendations is summarised in **Table E.2**.

¹ IPART, *Audit Guideline – Public Water Utilities* (Revision 7), May 2016.

² IPART, *Request for Quote – RFQ 17/103; 2016-17 WaterNSW Audits*, undated.

Table E.1 Summary of Audit Findings

Licence Part	Clause/Obligation	Compliance Grade/Comment ³
<i>State Water Operating Licence:</i>		
1. Licence and Licence authorisation	1.4.2	Full Compliance
3. Water Quantity	3.1.1	Full Compliance
	3.1.2	Full Compliance
	3.1.3	Full Compliance
	3.1.4	Full Compliance
	3.2.1	Full Compliance
	3.3.1	Full Compliance
4. Assets	4.1.1	Full Compliance
	4.1.2	Full Compliance
	4.1.4	Full Compliance
	4.2.1	High Compliance – WaterNSW had not read all of its Customers' meters during the audit period.
	4.2.2	No Requirement
5. Customers	5.1.1	Full Compliance
	5.1.2	Full Compliance
	5.1.3	Full Compliance
	5.3.1	Full Compliance
	5.3.3	Full Compliance
6. Environmental Management	6.1.1	Full Compliance
	6.1.2	Full Compliance
	6.1.4	Full Compliance
<i>Sydney Catchment Authority Operating Licence:</i>		
2. Water Quality	2.1.1	Full Compliance
	2.1.2	High Compliance – WaterNSW has not ensured that a multiple barrier approach remains in place (as required under Element 3 of the ADWG).
3. Water Supply Sufficiency	3.1.1	Full Compliance
4. Catchment	4.1.1	Full Compliance
5. Assets	5.1.1	Full Compliance
	5.1.2	Full Compliance
7. Environment	7.1.1	Full Compliance
	7.1.2	Full Compliance
	7.1.3	Full Compliance
	7.1.4	Full Compliance

³ Comment provided where less than full compliance assessed.

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

Recommendation	Operational Issue (Licence Reference) ⁴	Compliance Grade/Comment ⁵
<i>State Water Operating Licence:</i>		
-		There are no outstanding recommendations from previous audits
<i>Sydney Catchment Authority Operating Licence:</i>		
2014/15-01	Water Quality – maintain a Water Quality Management System (WQMS) (Licence sub-clause 2.1.1)	Addressed
2015/16-01	Water Quality – improve processes for reviewing the WQMS (Licence sub-clause 2.1.1)	Addressed
2015/16-02	Water Quality – undertake, at a minimum, two yearly comprehensive reviews of the WQMS (Licence sub-clause 2.1.1)	Addressed
2015/16-03	Assets – finalise development and certification of the Asset Management System and fully implement it on or before 31 December 2016 (Licence sub-clauses 5.1.1 and 5.1.2)	Addressed
2015/16-04	Environment – finalise development and certification of the Environmental Management System and fully implement it on or before 31 December 2016 (Licence sub-clauses 7.1.1 and 7.1.2)	Addressed

⁴ Refer to the relevant section of this report and associated appendix for full details of previous recommendations.

⁵ Comment provided where less than full compliance assessed.

Recommendations

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

Table E.3 Audit Recommendations

Licence Part	Clause/Obligation	Recommendation
<i>State Water Operating Licence:</i>		
4. Assets	4.2.1	REC-2016/17-01: It is recommended that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. This action should be completed by 30 June 2018.
<i>Sydney Catchment Authority Operating Licence:</i>		
2. Water Quality	2.1.2	<p>REC-2016/17-02: It is recommended that WaterNSW should:</p> <ul style="list-style-type: none"> ▪ repair or replace the failed Nepean Reservoir mixer as a matter of priority; ▪ undertake a risk assessment to determine appropriate strategies/controls to address any current reliability concerns or potential future failure of all such mixer/aerator assets within its portfolio; and ▪ implement such strategies/controls. <p>Repair/replacement of the Nepean Reservoir mixer by 30 June 2018 would ensure availability for the 2018/19 summer (repair/replacement prior to the 2017/18 summer would be ideal but is considered potentially impractical). Strategies for ensuring continuing functionality of all mixer/aerator assets should then be developed by 30 June 2018 and implemented by 31 December 2018.</p>

1. Introduction

1.1 Objectives

The objective of this audit was to assess, for the period from 1 July 2016 to 30 June 2017, WaterNSW's performance against the terms and conditions (obligations) of:

- the *State Water Corporation Operating Licence 2013-2018* (State Water Operating Licence);
- the *Sydney Catchment Authority Operating Licence 2012-2017* (SCA Operating Licence); and
- any other Ministerially-imposed requirements.

1.2 Audit Method

1.2.1 Audit Scope

The scope of the 2016/17 Operational Audit of WaterNSW is specified in detail in the *Request for Quote – RFQ 17/103; 2016-17 WaterNSW Audits*; it comprised:

- audit of WaterNSW's compliance with the obligations and requirements set out in its Operating Licences;⁶ and
- assessment of WaterNSW's progress in addressing outstanding recommendations arising from previous audits.

As outlined in its *Audit Guideline – Public Water Utilities*,⁷ IPART adopts a risk-based approach in setting the scope of public water utility operational audits. The clauses/obligations against which WaterNSW's compliance has been assessed are identified in **Table 1.1**.

⁶ Refer to **Section 1.3** for a discussion of the regulatory regime under which WaterNSW operates, including identification of its operating licences.

⁷ IPART, *Audit Guideline – Public Water Utilities* (Revision 7), May 2016, section 2.1, page 4.

Table 1.1 Scope of 2016/17 Operational Audit of WaterNSW

Licence Part	Clause/Obligation
<i>State Water Operating Licence:</i>	
1. Licence and Licence authorisation	1.4.2
3. Water Quantity	3.1.1; 3.1.2; 3.1.3; 3.1.4; 3.2.1; 3.3.1
4. Assets	4.1.1; 4.1.2; 4.1.4; 4.2.1; 4.2.2
5. Customers	5.1.1; 5.1.2; 5.1.3; 5.3.1; 5.3.3
6. Environmental Management	6.1.1; 6.1.2; 6.1.4
<i>SCA Operating Licence:</i>	
2. Water Quality	2.1.1; 2.1.2
3. Water Supply Sufficiency	3.1.1
4. Catchment	4.1.1
5. Assets	5.1.1; 5.1.2
7. Environment	7.1.1; 7.1.2; 7.1.3; 7.1.4

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

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

Licence	Recommendations/Outstanding Items ⁸
<i>State Water Operating Licence</i>	<ul style="list-style-type: none"> ▪ There are no outstanding recommendations from previous audits
<i>SCA Operating Licence</i>	<ul style="list-style-type: none"> ▪ 2014/15-01: related to Water Quality – documentation of Water Quality Management System (WQMS) consistent with the requirements of the Australian Drinking Water Guidelines (ADWG) ▪ 2015/16-01: related to Water Quality – improve processes for reviewing the WQMS ▪ 2015/16-02: related to Water Quality – undertake, at a minimum, two yearly comprehensive reviews of the WQMS ▪ 2015/16-03: related to Assets – finalise development and certification of the Asset Management System and fully implement it on or before 31 December 2016 ▪ 2015/16-04: related to the Environment – finalise development and certification of the Environmental Management System and fully implement it on or before 31 December 2016

⁸ Refer to the relevant section of this report and associated appendix for full details of previous recommendations.

1.2.2 Audit Standard

The auditing principles/guidance presented in ISO 19011:2011 *Guidelines for auditing management systems* have been applied in conducting this audit. Guidance presented in the following standards was also considered where appropriate:

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

1.2.3 Audit Steps

The audit was undertaken in accordance with the methodology outlined in IPART's *Audit Guideline – Public Water Utilities*.⁹ The audit steps are identified in **Table 1.3**.

Audit interviews and field verification site visits were undertaken during the five (5) day period 25 September 2017 to 29 September 2017. Interviews were conducted with WaterNSW representatives at WaterNSW's Parramatta offices. Field verification site visits were made to:

- Nepean System (Metro Operations) – inspection of:
 - catchment management practices; and
 - reservoir mixing and extraction systems; and
 - dam related infrastructure.
- Murrumbidgee Valley (Non-metro Operations):
 - inspection of infrastructure, including the following:
 - Tombullen Storage;
 - Yanco Weir;
 - Gogeldrie Weir;
 - Berembed Weir; and
 - Beavers Creek Regulator (and Fish Passage); and
 - review of operational and maintenance practices, including visit to Leeton office.

Table 1.3 Audit Steps¹⁰

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

⁹ IPART, *Audit Guideline – Public Water Utilities* (Revision 7), May 2016.

¹⁰ IPART, *Audit Guideline – Public Water Utilities* (Revision 7), May 2016, table 2.1, page 7.

1.2.4 Audit Team

The audit team comprised of the following:

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

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




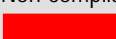
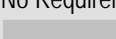
Table 1.4 Allocation of Audit Responsibilities

Licence Part	Clause/Obligation	Auditor
<i>State Water Operating Licence:</i>		
1. Licence and Licence authorisation	1.4.2	Jim Sly/Asoka Wijeratne
3. Water Quantity	3.1.1; 3.1.2; 3.1.3; 3.1.4; 3.2.1; 3.3.1	Jim Sly/Asoka Wijeratne
4. Asset	4.1.1; 4.1.2; 4.1.4; 4.2.1; 4.2.2	Jim Sly/Asoka Wijeratne
5. Customers	5.1.1; 5.1.2; 5.1.3; 5.3.1; 5.3.3	Jim Sly/Asoka Wijeratne
6. Environmental Management	6.1.1; 6.1.2; 6.1.4	Dan Deere/Tasleem Hasan
Management System Development Status	Asset Management Plan and Environmental Management Plan	Jim Sly/Dan Deere
<i>SCA Operating Licence:</i>		
2. Water Quality	2.1.1; 2.1.2	Dan Deere/Tasleem Hasan
3. Water Supply Sufficiency	3.1.1	Jim Sly/Asoka Wijeratne
4. Catchment	4.1.1	Dan Deere
5. Assets	5.1.1; 5.1.2	Jim Sly/Asoka Wijeratne
7. Environment	7.1.1; 7.1.2; 7.1.3; 7.1.4	Dan Deere/Tasleem Hasan
Recommendations/Outstanding Items from Previous Audits	2014/15-01; 2015/16-01; 2015/16-02	Dan Deere/Tasleem Hasan
	2015/16-03	Jim Sly/Asoka Wijeratne
	2015/16-04	Dan Deere/Tasleem Hasan
Management System Development Status	Asset Management Plan and Environmental Management Plan	Jim Sly/Dan Deere

1.2.5 Audit Grades

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

Table 1.5 Compliance Grades for Public Utilities¹¹

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

1.3 Regulatory Regime

WaterNSW is constituted under the *Water NSW Act 2014* and is a statutory State owned corporation pursuant to the *State Owned Corporations Act 1989*.

WaterNSW, formed by bringing together the two previous entities State Water Corporation and the Sydney Catchment Authority as of 1 January 2015, is responsible for developing infrastructure solutions for improved water supply and reliability, protecting water quality in its designated catchments, catchment protection in the Greater Sydney drinking water catchments, asset management, and flood operations and mitigation. WaterNSW’s area of operations includes the whole of the State of NSW.

Pursuant to Section 11 of the *WaterNSW Act 2014*, WaterNSW can be granted one or more operating licences to authorise it to carry out its specified and other functions. For the purposes of this audit (which addresses the audit period 1 July 2016 to 30 June 2017), WaterNSW has been granted and has been operating under the provisions of the *State Water Corporation Operating Licence 2013-2018* and the *Sydney Catchment Authority Operating Licence 2012-2017*.

It is noted that substitute licences, issued under section 13(1)(b) of the *Water NSW Act*, became effective on and from 1 July 2016. These substitute licences amended the licences that had been in place prior to that date.

¹¹ IPART, *Audit Guideline – Public Water Utilities* (Revision 7), May 2016, table C.1, page 27.

1.4 Quality Assurance Process

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

- Peer review of the audit questionnaires prior to submission to IPART;
- Processes to control all documents used in the audit;
- Accuracy checks of reported data and the completeness of audit trails;
- Peer review of preliminary findings and audit assessments included in the Draft Reports;
- Quality review of the Draft Reports (both independently and by the Audit Team Leader);
- Peer review of the Revised Draft Reports, specifically the treatment of comments received on the Draft Report and the feasibility of recommendations and opportunities for continuous improvement; and
- Quality review of the Final Report (both independently and by the Audit Team Leader).

An independent review has been undertaken to ensure that the accuracy of each section of the report is checked through quality control steps and all audit judgements, conclusions and recommendations are validated. The independent review was undertaken by Bob Burford, who holds Exemplar Global lead auditor accreditation in respect of Drinking Water Quality Management Systems and ISO lead auditor certification in respect of Environmental Management Systems, Quality Management Systems, OHS Management Systems, Food Safety (Water) Management Systems and Information Security Management Systems.

As Audit Team Leader, Jim Sly has also reviewed the Audit Report prior to release.

2. State Water Operating Licence

Section 1 – Licence and Licence Authorisation

2.1 Summary of Findings

Clause 1.4.2 – Full Compliance

This clause requires WaterNSW to exercise any functions conferred on it under the Licence consistently with the *Water Management Act 2000* (NSW), the *Water Act 1912* (NSW), the *New South Wales – Queensland Border Rivers Act 1947* (NSW), any other relevant law and any relevant Water Management Plan.

WaterNSW demonstrated that it has exercised each of the conferred functions that have been the subject of this audit during the audit period. On this basis, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Notwithstanding the assessed compliance, it should be noted that with one exception, the audited functions had only been conferred on WaterNSW at the start of the audit period. WaterNSW is working to improve its procedures for the exercise of these functions, which were inherited as part of the transfer. Full integration of both staff (that were also transferred) and procedures will require the implementation of an effective change management process.

Detailed assessment in respect to this sub-clause is presented in **Table A.1.1** (refer **Appendix A**).

2.2 Recommendations

No recommendations are made in respect of this section of the *State Water Operating Licence*.

2.3 Opportunities for Improvement

The following opportunities for improvement have been identified in respect of this section of the *State Water Operating Licence*.

- **OFI-2016/17-01:** [clause 1.4.2] It is suggested that WaterNSW continues the integration of staff and procedures associated with its conferred functions through the implementation of an effective change management process. This should include a detailed review of the procedures currently being implemented and the associated resource requirements.
- **OFI-2016/17-02:** [clause 1.4.2] It is suggested that WaterNSW considers identifying and implementing measures to assess the effectiveness with which it exercises its conferred functions. This may include (for example) an assessment of the extent to which the need to exercise the conferred functions is being identified (what proportion of potential ‘cases’ are being identified) and an assessment of the benefits derived through exercise of the conferred functions (is an effective outcome achieved).

3. State Water Operating Licence

Section 3 – Water Quantity

3.1 Summary of Findings

Clause 3.1.1 – Full Compliance

This clause requires WaterNSW to take all reasonable steps to process all Water Orders promptly and efficiently.

WaterNSW demonstrated that it has in place, and implements, a *Water Ordering Procedure* which provides a reasonable basis for ensuring that Water Orders are processed promptly and efficiently. Orders can be placed on-line using the iWAS system, in which case orders are processed automatically, or via the Customer Helpdesk, in which case there is a clearly defined procedure for ensuring compliance and submitting the order into the WAS system.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.1** (refer **Appendix A**).

Clause 3.1.2 – Full Compliance

This clause requires WaterNSW to take all reasonable steps to manage Water Orders so as to ensure the timely delivery of water to its Customers.

WaterNSW demonstrated that, through the implementation of its *Water Ordering Procedure* and use of its Computer Aided Improved River Operations (CAIRO) management tool, it has taken reasonable steps to ensure the timely delivery of water to its Customers. Based on the number of complaints received, it is evident that WaterNSW ensures the timely delivery of water for almost 100 percent of water orders.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.2** (refer **Appendix A**).

Clause 3.1.3 – Full Compliance

This clause requires WaterNSW to maintain a Water Allocation Account for each licence held by a Customer.

WaterNSW demonstrated that it maintains and effectively manages a Water Allocation Account for each access licence issued under the *Water Management Act 2000* (NSW) and each licence issued under the *Water Act 1912* (NSW) held by customers. Procedures are in place to guide the implementation of this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.3** (refer **Appendix A**).

Clause 3.1.4 – Full Compliance

This clause requires WaterNSW to take all reasonable steps to conserve water and minimise water losses that result from undertaking its operations under this Licence.

WaterNSW demonstrated that, during the audit period, it had limited the release of operational surpluses to 3.46% across the state (compared to a target of 5%). It also achieved benefits from the implementation of alternative operational and water ordering protocols, and has secured funding under the State Infrastructure Strategy to assess alternative arrangements to reduce transition losses in valleys where high losses are recorded.

On this basis, it is considered that WaterNSW had taken reasonable steps to conserve water and minimise water losses that result from undertaking its operations during the audit period.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.4** (refer **Appendix A**).

Clause 3.2.1 – Full Compliance

This clause requires WaterNSW to maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes.

WaterNSW demonstrated that it continues to maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes. Interested parties can register via the WaterNSW website, and are able to select specific notifications to suit their individual needs.

Concerns raised by DPI Water regarding the absence of notifications appear to have resulted from a misunderstanding within DPI Water of WaterNSW's requirements under the Operating Licence and those under Works Approvals.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.5** (refer **Appendix A**).

Clause 3.3.1 – Full Compliance

This clause requires WaterNSW to prepare water balance reports for each of the Valleys in which it operates and to make them available on its website and at its offices.

WaterNSW demonstrated that it had prepared water balance reports for each of the valleys in which it operates and the reports included the requisite information. The auditors confirmed that the water balance reports were available on the WaterNSW website for downloading.

Although the auditors did not seek to obtain or access a copy of the water balance reports at a WaterNSW office as part of this audit, it is assessed that WaterNSW is fully compliant with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table A.2.6** (refer **Appendix A**).

3.2 Recommendations

No recommendations are made in respect of this section of the *State Water Operating Licence*.

3.3 Opportunities for Improvement

The following opportunity for improvement has been identified in respect of this section of the *State Water Operating Licence*:

- **OFI-2016/17-03:** [clause 3.1.1] It is suggested that WaterNSW takes steps to finalise review of the *Water Ordering Procedure* and implement a formalised periodic review thereafter.

[Note: WaterNSW demonstrated that it had addressed this opportunity for improvement by finalising its review of the Water Ordering Procedure and initiating a two yearly review cycle prior to issue of the Final Audit Report.]

4. State Water Operating Licence

Section 4 – Assets

4.1 Summary of Findings

Clause 4.1.1 – Full Compliance

This clause requires that, by 30 June 2018, WaterNSW must develop a Management System that is consistent with the *International Standard ISO 55001:2013 Asset Management - Management systems - Requirements*; or another asset management standard agreed to by IPART.

WaterNSW's Asset Management System was certified as being compliant with the requirements of *ISO 55001:2014* on 10 January 2017. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table A.3.1** (refer **Appendix A**).

Clause 4.1.2 – Full Compliance

This clause requires that, in the case of an Asset Management System which is developed under the *International Standard ISO 55001:2013 Asset Management - Management systems - Requirements*, WaterNSW must ensure that:

- by 30 June 2018, the Asset Management System is certified as being consistent with *ISO 55001:2013*; and
- once the Asset Management System is certified, the certification is maintained during the remaining term of the current Licence.

WaterNSW's Asset Management System was certified as being consistent with *ISO 55001:2014*; a *Certificate of Registration* was issued by BSI Group, which holds the required accreditation, on 10 January 2017. Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Asset Management System, a prerequisite to maintaining certification, throughout the audit period.

Detailed assessment in respect to this sub-clause is presented in **Table A.3.2** (refer **Appendix A**).

Clause 4.1.4 – Full Compliance

This clause requires that, until it has developed an asset management system pursuant to clause 4.1.1, and had it certified pursuant to clause 4.1.2 (if applicable), of the *Operating Licence*, WaterNSW must maintain programs to manage risks to its assets and to maintain the appropriate levels of service of those assets; and ensure that all its activities are carried out in accordance with those programs.

WaterNSW demonstrated that it continues to maintain and implement programs to manage risks to its rural (former State Water) assets and to maintain the appropriate levels of service of those assets. Risks to assets and levels of service are managed through a rigorous condition and

reliability audit program, supported by the implementation of effective operation and maintenance practices.

Assessment of the field implementation of asset management practices in the Murrumbidgee Valley revealed that site based personnel undertake an extensive range of operations and maintenance activities. They demonstrated a high level of ‘ownership’ and pride in their work and it was apparent that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

Detailed assessment in respect to this sub-clause is presented in **Table A.3.3** (refer **Appendix A**).

Clause 4.2.1 – High Compliance

This clause requires WaterNSW to read each of its customers meters.

WaterNSW demonstrated that it had read the majority, but not all, of its customers’ meters during the audit period. The total number of reads (as assessed for regulated source customers) was less than the frequency requirements documented in the *Meter Reading Procedure*. On this basis, it is assessed that WaterNSW has demonstrated high compliance with this obligation.

It is recommended that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. To facilitate the implementation of this recommendation, it is suggested that WaterNSW updates its *Meter Reading Procedure* to reflect the change in WaterNSW’s responsibilities in respect of water take measurement and the requirements of the *WaterNSW Operating Licence 2017-2022* (i.e. develop a *Determination of Water Take Procedure*). Such procedure should detail all methods used to determine and/or validate water take measurements.

Detailed assessment in respect to this sub-clause is presented in **Table A.3.4** (refer **Appendix A**).

Clause 4.2.2 – No Requirement

This clause requires WaterNSW to read metering equipment, determine water extraction and carry out any other specified water monitoring functions at locations and within timeframes set out in the agreement, where it has an agreement in place with the Minister or DPI Water to do so.

A *Deed of Business Transfer* between the Department of Industry, Skills and Regional Development and WaterNSW, which took effect as of 1 July 2016, facilitated the transfer of meter reading functions for unregulated and groundwater sources from DPI Water to WaterNSW. Service Level Agreements in respect of meter reading functions for unregulated and groundwater sources that were in place prior to this transfer of responsibilities no longer had effect.

In the absence of any other identified agreement between Water NSW and the Minister or DPI Water, there was no requirement for WaterNSW to read meters, determine water extraction or carry out any other specified water monitoring functions pursuant to this obligation.

In summary, it is understood that under the new arrangements WaterNSW is fully responsible for the meter reading function; it no longer performs this function in respect of groundwater and unregulated river sources as a service provider to DPI Water.

Detailed assessment in respect to this sub-clause is presented in **Table A.3.5** (refer **Appendix A**).

4.2 Recommendations

The following recommendation is made in respect of this section of the *State Water Operating Licence*:

- **REC-2016/17-01:** [clause 4.2.1] It is recommended that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. This action should be completed by 30 June 2018.

4.3 Opportunities for Improvement

The following opportunity for improvement has been identified in respect of this section of the *State Water Operating Licence*:

- **OFI-2016/17-04:** [clause 4.1.2] It is suggested that WaterNSW ensures that the record of each Management Review of the Asset Management System includes the date of the review, details of the management representatives that had participated in undertaking the review and the date of the next planned review.

[*Note: WaterNSW advised, prior to issue of the Final Audit Report, that it is reviewing its management review processes with a view to rationalising implementation across all of its management forums (systems). This approach is supported.*]

- **OFI-2016/17-05:** [clause 4.2.1] It is suggested that WaterNSW updates its *Meter Reading Procedure* to reflect the change in WaterNSW's responsibilities in respect of water take measurement and the requirements of the *WaterNSW Operating Licence 2017-2022* (i.e. develop a *Determination of Water Take Procedure*). Such procedure should detail all methods used to determine and/or validate water take measurements.
- **OFI-2016/17-06:** [clause 4.2.1] WaterNSW may wish to consider providing information to affected customers outlining the change in responsibilities in respect of metering of unregulated and groundwater sources and the action subsequently taken by WaterNSW (if this has not already been done). Such information could be provided in a mailed brochure, email notice or other appropriate means.

5. State Water Operating Licence

Section 5 – Customers

5.1 Summary of Findings

Clause 5.1.1 – Full Compliance

This clause requires WaterNSW to regularly consult with Valley-based customer service committees (CSCs) to enable Customer involvement in issues relevant to the performance of WaterNSW's obligations to its Customers (excluding Fish River Water Supply Scheme Customers) under the provisions of the *Operating Licence* and the *Customer Service Charter*.

WaterNSW demonstrated that, during the audit period, it regularly consulted with the Valley-based customer service committees (CSCs) regarding issues relevant to the performance of its obligations to customers. It also consulted with a reference group comprising a representative from each CSC in respect of matters of interest across all Valleys.

In respect of concerns raised by the New South Wales Irrigator's Council, minutes of meetings of both CSCs and the CSC Reference Group indicate that WaterNSW has informed/consulted with the CSCs in relation to the items specifically identified.

Detailed assessment in respect to this sub-clause is presented in **Table A.4.1** (refer **Appendix A**).

Clause 5.1.2 – Full Compliance

This clause requires WaterNSW to invite at least one representative from groups or bodies, including customers that are Unregulated River water users, customers that are groundwater users, the NSW environmental water entitlement holder, the Commonwealth Environmental Water Holder, Local Land Services and DPI Water, to be members of each Valley-based customer service committee.

Based on the findings of the 2015/16 Operational Audit, it was assessed that membership of Customer Service Committees (CSCs), which continued from previous years, was compliant with the requirements of this obligation with the exception of the new requirement (effective from 1 July 2016) to include a representative of DPI Water. WaterNSW demonstrated that it had invited DPI Water representatives to attend CSC meetings during the first six-months of the audit period and had initiated an alternative Partnership Forum through which to engage with DPI Water.

In respect to concerns expressed by DPI Water that "...a DPI Water representative is no longer required ...", it is considered that this comment may relate to the changes to consultation arrangements under the *WaterNSW Operating Licence 2017-2022*, and is therefore not directly applicable to this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table A.4.2** (refer **Appendix A**).

Clause 5.1.3 – Full Compliance

This clause requires WaterNSW to provide the customer service committees (CSCs) with adequate information within its possession or under its control to enable the CSC to discharge the tasks assigned to it, subject to confidentiality (or similar) provisions.

WaterNSW demonstrated that it provides the customer service committees (CSCs) with adequate information within its possession or under its control so as to enable the CSCs to discharge the tasks assigned to it. It was noted that the *CSC Terms of Reference and Operating Guidelines* identify restrictions in respect of the provision of confidential information.

Detailed assessment in respect to this sub-clause is presented in **Table A.4.3** (refer **Appendix A**).

Clause 5.3.1 – Full Compliance

This clause requires WaterNSW to regularly consult with a Fish River Customer Council.

WaterNSW demonstrated that it has regularly consulted with the Fish River Customer Council to enable Fish River Water Scheme Customer involvement in issues relevant to the performance of WaterNSW in its obligations to Fish River Water Scheme Customers. A review of meeting agenda, business papers and meeting minutes revealed that relevant topics were addressed.

Detailed assessment in respect to this sub-clause is presented in **Table A.4.4** (refer **Appendix A**).

Clause 5.3.3 – Full Compliance

This clause requires WaterNSW to provide the Fish River Customer Council with adequate information so as to enable the Fish River Customer Council to discharge the tasks assigned to it, subject to confidentiality (or similar) restrictions.

WaterNSW demonstrated that it provides the Fish River Customer Council with adequate information within its possession or under its control so as to enable the Customer Council to discharge the tasks assigned to it. WaterNSW also demonstrated that it has a procedure in place that provides guidance in respect of information that cannot be provided to the Customer Council due to confidentiality or privilege.

Detailed assessment in respect to this sub-clause is presented in **Table A.4.5** (refer **Appendix A**).

5.2 Recommendations

No recommendation is made in respect of this section of the *State Water Operating Licence*.

5.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of this section of the *State Water Operating Licence*.

6. State Water Operating Licence

Section 6 – Environmental Management

6.1 Summary of Findings

Clause 6.1.1 – Full Compliance

This clause requires that, by 30 June 2018, WaterNSW must develop a Management System that is consistent with the *Australian Standard AS/NZS ISO 14001:2004 Environmental Management Systems - Requirements with guidance for use*.

WaterNSW's Environmental Management System was certified as being compliant with the requirements of *ISO 14001:2004* on 16 January 2017. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table A.5.1** (refer **Appendix A**).

Clause 6.1.2 – Full Compliance

This clause requires that:

- by 30 June 2018, the Environmental Management System is certified as being consistent with *AS/NZS ISO 14001:2004*; and
- once the Environmental Management System is certified, the certification is maintained during the remaining term of the current Licence.

WaterNSW's Environmental Management System was certified as being consistent with *ISO 14001:2004*; a Certificate of Registration was issued by BSI Group, which holds the required accreditation, on 16 January 2017. The certification covers the full scope of activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence* (and the *SCA Operating Licence*), and WaterNSW is now certified for all except the recently inherited DPI Water functions (hydrometric and compliance services) which have already been subject to a surveillance audit.

Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Environmental Management System, a prerequisite to maintaining certification, throughout the audit period.

Detailed assessment in respect to this sub-clause is presented in **Table A.5.2** (refer **Appendix A**).

Clause 6.1.4 – Full Compliance

This clause requires that, until it has developed an Environmental Management System pursuant to clause 6.1.1 and had it certified pursuant to clause 6.1.2, WaterNSW must maintain programs to manage risks to the environment from carrying out its activities and ensure that all its activities are carried out in accordance with those programs.

The evidence provided demonstrates that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs. Target actions in support of objectives to minimise the environmental impact of infrastructure and activities and to promote an environmentally responsible culture were substantially met.

Detailed assessment in respect to this sub-clause is presented in **Table A.5.3** (refer **Appendix A**).

6.2 Recommendations

No recommendations are made in respect of this section of the *State Water Operating Licence*.

6.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of this section of the *State Water Operating Licence*.

7. Sydney Catchment Authority Operating Licence Section 2 – Water Quality

7.1 Summary of Findings

Clause 2.1.1 – Full Compliance

This clause requires WaterNSW to maintain a Management System that is consistent with the Australian Drinking Water Guidelines (ADWG) or the ADWG as amended or added to by NSW Health.

The auditors found that WaterNSW has established a Water Quality Management System (WQMS) which addresses and is consistent with the framework prescribed by the ADWG.

Detailed assessment in respect to this sub-clause is presented in **Table B.1.1** (refer **Appendix B**).

Clause 2.1.2 – High Compliance

This clause requires WaterNSW to fully implement the WQMS and carry out all relevant activities in accordance with the System, including to the satisfaction of NSW Health.

The auditors assessed that the items/elements that were documented in the WQMS were largely being implemented, including monitoring, incident management, communication and catchment management. The main shortfall noted relates to Element 3 of the ADWG, to ensure that a multiple barrier approach remains in place when implementing the WQMS in the field.

Aerators and destratifiers are used by WaterNSW as preventive measures/barriers in the reservoirs. However, it was noted that the compressed air diffuser/mixer was not working at Nepean Reservoir. This finding was considered to represent a non-compliance in that an important operational asset that serves as a preventive measure to help reduce significant risks from important water quality hazards has failed. The failed preventive measure (aerator) has not been replaced in over 12 months. There was no standby replacement asset or any replacement plan as a contingency to allow for the reasonably foreseeable case that this preventive measure might fail.

Detailed assessment in respect to this sub-clause is presented in **Table B.1.2** (refer **Appendix B**).

Recommendation 2014/15-01 – Addressed

This recommendation required that:

“WaterNSW should develop and maintain a Water Quality Management System (WQMS) that documents a consistent approach to managing risks, protecting water quality, and public health, across the range of WaterNSW’s functions under the Sydney Catchment Authority licence (by 30 September 2016). The WQMS should be consistent with the requirements of the Australian Drinking Water Guidelines 2011.”

The recommendation has been adequately addressed, although it was not completed until July 2017, i.e. after the target date of 30 September 2016. The updated WQMS documents a consistent approach to managing water quality risks. The WQMS is consistent with the requirements of the ADWG 2011 and is structured around the 12 Elements of the Framework for Management of Water Quality. It is noted that the WQMS is a ‘living’ document which needs to be used and kept up to date.

Detailed assessment in respect to this past recommendation is presented in **Table B.1.3** (refer **Appendix B**).

Recommendation 2015/16-01 – Addressed

This recommendation required that:

“WaterNSW should improve its processes for reviewing its Water Quality Management System (WQMS), as set out in the Australian Drinking Water Guidelines (ADWG). WaterNSW could achieve this by implementing the following:

- *WaterNSW should undertake, at a minimum, annual reviews of the WQMS to check that it accurately reflects WaterNSW’s current operations and operational environment, including any changes that may occur to these and any outcomes/ lessons learnt.*

(The first review should be completed by 30 June 2017).

- *WaterNSW should document its review processes in the WQMS specifying the processes to be undertaken and the review frequencies.*

(This should be completed by 30 June 2017).”

The auditors noted that the review has been undertaken to produce the updated WQMS. In addition, WaterNSW has clearly stipulated the review frequencies associated with the various components of the WQMS and the process for the annual review of the WQMS. Undertaking reviews as stated in the updated WQMS will be a routine task for WaterNSW, and implementation of this will be checked as part of the regular Operating Licence audits.

Detailed assessment in respect to this past recommendation is presented in **Table B.1.4** (refer **Appendix B**).

Recommendation 2015/16-02 – Addressed

This recommendation required that:

“WaterNSW should undertake, at a minimum, two yearly comprehensive reviews of the WQMS to check that it is fully consistent with each element of the ADWG.

(The first review [the Water Quality Management System Review Project] should be completed by 30 June 2018).

A review of the WQMS document has been undertaken to produce the updated WQMS. The WQMS is consistent with the requirements of the ADWG 2011 and is structured around the 12 Elements of the Framework for Management of Water Quality. In addition, the revised Water Quality Incident Response Protocol, which is a core component of the WQMS, has been comprehensively reviewed and updated.

Ongoing review frequencies associated with the various key components of the WQMS and the process for the annual review of the WQMS have also been documented by WaterNSW. Undertaking reviews as stated in the updated WQMS will be a routine task for WaterNSW, and implementation of this will be checked as part of the regular Operating Licence audits.

Detailed assessment in respect to this past recommendation is presented in **Table B.1.5** (refer **Appendix B**).

7.2 Recommendations

The following recommendation is made in respect of this section of the *Sydney Catchment Authority Operating Licence*:

- **REC-2016/17-02:** [clause 2.1.2] WaterNSW should:
 - repair or replace the failed Nepean Reservoir mixer as a matter of priority;
 - undertake a risk assessment to determine appropriate strategies/controls to address any current reliability concerns or potential future failure of all such mixer/aerator assets within its portfolio; and
 - implement such strategies/controls.

Repair/replacement of the Nepean Reservoir mixer by 30 June 2018 would ensure availability for the 2018/19 summer (repair/replacement prior to the 2017/18 summer would be ideal but is considered potentially impractical). Strategies for ensuring continuing functionality of all mixer/aerator assets should then be developed by 30 June 2018 and implemented by 31 December 2018.

7.3 Opportunities for Improvement

The following opportunities for improvement have been identified in respect of this section of the *Sydney Catchment Authority Operating Licence*:

Element 5 – Verification of Water Quality:

- **OFI-2016/17-07:** [clause 2.1.1] WaterNSW should continue to move further towards best practice (rather than routine) monitoring methods for protozoan parasites in source waters. Such methods would capture large volumes (hundreds to thousands of litres) per sample (as Sydney Water has started to do in raw water samples) and gather more event-based samples (as WaterNSW has begun undertaking, but collecting from additional sample points further upstream and using more sensitive methods with larger volumes). This move would significantly increase the statistical power, credibility and value of the WaterNSW protozoan parasite monitoring program. It is acknowledged that such a task is not simple and that the assessment of viability and infectivity already occurs. It is noted that the more specialised water laboratories, such as the Sydney Water laboratories locally, and SA Water laboratories, have set up such methods and strategies. Furthermore, other more generic service providers might be able to offer such monitoring if requested and supported in setting them up.

Element 7 – Employee Awareness and Training:

- **OFI-2016/17-08:** [clause 2.1.1] WaterNSW could consider ways to formalise a workforce and succession planning program. The program ought to identify the critical expertise required by WaterNSW to understand and manage drinking water catchments and reservoirs for water quality outcomes. Programs of building and maintaining expertise could be implemented to help ensure that WaterNSW is not left exposed due to periods of staff leave or staff turnover.

Element 9 – Research and Development:

- **OFI-2016/17-09:** [clause 2.1.1] Building on its existing collaborative work in liaison with Sydney Water, WaterNSW could undertake significantly more monitoring, research and management interventions to fully understand the sources of bulk NOM within its water sources, the fate and transport of bulk NOM through its waterways and reservoirs and the way that interventions can limit its export, transport and residence time. This evidence could directly feed into the various WaterNSW modelling, development assessment and planning tools alongside nutrients, sediments and pathogens. Additional expertise in NOM may need to be recruited within WaterNSW to deliver such a wide-ranging, complex and important program.

8. Sydney Catchment Authority Operating Licence Section 3 – Water Supply Sufficiency

8.1 Summary of Findings

Clause 3.1.1 – Full Compliance

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

WaterNSW demonstrated that it had continued to operate and manage the Catchment Infrastructure consistent with the Design Criteria during the audit period. Furthermore, it demonstrated that it implements a set of Operating Rules to guide its approach.

There remains an opportunity to optimise system operation on the basis of total cost of water supplied to the consumer (i.e. taking into account both system yield/water security and the cost of treatment). Notwithstanding, WaterNSW is assessed as having demonstrated full compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table B.2.1** (refer **Appendix B**).

8.2 Recommendations

No recommendations are made in respect of this section of the *Sydney Catchment Authority Operating Licence*.

8.3 Opportunities for Improvement

The following opportunity for improvement has been identified in respect of this section of the *Sydney Catchment Authority Operating Licence*:

- **OFI-2016/17-10:** [clause 3.1.1] It is suggested that in the absence of actual water treatment cost information, WaterNSW may be able to identify/obtain indicative (or surrogate) cost information that could be used to optimise system operation on the basis of total cost of water supplied to the consumer.

9. Sydney Catchment Authority Operating Licence

Section 4 – Catchment

9.1 Summary of Findings

Clause 4.1.1 – Full Compliance

This clause requires WaterNSW to manage and protect the Catchment Area consistent with its objectives and functions under the Act.

WaterNSW has demonstrated that it implements activities to manage and protect the catchment area consistent with its relevant objectives and functions under the Act. Overall, WaterNSW demonstrated during the audit that it was aware of development pressure in the catchments, was controlling those pressures, and did not have indications from water quality monitoring of significant reductions in yielded water quality (albeit noting that the audit period was drier than average). There was no evidence of any net degradation, complacency or deterioration with respect to catchment management and protection activities.

WaterNSW is to be particularly commended for actively defending its industry benchmark Neutral or Beneficial Effect Test that is essential to avoiding otherwise inevitable catchment and water quality degradation and significantly increased risk of water quality incidents and water treatment costs.

Detailed assessment in respect to this sub-clause is presented in **Table B.3.1** (refer **Appendix B**).

9.2 Recommendations

No recommendations are made in respect of this section of the *Sydney Catchment Authority Operating Licence*.

9.3 Opportunities for Improvement

The following opportunity for improvement has been identified in respect of this section of the *Sydney Catchment Authority Operating Licence*:

- **OFI-2016/17-11:** [clause 4.1.1] WaterNSW should review current maintenance systems, processes and resources used for the implementation of pest and weed management on WaterNSW owned land, to ensure problem flora and fauna are adequately controlled.

10. Sydney Catchment Authority Operating Licence

Section 5 – Assets

10.1 Summary of Findings

Clause 5.1.1 – Full Compliance

This clause requires WaterNSW to develop an Asset Management System consistent with an approved standard or guidance by 30 June 2015.

In response to the (declared non-compliance) findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 5.1.2), IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Asset Management System was audited and assessed as being compliant with the requirements of *ISO 55001:2014* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table B.4.1** (refer **Appendix B**).

Clause 5.1.2 – Full Compliance

This clause requires WaterNSW to ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the System by 1 July 2015.

In response to the (declared non-compliance) findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 5.1.1), IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Asset Management System was audited and assessed as being compliant with the requirements of *ISO 55001:2014* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system was being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

An assessment of the practical application of the Asset Management System confirms that activities are carried out in accordance with the System.

Detailed assessment in respect to these sub-clauses is presented in **Table B.4.2** (refer **Appendix B**).

Recommendation 2015/16-03 – Addressed

This recommendation required that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

A certification audit of the WaterNSW Asset Management System, which recommended that certification be granted, was completed in November/December 2016 (i.e. prior to the target date of 31 December 2016) and a Certificate of Registration issued on 10 January 2017.

Given that certification was achieved, it is deemed that the Asset Management System was being fully implemented at that time.

Detailed assessment in respect to this past recommendation is presented in **Table B.4.3** (refer **Appendix B**).

10.2 Recommendations

No recommendations are made in respect of this section of the *Sydney Catchment Authority Operating Licence*.

10.3 Opportunities for Improvement

The following opportunity for improvement has been identified in respect of this section of the *Sydney Catchment Authority Operating Licence*:

- **OFI-2016/17-12:** [clause 5.1.2] It is suggested that WaterNSW reviews its processes under which a maintenance activity is elevated to ‘project’ status. This may include a review of ‘trigger points’ based on time for which an asset remains out-of-service or time a work order remains open, in addition to the capitalisation criteria.

11. Sydney Catchment Authority Operating Licence

Section 7 – Environment

11.1 Summary of Findings

Clause 7.1.1 – Full Compliance

This clause requires WaterNSW to develop an Environmental Management System consistent with the *Australian Standard AS/NZS ISO 14001:2004: Environmental management systems - Requirements with guidance for use* by 30 June 2015.

In response to the (declared non-compliance) findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 7.1.2), IPART recommended to the Minister (Recommendation 2015/16-04) that:

“WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Environmental Management System was audited and assessed as being compliant with the requirements of *ISO 14001:2004* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table B.5.1** (refer **Appendix B**).

Clause 7.1.2 – Full Compliance

This clause requires WaterNSW to ensure that the Environmental Management System is fully implemented and that all relevant activities are carried out in accordance with the System by 1 July 2015.

In response to the (declared non-compliance) findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 7.1.2), IPART recommended to the Minister (Recommendation 2015/16-04) that:

“WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Environmental Management System was audited and assessed as being compliant with the requirements of *ISO 14001:2004* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system was being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Detailed assessment in respect to this sub-clause is presented in **Table B.5.2** (refer **Appendix B**).

Clause 7.1.3 – Full Compliance

This clause requires WaterNSW to ensure that:

- by 30 June 2017, the Environmental Management System is certified by an appropriately qualified third party to be consistent with the *Australian Standard AS/NZS ISO 14001:2004: Environmental management systems - Requirements with guidance for use*; and
- once the Environmental Management System is certified [under clause 7.1.3(a)], the certification is maintained during the remaining term of this Licence.

WaterNSW's Environmental Management System was certified as being consistent with *ISO 14001:2004*; a Certificate of Registration was issued by BSI Group, which holds the required accreditation, on 16 January 2017. The certification covers the full scope of activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence* (and the *State Water Operating Licence*), and WaterNSW is now certified for all except the recently inherited DPI Water functions (hydrometric and compliance services) which have already been subject to a surveillance audit.

Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Environmental Management System, a prerequisite to maintaining certification, throughout the audit period.

Detailed assessment in respect to this sub-clause is presented in **Table B.5.3** (refer **Appendix B**).

Clause 7.1.4 – Full Compliance

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

The evidence provided demonstrates that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs. Target actions in support of objectives to minimise the environmental impact of infrastructure and activities, to positively influence third party activities to protect Sydney catchment areas and to promote an environmentally responsible culture were substantially met.

Detailed assessment in respect to this sub-clause is presented in **Table B.5.4** (refer **Appendix B**).

Recommendation 2015/16-04 – Addressed

This recommendation required that:

“WaterNSW should finalise its development and certification of the Environmental Management system and fully implement it by or before 31 December 2016.”

A certification audit of the WaterNSW Environmental Management System, which recommended that certification be granted, was completed in November/December 2016 (i.e. prior to the target date of 31 December 2016) and a Certificate of Registration issued on 16 January 2017.

Given that certification was achieved, it is deemed that the Environmental Management System was being fully implemented at that time.

Detailed assessment in respect to this past recommendation is presented in **Table B.5.5** (refer **Appendix B**).

11.2 Recommendations

No recommendations are made in respect of this section of the *Sydney Catchment Authority Operating Licence*.

11.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of this section of the *Sydney Catchment Authority Operating Licence*.

Appendix A Detailed Audit Findings State Water Operating Licence

Detailed audit findings in respect of the *State Water Operating Licence* are presented in this Appendix.

A.1 Section 1 – Licence and Licence Authorisation

Table A.1.1 Conferred functions (Sub-clause 1.4.2)

Sub-clause	Requirement	Compliance Grade
1.4.2	Water NSW must exercise any functions conferred on it under this Licence consistently with the <i>Water Management Act 2000</i> (NSW), the <i>Water Act 1912</i> (NSW), the <i>New South Wales – Queensland Border Rivers Act 1947</i> (NSW), any other relevant law and any relevant Water Management Plan.	Full Compliance

Risk	Target for Full Compliance
This requirement represents a moderate regulatory and operational risk. It is important that all elements of the legislation are implemented and that WaterNSW implements those areas of the legislation for which it is responsible.	Evidence that WaterNSW has exercised those functions conferred on it by the Licence(s) consistently with the relevant legislation.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017.
- WaterNSW Response Register to IPART's Comments, 16 November 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Document: *327.2 Case Summary Sheet* (Reference: D2017/121622).
- Document: *327.2 Advisory Letter* (Reference: D2017/121654).
- Document: *327.2 Final Advisory Letter* (Reference: D2017/121657).
- Document: *327.2 Final Direction Letter* (Reference: D2017/121658).
- Document: CIRaM Annual Statistics FY16-17 (Reference: D2017/93562).
- Document: *329.2 Case Summary Sheet* (Reference: D2017/121622).
- Document: *329.2 Final Direction Letter* (Reference: D2017/121644).
- WaterNSW, *91i Procedure* (Reference: CD2015/275[v2]).
- Document: *91i Procedure for Recording Requests* (Reference: D2017/121970).
- WaterNSW, *91i Blank application form* (Reference: D2016/62129).
- Document: *91i Authority letter to customer* (Reference: CD2015/305[v2]).
- MS Excel Spreadsheet: *91i Register* (Reference: D2016/105172).
- Document: *Completed 91i application form* (Reference: D2017/116263).
- Document: *Helpdesk communication 91i application* (Reference: D2017/116264).
- Document: *Letter to customer regarding 91i approval* (Reference: D2017/116265).
- MS Excel Spreadsheet: *Details records by CFOs in Water Accounting System* (Reference: D2017/116296).
- Documents: *Direction to Install and Maintain Metering Equipment 00193-2013* (Reference: D2017/122468 and D2017/122469).

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- Document: *s326 1 Case 00193-2013 Case Log* (Reference: D2017/122467).
 - Document: *s326 1 Case 00193-2013 Document List* (Reference: D2017/122465).
 - Document: *Quotation WNSW Water Meter Accuracy Testing* (Reference: D2017/122780).
 - Available procedures/guidelines/forms, as referenced.
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Summary of reasons for grade

WaterNSW demonstrated that it has exercised each of the conferred functions that have been the subject of this audit during the audit period. On this basis, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Notwithstanding the assessed compliance, it should be noted that with one exception, the audited functions had only been conferred on WaterNSW at the start of the audit period. WaterNSW is working to improve its procedures for the exercise of these functions, which were inherited as part of the transfer. Full integration of both staff (that were also transferred) and procedures will require the implementation of an effective change management process.

Discussion and notes

Overview:

This sub-clause requires that WaterNSW exercises the functions conferred on it under the Licence, consistently with the relevant legislation. For the purposes of this audit, IPART has nominated the following functions under the *Water Management Act 2000* for assessment:

- Conferred compliance functions:
 - s.327 – Form the opinion that a water management work is being or will be constructed or used in contravention of the Act and by order in writing, direct a person to take specified measures: (a) to prohibit or discontinue its construction or use, or (b) to construct or use the work only as specified.
 - s.329(2) – By order in writing, direct a person to take specified measures to demolish, remove, modify or dismantle a water management work or otherwise render it ineffective.
- Metering functions:
 - s.91I(3) – Authorise a person in writing to take water by means of a metered work while its metering equipment is not operating properly or is not operating and specify conditions in any such authorisation.
 - s.326(1) – By order in writing, direct a landholder or person to take specified measures to install, replace or to properly maintain metering equipment for use in connection with the water supply work.
 - s.372A(1) – Install test and remove metering equipment.

It is noted that, with the exception of s.91I(3), these functions were conferred on WaterNSW effective from 1 July 2016 (i.e. the commencement of the audit period). The provisions of s.91I(3) had previously been conferred on WaterNSW.

It is understood from audit discussions with WaterNSW that, in most cases it initially adopted previously implemented DPI Water practices and procedures in respect of the exercise of these functions.

Action taken by WaterNSW in exercising these functions during the audit period is discussed in the following.

s.327 – Stop work order regarding unlawful construction or use of water management work:

s.327 of the *Act* prescribes that:

-
- (1) *This section applies to a water management work that, in the Minister's opinion, is being constructed or used, or is about to be constructed or used, in contravention of this Act.*
 - (2) *The Minister may, by order in writing served on any person having control or management of the water management work, direct the person to take specified measures:*
 - (a) *to prohibit or discontinue its construction or use, or*
 - (b) *to construct or use the work only as specified.*
 - (3) *Without limiting subsection (2), the landholder on whose land the water management work is situated, or is proposed to be situated, is taken to have control and management of the work.*

In response to the auditors' enquiries regarding exercise of this function, WaterNSW advised that:¹²

"Stop work orders are served on any person having control or management of a water management work, who is deemed to be unlawfully constructing or using that work.

Alleged breaches of the WMA are identified as follows:

- *members of the public, local councils and other government agencies report alleged breaches by phone and email.*
- *on-ground monitoring by WaterNSW field and water regulation staff.*

Alleged breach notifications or other reports are investigated and assessed in accordance with legislation and relevant policies and procedures. A decision on what action is required to be taken is evidence based and specific to a particular breach."

Available procedures/guidelines relevant to this function again include:

- *Sydney Catchment Authority; Prosecution and Compliance Guidelines* (Reference: CD2011/141) – this document does not reference, or appear relevant to functions under the *Water Management Act*;
- *DPI Water; Compliance Policy* (WaterNSW Reference: D2017/121956);
- *DPI Water; Taking a compliance action* (WaterNSW Reference: D2017/120606);
- *DPI Water; Managing alleged breach notifications* (WaterNSW Reference: D2017/121967);
- *DPI Water; Managing and investigating alleged breaches* (WaterNSW Reference: D2017/120607);
- *DPI Water; Authorised officer handbook* (WaterNSW Reference: D2017/121968); and
- *DPI Water; Issuing penalty notices* (WaterNSW Reference: D2017/121969) (not sighted).

As evidence of implementation, WaterNSW provided details of an example case (Reference: 00463-2016). This case, which involved an irrigation channel constructed across a floodplain, is summarised in a *Case Summary Sheet*.¹³ The alleged breach was reported on 13 October 2016 and compliance action recommended on 8 May 2017. An *Advisory Letter*,¹⁴ which advised the intent to issue Directions under s.327(2) and s.329(2) of the Water Management Act was issued on 22 May 2017. A *Final Advisory Letter*¹⁵ and *Stop Work Order*¹⁶ were issued on 21 June 2017. Photographs and a series of maps detailing the breach and its location were also provided.

Although the evidence provided in respect of this example case does not illustrate all aspects of the management and investigation of the breach (for example, the initial risk assessment or the investigation planning process) as outlined in the abovementioned guidelines, it is apparent that investigations have been undertaken, the party involved has been consulted and the relevant advisory letters and ultimately a direction have been issued. On this basis it is assessed that the compliance action has been undertaken generally in accordance with the guidelines issued by DPI Water, as required by the Licence.

¹² WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017, page 5.

¹³ Document: 327.2 *Case Summary Sheet* (Reference: D2017/121622).

¹⁴ Document: 327.2 *Advisory Letter* (Reference: D2017/121654).

¹⁵ Document: 327.2 *Final Advisory Letter* (Reference: D2017/121657).

¹⁶ Document: 327.2 *Final Direction Letter* (Reference: D2017/121658).

Details of the Water Regulations Group workload were provided for review.¹⁷ Annual Statistics appear to show that a total of 396 alleged breaches were reported in 2016/17, resulting in the issue of three (3) *Stop Work Orders*.

s.329(2) – Removal of unlawful water management works:

s.329(2) of the *Act* prescribes that:

The Minister may, by order in writing served on any person having control or management of the work, direct the person to take specified measures to demolish, remove, modify or dismantle the work or otherwise render it ineffective.

[**Note:** to provide context, s.329(1) provides that:

This section applies to a water management work for which no water management work approval is in force.]

In response to the auditors' enquiries regarding exercise of this function, WaterNSW advised that:¹⁸

“Orders under s.329(2) to remove or modify a work, are served if it is found a water management work, other than a work pertaining to a basic landholder right, is not authorised by a relevant approval.

Alleged breaches of the WMA are identified as follows:

- *members of the public, local councils and other government agencies report alleged breaches by phone and email.*
- *on-ground monitoring by WaterNSW field and water regulation staff.*

Alleged breach notifications or other reports are investigated and assessed in accordance with legislation and relevant policies and procedures. A decision on what action is required to be taken is evidence based and specific to a particular breach.”

Available procedures/guidelines relevant to this function again include:

- *Sydney Catchment Authority; Prosecution and Compliance Guidelines* (Reference: CD2011/141) – this document does not reference, or appear relevant to functions under the *Water Management Act*;
- *DPI Water; Compliance Policy* (WaterNSW Reference: D2017/121956);
- *DPI Water; Taking a compliance action* (WaterNSW Reference: D2017/120606);
- *DPI Water; Managing alleged breach notifications* (WaterNSW Reference: D2017/121967);
- *DPI Water; Managing and investigating alleged breaches* (WaterNSW Reference: D2017/120607);
- *DPI Water; Authorised officer handbook* (WaterNSW Reference: D2017/121968); and
- *DPI Water; Issuing penalty notices* (WaterNSW Reference: D2017/121969) (not sighted).

As evidence of implementation, WaterNSW provided details of an example case (Reference: 00463-2016), which is the same case cited in respect of s.327(2). As previously noted, this case, which involved an irrigation channel constructed across a floodplain, is summarised in a *Case Summary Sheet*.¹⁹ The alleged breach was reported on 13 October 2016 and compliance action recommended on 8 May 2017. A *Direction to Remove Unlawful Water Management Work*²⁰ was issued on 21 June 2017. Aerial photographs and a series of maps detailing the location of the breach were also provided.

It is apparent that this breach resulted in the issue of both a *Stop Work Order* and a *Direction to Remove Unlawful Water Management Work*. As reported above (in respect of s.327(2)), on the basis of the evidence provided, it is assessed that the compliance action has been undertaken generally in accordance with the guidelines issued by DPI Water, as required by the Licence.

s.91I(3) – Taking water when metering equipment not working:

s.91I(3) of the *Act* prescribes that:

¹⁷ Document: CIRaM Annual Statistics FY16-17 (Reference: D2017/93562).

¹⁸ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017, page 5.

¹⁹ Document: 329.2 *Case Summary Sheet* (Reference: D2017/121622).

²⁰ Document: 329.2 *Final Direction Letter* (Reference: D2017/121664).

Subsection (2) does not apply if:

- (a) *the person is authorised by the Minister in writing to take water by means of a metered work while its metering equipment is not operating properly or is not operating, and*
- (b) *the water is taken in accordance with any conditions specified in the authorisation and any requirements prescribed by the regulations for the purposes of this subsection.*

[Note: to provide context, s.91I(2) provides that:

A person who takes water from a water source to which this Part applies by means of a metered work while its metering equipment is not operating properly or is not operating is guilty of an offence.]

In response to the auditors' enquiries regarding exercise of this function, WaterNSW advised that:²¹

“During the 2016/17 Water year there have been 102 instances where a 91i application (new or extension) has been recorded in the WaterNSW helpdesk. Refer D2017/116261.

Conditions regarding the 91i application forms part of the approval letter which is sent to customers.

The circumstances for which WaterNSW will implement a 91i is when:

- *A Customer reports a meter not operating properly or not operating or,*
- *A Customer Field Officer finds a customer meter not operating properly or not operating or,*
- *A WaterNSW owned Telemetered Meter is not operating properly or not operating.*

WaterNSW currently has a 91i procedure in place CD2015/275[v2].

As part of the 91i application form the customer must provide WaterNSW (CFO) with an agreed method of how an alternate assessment of usage will be calculated while their meter is being repaired. Once agreed upon this alternate method of assessing usage will be used which can be based on Hrs run (Diesel pump) or Kilowatt hrs run of an electric motor or assessment made regarding complying water orders. Compliance with 91i approvals are noted in WaterNSW water accounting system by CFOs. Refer D2017/116296.”

The *Section 91I Procedure*²² outlines the process followed depending upon whether the meter involved is customer or WaterNSW owned, and the manner in which/by whom the meter was identified as not operating properly. A *Procedure for Recording Requests*²³ provides additional guidance for cases where the issue is identified by a CFO. Once prepared, *Application Forms*²⁴ are submitted via the Helpdesk, and progress managed via the “Tickit” system. WaterNSW has a standard *Letter of Authority*²⁵ which is issued to the customer if the application is approved; conditions on the approval include identification of the accepted alternative measurement arrangements. WaterNSW maintains a *Register of Applications*.²⁶

As evidence of implementation, WaterNSW provided details of an example case including:

- a completed Application Form dated 17 October 2016;²⁷
- Helpdesk communication assigning the ticket for action on 17 October 2016;²⁸
- a letter dated 19 October 2016 to the customer regarding 91i approval, and indicating that an engine hour metre and associated calibration factor were to be used as the alternative means of measurement;²⁹ and
- a sample of CFO notes regarding 91i conditions being met.³⁰

²¹ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017, page 6.

²² WaterNSW, *91i Procedure* (Reference: CD2015/275[v2]).

²³ Document: *91i Procedure for Recording Requests* (Reference: D2017/121970).

²⁴ WaterNSW, *91i Blank application form* (Reference: D2016/62129).

²⁵ Document: *91i Authority letter to customer* (Reference: CD2015/305[v2]).

²⁶ MS Excel Spreadsheet: *91i Register* (Reference: D2016/105172).

²⁷ Document: *Completed 91i application form* (Reference: D2017/116263).

²⁸ Document: *Helpdesk communication 91i application* (Reference: D2017/116264).

²⁹ Document: *Letter to customer regarding 91i approval* (Reference: D2017/116265).

³⁰ MS Excel Spreadsheet: *Details records by CFOs in Water Accounting System* (Reference: D2017/116296).

s.326(1) – Directions to install and maintain metering equipment:

s.326(1) of the *Act* prescribes that:

The Minister may, by order in writing served on:

- (a) a landholder on whose land is situated a water supply work, or*
- (b) any person having the control and management of such a work,*

direct the landholder or person to take specified measures to install, replace or to properly maintain metering equipment for use in connection with that work.

In response to the auditors' enquiries regarding exercise of this function, WaterNSW advised that:³¹

“Directions to install and/or maintain metering equipment are served if it is found that metering equipment is required to be installed under the rules of a water sharing plan, is malfunctioning or has not been installed in accordance with the conditions of a water management work approval.

Alleged breaches of the WMA are identified as follows:

- *members of the public, local councils and other government agencies report alleged breaches by phone and email.*
- *on-ground monitoring by WaterNSW field and water regulation staff.*

Alleged breach notifications or other reports are investigated and assessed in accordance with legislation and relevant policies and procedures. A decision on what action is required to be taken is evidence based and specific to a particular breach.”

Available procedures/guidelines relevant to this function include:

- *Sydney Catchment Authority; Prosecution and Compliance Guidelines* (Reference: CD2011/141) – this document does not reference, or appear relevant to functions under the *Water Management Act*;
- *DPI Water; Compliance Policy* (WaterNSW Reference: D2017/121956);
- *DPI Water; Taking a compliance action* (WaterNSW Reference: D2017/120606);
- *DPI Water; Managing alleged breach notifications* (WaterNSW Reference: D2017/121967);
- *DPI Water; Managing and investigating alleged breaches* (WaterNSW Reference: D2017/120607);
- *DPI Water; Authorised officer handbook* (WaterNSW Reference: D2017/121968); and
- *DPI Water; Issuing penalty notices* (WaterNSW Reference: D2017/121969) (not sighted).

WaterNSW advised that,³² whilst these procedures/guidelines may not directly refer to s.326.1 of the *Water Management Act*, they set out the method for determining the appropriate action to take, the process by which a direction is served and the decision making process generally. The process is further supported by guidance provided in the following templates:

- *DPI Water, Reasons for Decision* template (WaterNSW Reference: D2017/135820); and
- *DPI Water, Direction to Install and Maintain Metering Equipment* template (WaterNSW Reference: D2017/135819).

During the audit interviews, WaterNSW advised that this function is exercised periodically, but was not able to provide more specific details regarding the number of cases.

WaterNSW noted that it has been implementing an inherited system which is not yet mature, although action is being taken to improve the process.

As evidence of implementation, WaterNSW provided details of an example case (Reference: 00193-2013). This case, which involved an alleged offence of taking of water (including meter offences) was initiated in February 2013. Directions to install and maintain metering equipment were issued on 16 May 2014.³³

³¹ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017, page 6.

³² WaterNSW Response Register to IPART's Comments, 16 November 2017.

³³ Documents: *Direction to Install and Maintain Metering Equipment 00193-2013* (Reference: D2017/122468 and D2017/122469).

Copies of a Case Log³⁴ and Document List³⁵ demonstrate the progress of the case, which was finalised on 20 September 2017.

s.372A(1) – Metering equipment functions:

s.372A(1) of the *Act* prescribes that:

Conferral of metering equipment functions

The Ministerial Corporation may install, test and remove metering equipment.

In response to the auditors' enquiries regarding the exercise of this function WaterNSW advised that, under this provision of the *Act*:³⁶

- No new meters had been installed;
- Four (4) meters had been physically removed for testing;
- 310 meters had been electronically verified; and
- Ten (10) meters had been removed.

Meter testing was undertaken in response to accuracy disputes or under a planned maintenance regime. Meters were removed in cases where the landowner had decommissioned the site or a Works Approval had been cancelled.

WaterNSW provided a copy of a quotation³⁷ for the removal, testing, reinstallation and validation of four meters (referenced above).

Identification and assessment of the need to exercise this function is driven by Customer request; the applicable non-urban metering compliance standards (MAF and AS 4747); asset management and maintenance plans; and business requirements for accurate water accounting and operations.

Available procedures/guidelines/forms relevant to this function include:

- *WaterNSW Meter Installation Requirements* (Reference: D2017/122783);
- *Requesting a New or Changed Water Meter Procedure* (Reference: D2017/122790);
- *Procedure for Resolving Meter Accuracy Disputes; WaterNSW Owned Meters* (Reference: D2017/122787);
- Standard form *WNSW State Owned Meter – Validation Form* (Reference: D2017/122784); and
- Standard form letter *Request for Removal of State Owned Metering Equipment under the Water Management Act 2000* (Reference: D2017/122781).

WaterNSW has engaged a service provider to design, construct and maintain over 2000 non-urban water meters in the NSW Murray Darling Basin. Maintenance activities (corrective and routine) are monitored on a monthly basis.

On the basis of the information provided, it is apparent that WaterNSW does exercise this conferred function specifically in relation to State owned meters.

Summary:

In summary, WaterNSW has demonstrated that it has exercised each of the conferred functions that have been the subject of this audit. However, the extent to which (number of times) they have been exercised is not apparent in all cases.

With the exception of s.911(3), which was already conferred on WaterNSW prior to 1 July 2017, procedures implemented in relation to these functions were inherited (as part of the transfer of the functions) from DPI Water. WaterNSW has indicated that, whilst it is working to improve them, some of these processes are not yet mature. Furthermore, they are in part restricted by the provisions of the

³⁴ Document: *s326 1 Case 00193-2013 Case Log* (Reference: D2017/122467).

³⁵ Document: *s326 1 Case 00193-2013 Document List* (Reference: D2017/122465).

³⁶ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 13 October 2017, page 7.

³⁷ Document: *Quotation WNSW Water Meter Accuracy Testing* (Reference: D2017/122780).

legislation or its related instruments (for example, Water Sharing Plans).

It is noted that staff involved in the exercise of these functions were also transferred from DPI Water. Full integration of both staff and procedures will require the implementation of an effective change management process.

Based on observations made in respect of this Licence obligation, as opportunities for improvement it is suggested that WaterNSW:

- continues the integration of staff and procedures associated with its conferred functions through the implementation of an effective change management process. This should include a detailed review of the procedures currently being implemented and the associated resource requirements (**OFI-2016/17-01**);
- considers identifying and implementing measures to assess the effectiveness with which it exercises its conferred functions. This may include (for example) an assessment of the extent to which the need to exercise the conferred functions is being identified (what proportion of potential 'cases' are being identified) and an assessment of the benefits derived through exercise of the conferred functions (is an effective outcome achieved) (**OFI-2016/17-02**).

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-01:** It is suggested that WaterNSW continues the integration of staff and procedures associated with its conferred functions through the implementation of an effective change management process. This should include a detailed review of the procedures currently being implemented and the associated resource requirements.
 - **OFI-2016/17-02:** It is suggested that WaterNSW considers identifying and implementing measures to assess the effectiveness with which it exercises its conferred functions. This may include (for example) an assessment of the extent to which the need to exercise the conferred functions is being identified (what proportion of potential 'cases' are being identified) and an assessment of the benefits derived through exercise of the conferred functions (is an effective outcome achieved).
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A.2 Section 3 – Water Quantity

Table A.2.1 Delivery of water to Customers (Sub-clause 3.1.1)

Sub-clause	Requirement	Compliance Grade
3.1.1	<p>Water NSW must take all reasonable steps to process all Water Orders promptly and efficiently.</p> <p><i>[Note: Where a Customer places an incomplete or incorrect Water Order, Water NSW could fulfil this obligation by notifying that Customer promptly and efficiently of the error, and how to rectify it.]</i></p>	Full Compliance
Risk	Target for Full Compliance	
Failure to process Water Orders promptly and efficiently presents a high operational risk and a high risk in respect of customer relations.	Evidence that WaterNSW has processes and procedures in place to ensure that Water Orders are processed promptly and efficiently.	
Evidence sighted		
<ul style="list-style-type: none"> ▪ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017. ▪ Interviews with WaterNSW staff, 25-29 September 2017. ▪ WaterNSW, <i>Water Ordering Procedure</i> (Reference: CD2015/312[V2]), undated. ▪ Ordering Water webpage at: http://www.watarnsw.com.au/customer-service/ordering#stay. ▪ Water Accounting System (iWAS) webpage at: http://www.watarnsw.com.au/customer-service/ordering/iwas. ▪ WaterNSW, <i>Water Order Application Form</i> (Reference: D2017/103485), undated. ▪ <i>Water Order Application Form</i> available on webpage at: http://www.watarnsw.com.au/_data/assets/pdf_file/0017/121256/Water-Order-Form_S-with-email.pdf. ▪ State Water, <i>Water Order Checklist</i>, undated (Reference: DOC10_11867). ▪ Document: <i>WNSW communication re Non-Complying Water Order – Insufficient Water Available</i> (Reference: D2017/98958). ▪ Document: WaterNSW, <i>Water Account Statement</i> (in relation to non-complying order) (Reference: D2017/98963). ▪ Document: <i>WNSW communication re Non-Complying Water Order – Incorrect Licence</i> (Reference: D2017/98971). ▪ MS Excel Spreadsheet: <i>Water Order Forms Processed 2016/17</i> (Reference: D2017/98944). ▪ MS Excel Spreadsheet: <i>Processing times for Complying Water Orders 2016/17</i> (Reference: D2017/98957). ▪ MS Excel Spreadsheet: <i>Non-complying water orders contacted greater 1 day</i> (Reference: D2017/98952). ▪ WaterNSW, <i>Water Ordering Procedure</i> (Reference: CD2015/312) [Revised], Review Date: October 2019. 		

Summary of reasons for grade

WaterNSW demonstrated that it has in place, and implements, a *Water Ordering Procedure* which provides a reasonable basis for ensuring that Water Orders are processed promptly and efficiently. Orders can be placed on-line using the iWAS system, in which case orders are processed automatically, or via the Customer Helpdesk, in which case there is a clearly defined procedure for ensuring compliance and submitting the order into the WAS system.

Accordingly, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

WaterNSW advised that:³⁸

“WaterNSW has an approved water ordering procedure, currently under review due to review cycle. This procedure defines how to assess whether a water order is complete and correct. WaterNSW has a water order checklist in place, which Customer Service Officers use to ensure water orders received are correct.

WaterNSW has an online water ordering system available to customers (iWAS). These online orders once entered by the customer are processed immediately.”

The *Water Ordering Procedure*³⁹ identifies the range of options available for customers to place water orders; these include:

- Direct orders, whereby customers place orders on-line (using the iWAS system); and
- Requested orders, whereby customers place order requests via email, fax and phone; requested orders are captured via the Customer Helpdesk Ticketing System before being entered into the Water Accounting System (WAS) by a Customer Service Officer (CSO).

The *Water Ordering Procedure* establishes protocols for the timely opening of orders received, recording the orders into the Ticketing System (which assigns the order a unique reference number and so allows the processing of the order to be tracked) and entering the orders into the WAS. A Water Order is considered to be processed when it is entered into the WAS. Only complying orders are entered; protocols for dealing with non-complying orders are included in the procedure.

To be complying, water orders must include details of the access licence holders name, access licence number, works approval licence number, extraction site, pumping dates (the order must not start within the lead days), current meter reading (to ensure that the account has enough water to cover the water order) and name, signature and contact details. Requirements for complying water orders are clearly set out on the WaterNSW website.⁴⁰

The iWAS system for on-line ordering includes in-built checks to ensure that the details required for a water order to be compliant are correctly provided. Orders placed through the iWAS system are processed rapidly. Details about iWAS and how customers can access the iWAS are available on the WaterNSW web site.⁴¹ WaterNSW advised that there were 11,807 customer water orders entered using the iWAS during the 2016/17 water year; due to the internal checks incorporated within the iWAS, these are all complying orders.

The *Water Ordering Procedure*⁴² includes clear guidelines to assist CSOs to check the Ticketing System regularly, to process any unassigned water order requests as they are received, and to check these orders for compliance before completing the processing of the water order by entering the order details into WAS. The procedure clearly states that water orders take priority over other types of request, and identifies daily cut-off times for receipt of order requests that apply in each of the North, Central and

³⁸ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 3.

³⁹ WaterNSW, *Water Ordering Procedure* (Reference: CD2015/312[V2]), undated.

⁴⁰ Ordering Water webpage at: <http://www.waternsw.com.au/customer-service/ordering#stay>

⁴¹ Water Accounting System (iWAS) webpage at: <http://www.waternsw.com.au/customer-service/ordering/iwas>.

⁴² WaterNSW, *Water Ordering Procedure* (Reference: CD2015/312[V2]), undated, page 2.

South (Operational) Areas.

As noted above, water orders can be placed using a *Water Order Application Form*⁴³ (available on the WaterNSW website)⁴⁴ which is submitted via the Customer Helpdesk Ticketing System. For orders placed via the Ticketing System, CSOs use a simple *Water Order Checklist*⁴⁵ to check compliance. Items checked relate to Water Order Type, Water Access Licence Details, Combined Approval or Works Approval, Extraction Details, Meter Reading and Authorisation.

The *Water Ordering Procedure* also includes instructions to assist CSOs to deal with Non-Complying Orders. These instructions direct CSOs to attempt to contact the customer, to assist the customer to provide any missing or incorrect information, and to process the water order if the information provided is sufficient for the order to be complying. The process used by WaterNSW to deal with non-complying orders is also described on its website.⁴⁶

Samples of communications in respect of non-complying water orders (and supporting evidence) were provided, as follows:

- Sample communication regarding rejection of water order due to insufficient water available on date of order (14 February 2017);⁴⁷
- Sample *Water Account Statement* showing the actual available water on 14 February 2017 for the account to which the rejected order related;⁴⁸ and
- Sample communication regarding rejection of water order due to incorrect licence number being provided.⁴⁹

The 2016/17 Water Orders reconciliation⁵⁰ shows that 4,026 customer interactions were processed through the Customer Helpdesk, including 3,683 water orders. Of these 3,683 water orders, 2,449 were complying and approved; 1,059 were non-complying but approved; and 180 were non-complying and not approved. Other customer interactions managed through the Customer Helpdesk were related to meter reading (270) and customer enquiries (73).

Processing times for the 2,449 complying water orders processed through the Customer Helpdesk⁵¹ is shown in Table A.2.1A (see below). This data shows that 92% of complying water orders were processed by the Helpdesk within 4 hours and 96% of complying water orders are processed within 8 hours, that is within one working day, of receipt.

Of the non-complying orders received, five (5) were not contacted within one working day of submitting the order.⁵²

This analysis indicates that WaterNSW has taken all reasonable steps to process all water orders promptly and efficiently. Furthermore, where a Customer places a non-complying water order, WaterNSW (pursuant to its *Water Ordering Procedure*) makes a concerted attempt to notify the Customer promptly and efficiently of the error, and how to rectify it.

⁴³ WaterNSW, *Water Order Application Form* (Reference: D2017/103485), undated.

⁴⁴ *Water Order Application Form* available on webpage at: http://www.waternsw.com.au/_data/assets/pdf_file/0017/121256/Water-Order-Form_S-with-email.pdf.

⁴⁵ State Water, *Water Order Checklist*, undated (Reference: DOC10/11867).

⁴⁶ Ordering Water webpage at: <http://www.waternsw.com.au/customer-service/ordering#stay>

⁴⁷ Document: *WNSW communication re Non-Complying Water Order – Insufficient Water Available* (Reference: D2017/98958).

⁴⁸ Document: WaterNSW, *Water Account Statement* (in relation to non-complying order) (Reference: D2017/98963).

⁴⁹ Document: *WNSW communication re Non-Complying Water Order – Incorrect Licence* (Reference: D2017/98971).

⁵⁰ MS Excel Spreadsheet: *Water Order Forms Processed 2016/17* (Reference: D2017/98944).

⁵¹ Derived from MS Excel Spreadsheet: *Processing times for Complying Water Orders 2016/17* (Reference: D2017/98957).

⁵² MS Excel Spreadsheet: *Non-complying water orders contacted greater 1 day* (Reference: D2017/98952).

Table A.2.1A Water Order Processing Times – 2016/17

Processing Time	Number of Orders	Cumulative Percentage
< 1 Hour	1721	70%
1-2 Hours	306	83%
2-3 Hours	153	89%
3-4 Hours	66	92%
4-8 Hours	96	96%
> 8 hours	107	100.0%
Total	2449	

It is, however, noted that the *Water Ordering Procedure* remains under review as was also reported at the time of the 2015/16 Operational Audit.⁵³ As an opportunity for improvement (**OFI-2016/17-03**), it is suggested that WaterNSW takes steps to finalise review of the *Water Ordering Procedure* and implement a formalised periodic review thereafter.

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-03:** It is suggested that WaterNSW takes steps to finalise review of the *Water Ordering Procedure* and implement a formalised periodic review thereafter.

[*Note: WaterNSW demonstrated that it had addressed this opportunity for improvement by finalising its review of the Water Ordering Procedure*⁵⁴ and initiating a two yearly review cycle prior to issue of the Final Audit Report.]

⁵³ Cobbitty Consulting/Viridis, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.2.1.

⁵⁴ WaterNSW, *Water Ordering Procedure* (Reference: CD2015/312) [Revised], Review Date: October 2019.

Table A.2.2 Delivery of water to Customers (Sub-clause 3.1.2)

Sub-clause	Requirement	Compliance Grade
3.1.2	Water NSW must take all reasonable steps to manage Water Orders so as to ensure the timely Delivery of water to its Customers.	Full Compliance

Risk	Target for Full Compliance
Failure to ensure the timely delivery of water presents a high operational risk and a high risk in respect of customer relations.	Evidence that WaterNSW has processes and procedures in place to manage Water Orders so as to ensure the timely delivery of water.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Overview of CARM available at: <http://www.waternsw.com.au/projects/efficiency/CARM>.
- MS Excel Spreadsheet: *16-17 Number of complaints - Water Delivery* (Reference: D2017/99583).
- MS Excel Spreadsheet: *16-17 Rescheduled Water Orders* (Reference: D2017/99589).
- MS Excel Spreadsheet: *Environmental Water Account Summary 2017* (Reference: D2017/100607).
- Document (email and attachments): *EWAG and WNSW Meeting Minutes and correspondence* (Reference: D2017/100689).

Summary of reasons for grade

WaterNSW demonstrated that, through the implementation of its *Water Ordering Procedure* and use of its Computer Aided Improved River Operations (CAIRO) management tool, it has taken reasonable steps to ensure the timely delivery of water to its Customers. Based on the number of complaints received, it is evident that WaterNSW ensures the timely delivery of water for almost 100 percent of water orders.

Accordingly, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

WaterNSW advised that it processes all water orders in accordance with its *Water Ordering Procedure*.⁵⁵

Details of the *Water Ordering Procedure* are discussed in Table A.2.1. Having processed a Water Order (i.e. entered the order into the Water Accounting System (WAS)), WaterNSW must then implement processes and procedures to ensure the timely delivery of the water ordered by customers.

WaterNSW advised that:⁵⁶

“WaterNSW does monitor the timeliness of water delivery (which does include environmental water) through a number of metrics and systems. These are:

1. Complaints *To record the success of water delivered, WaterNSW measures timeliness of water delivery (actual delivery date relative to the day water ordered) by recording the number of complaints received for water orders.*

During the 2016-17 water year WaterNSW received in total 19 Complaints regarding water deliveries. Three (3) were for water orders delivered outside +/- 1 day of the delivery date, Eight (8) were related to water level issues. In addition to the above during 2016/17 to further monitor the efficient delivery of Water, WaterNSW has also started to record all Ministerials relating to water delivery into the WaterNSW helpdesk. During the 2016-17 Water year

⁵⁵ WaterNSW response to 2016 Operational Audit Questionnaire, 1 September 2016, page 8.

⁵⁶ WaterNSW response to 2016 Operational Audit Questionnaire, 1 September 2016, page 8.

there were an additional 8 Ministerials recorded relating to water delivery issues.

2. Re-scheduled Orders *WaterNSW also records in its helpdesk systems all orders that have been rescheduled as a result of a shortfall being identified. WaterNSW contacts all customers directly in the event that a shortfall is predicted.*

During the 2016-17 period WaterNSW identified 11 incidents where there was going to be a shortfall in water supply and as a result worked with the affected customers to reschedule water delivery. Conversely, if a surplus is predicted WaterNSW will work directly with customers for rescheduling of water delivery to reduce any surplus.

3. Direct communication *To ensure delivery times are met in line with water orders water Delivery Operators will communicate directly with environmental customers either by phone or e-mail.*

4. Monitoring of Gauging Stations information *This information is uploaded into CAIRO.*

5. Water Delivery uses a Computer Aided Improved River Operations (CAIRO) system *to help monitor the timeliness and efficiency of water delivery to its customers. CAIRO enables water delivery to determine the amount of water to be released from storage to fulfil all water orders. CAIRO allows Water operations to take into account different events which may impact the timeliness of water delivery. Such events include water losses (Evaporation etc) and inflows (runoff into river from a rain event) from tributaries.*

6. WaterNSW has also developed a more sophisticated water delivery model called (CARMS) *which through Telemetry, uses real time information from meters and gauging stations that have been installed in the Murrumbidgee Valley.”*

The auditors have reviewed the Computer Aided Improved River Operations (CAIRO) system during a number of previous Operational Audits. CAIRO is essentially a water accounting spreadsheet which tracks flows (blocks of water) in defined river reaches between flow gauging stations with fixed estimation of travel times and empirical estimates of losses and gains based on experience. After the orders to be delivered from a particular storage are aggregated, CAIRO has the capacity to calculate the quantity of water that needs to be released from the storage to ensure that the orders are satisfied, taking account of water losses along the course of the river due to seepage and evaporation and gains from tributary inflows. A demonstration of CAIRO was presented during the audit interviews.

CARMS (Computer Aided River Management System) is a recently developed, more sophisticated computer based system that is currently being trialled in the Murrumbidgee river basin (where it is being used in parallel with CAIRO); there was no further rollout of this system during 2016/17. CARMS is based on hydraulic flow models⁵⁷ with real time flow and rainfall telemetry measurement, allowing greater optimisation of dam releases and unregulated flows to meet water use demands at the right time, and of the right quantity and duration. Since it is based on improved, continuously measured data, CARMS has the capability to more accurately account for all important flow processes. Further information is available on the WaterNSW website.⁵⁸

As noted above, WaterNSW measures timeliness of delivery (actual delivery date relative to day water ordered for) by the number of complaints received about orders outside of +1/-1 day of scheduled delivery. It reported three (3) complaints for water delivered outside +/- 1 day of the scheduled date and eight (8) in relation to water level issues, which is consistent with information derived from the *Complaints Register*.⁵⁹ Water level issues relate to the customers extraction (pumping) installations (e.g. the suction pipe doesn't extend to a low enough level) and are the responsibility of the customer.

Whilst WaterNSW advised that 'Ministerials' related to water delivery are now captured via the Helpdesk 'Ticket' system, it noted that the majority of these are related to licensing issues.

WaterNSW further reported that eleven (11) incidents in which it rescheduled complying water orders in

⁵⁷ CARMS is based on a customised DHI MIKE Operations platform.

⁵⁸ Overview of CARM available at: <http://www.waternsw.com.au/projects/efficiency/CARM>

⁵⁹ MS Excel Spreadsheet: *16-17 Number of complaints - Water Delivery* (Reference: D2017/99583).

consultation with the affected customers within +/- one day of the identified shortfall. This is consistent with information presented in the *Rescheduled Water Orders Register*,⁶⁰ which also recorded that there were ten (10) customer initiated rescheduled orders. Details of the reasons for the rescheduling are recorded; for those initiated by WaterNSW, three (3) relate to a water shortfall in the Gwydir Valley whilst the remainder appear to relate to a customer request to pump two days earlier due to rising temperatures.

As noted by WaterNSW, environmental water forms part of the total volume that needs to be delivered in a timely manner. Environmental water is delivered in accordance with a fixed schedule (monthly targets) and in response to orders placed by the Office of Environment and Heritage (OEH). Both the State and Commonwealth have purchased water and hold water accounts (which, as for other licence/account holders, are subject to available water determinations).

WaterNSW provided a copy of the *Environmental Account Summary*,⁶¹ which is used to monitor environmental releases. Recorded volumes are based principally on allocations recorded in CAIRO.

WaterNSW liaises with a series of Environmental Water Advisory Groups (EWAGs) (which are set up by the OEH) in respect of environmental water requirements. Documentation (agenda, minutes and related items) in relation the Lachlan EWAG December 2016 meeting provided an indication of the topics discussed, including details of flow releases.⁶²

Taking account of the ongoing demonstrated performance record of the CAIRO system and the efforts of WaterNSW to develop and improve the CARMS system, the auditors formed the conclusion that WaterNSW had taken all reasonable steps to manage Water Orders to ensure the timely delivery of water to customers.

Recommendations

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

Opportunities for improvement


No opportunities for improvement have been identified in respect of this sub-clause.

⁶⁰ MS Excel Spreadsheet: *16-17 Rescheduled Water Orders* (Reference: D2017/99589).

⁶¹ MS Excel Spreadsheet: *Environmental Water Account Summary 2017* (Reference: D2017/100607).

⁶² Document (email and attachments): *EWAG and WNSW Meeting Minutes and correspondence* (Reference: D2017/100689).

Table A.2.3 Delivery of water to Customers (Sub-clause 3.1.3)

Sub-clause	Requirement	Compliance Grade
3.1.3	Water NSW must maintain a Water Allocation Account for each access licence issued under the <i>Water Management Act 2000</i> (NSW) and each licence issued under the <i>Water Act 1912</i> (NSW) held by a Customer.	 Full Compliance

Risk

Failure to maintain Water Allocation Account presents a high risk that available water may be over allocated.

Target for Full Compliance

Evidence that WaterNSW has maintained a Water Allocation Account for each licence held by a Customer.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- DPI Water website at <http://www.water.nsw.gov.au/water-management/water-availability/water-allocations>.
- DPI Water, *Fact Sheet Series – Compliance with NSW Water Management Laws; Regulated activities, offences and penalties*, November 2015.
- Procedures/How to Guides in relation to Water Allocation Accounts, as referenced.
- Document: *Alloc Account Reg AUSCOTT 80.AL702940* (Reference: D2017/99392).
- Document: *D2017 99393 Alloc Account GW PASPALLEY PEARLS 80.AL715160* (Reference: D2017/99393).
- Document: *Alloc Account Reg CADIA HOLDINGS 80.AL716139* (Reference: D2017/99391).

Summary of reasons for grade

WaterNSW demonstrated that it maintains and effectively manages a Water Allocation Account for each access licence issued under the *Water Management Act 2000* (NSW) and each licence issued under the *Water Act 1912* (NSW) held by customers. Procedures are in place to guide the implementation of this obligation.

Accordingly, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

WaterNSW maintains water accounts for all regulated, groundwater and unregulated sources in its Water Accounting System (WAS). It has a number of documented procedures/how to guides for maintaining Water Allocation Accounts.

WaterNSW advised⁶³ that there are numerous actions involved in maintaining a Water Allocation Account, including:

- Recording of Water Credits:
 - Available Water Determinations (AWDs) announced throughout the year.
 - Temporary Water trades into accounts.
 - Increase in entitlement (Water Dealing).
 - Carryover water account balance from previous year.

⁶³ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 5.

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- Recording Water Debits:
 - Meter readings/usage.
 - Temporary water Trades out of an account.
 - Water Orders Northern Valleys.
 - Spill Reduction.
 - Other Transactions:
 - Opening and Closing balances of each water year.
 - Subdivision of a licenses transfer of entitlement.
 - Exit a holding transfer of entitlement.
 - Increase/decrease in entitlement through dealing.

DPI Water is responsible for the development of Water Sharing Plans (WSPs), which define the rules for sharing the water resources of each regulated river valley between consumptive users and the environment. As part of these activities, DPI Water issues Annual Available Water Determinations (AWDs), which define the quantity of water which is available to be shared between water users in accordance with the WSPs.⁶⁴ If the annual determination is less than 100 percent, DPI Water will review water availability on a regular basis and, when possible, announce revised water allocations.

DPI Water also operates the Water Licensing System (WLS) which includes the details of each licence holder and a complete record of each customer's licence details. This information is maintained by DPI Water licensing staff and is accessed directly by the WaterNSW Water Accounting System (WAS).

WaterNSW maintains a Water Allocation Account for each licence held by a customer (Access Licence) under both the *Water Management Act 2000* (NSW) and the *Water Act 1912* (NSW). It is noted that DPI Water is currently in the process of converting licences issued under the *Water Act* to the *Water Management Act*.

As reported above, WaterNSW uses a number of processes to monitor and update these Water Allocation Accounts. Credits are increases in a customer's Water Allocation Account. These arise from a newly declared AWDs or the purchase of water from another user (trade in).⁶⁵ There are also valley specific rules, reflected in the respective Water Sharing Plan, that govern how much water can be credited to customer accounts.

Debits are decreases in a customer's Water Allocation Account. These arise from water orders, usage and trade outs. There are account rules that govern how much water is available for use. Pursuant to the relevant legislation, penalties can be applied for taking water in excess of that available in the Water Allocation Account.⁶⁶

There are also general and valley specific rules that govern carryover, usage, account, available water, and dealing.

WaterNSW's documented procedures for maintaining Water Allocation Accounts include (for example):

- *How to Guide – Entering Opening and Closing Balance for a New Water Year in WAS* (Reference: D2017/100706);
- *How To Guide – Entering an Announcement into the Water Accounting System (WAS)* (Reference: D2017/100705);
- *Conducting Assessments of Usage Procedure* (Reference: CD2015/279);

⁶⁴ Further information about water allocations, determinations and other orders is available on the DPI Water website at <http://www.water.nsw.gov.au/water-management/water-availability/water-allocations>. Information about the NSW Water Register is also available at the DPI Water web site at <http://www.water.nsw.gov.au/water-licensing/registers>.

⁶⁵ Trades have been reported to IPART in: WaterNSW, *Report to the IPART under the Operating Licence 2013-2018 for State Water*, 1 September 2015.

⁶⁶ DPI Water, *Fact Sheet Series – Compliance with NSW Water Management Laws; Regulated activities, offences and penalties*, November 2015.

-
- *Incorrect Water Usage Procedure* (Reference: CD2015/291); and
 - *Meter Reading Procedure* (Reference: CD2015/294[v2]).

These documents appear to provide relevant guidance for the respective activities. It is noted that some remain “State Water” badged; however, as they are internal procedures, this is not considered to be an issue.

WaterNSW provided examples of water licence holders’ accounts for regulated, groundwater and unregulated water users, as follows:

- Licence No: 80AL702940 (WAL No: 11233) – Regulated River (General Security) (*Macquarie and Cudgegong Regulated Rivers Water Source*);⁶⁷
- Licence No: 80AL771560 (WAL No: 28516) – Aquifer (*Lachlan Fold Belt MDB Groundwater Source*);⁶⁸ and
- Licence No: 80AL716139 (WAL No: 31527) – Unregulated River (*Belubula Tributaries below Carcoar Dam Water Source*).⁶⁹

In each case, the account showed: account parameters, transactions and available water, allocation totals, share component totals, order and usage totals, orders (for regulated rivers only), extraction sites, last meter readings, and usages. Transaction types included (for example): AWD credits (regulated rivers), debits for water orders, usage by extraction site, assessed meter readings, meter readings, credits for under-pumping, and a credit for a trade-in.

Customers who have registered to do so are able to view their accounts online through the WaterNSW online water ordering system, iWAS. iWAS allows customers to place water orders and record meter reads on their accounts.

Any shortcoming in the water allocation accounting system will likely be identified through customer feedback or complaints after Customers review billing or iWAS statements. WaterNSW reports to IPART on complaints received during the year, including water accounting complaints.

The above analysis indicates that WaterNSW maintains and effectively manages a Water Allocation Account for each licence held by a Customer.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

⁶⁷ Document: *Alloc Account Reg AUSCOTT 80.AL702940* (Reference: D2017/99392).

⁶⁸ Document: *D2017 99393 Alloc Account GW PASPALEY PEARLS 80.AL715160* (Reference: D2017/99393).

⁶⁹ Document: *Alloc Account Reg CADLA HOLDINGS 80.AL716139* (Reference: D2017/99391).

Table A.2.4 Delivery of water to Customers (Sub-clause 3.1.4)

Sub-clause	Requirement	Compliance Grade
3.1.4	Water NSW must take all reasonable steps to conserve water and minimise water losses that result from undertaking its operations under this Licence.	Full Compliance

Risk	Target for Full Compliance
Failure to conserve water and minimise losses presents a high risk of water shortage; with resultant operational and environmental impacts.	Evidence that WaterNSW has taken reasonable steps to conserve water and minimise water losses that result from undertaking its operations.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- MS Excel Spreadsheet: *Water Delivery Operational Surplus Performance Indicator 2016'2017* (Reference: D2016/86962).
- Extract from State Infrastructure Strategy webpage at: <https://www.nsw.gov.au/improving-nsw/projects-and-initiatives/state-infrastructure-strategy/#water>.
- WaterNSW, *Fact Sheet, Tier 2 – Water Ordering: As grouped under the 2015-16 water order trial, Lachlan Valley Regulated Customers* (available on the WaterNSW website at: http://www.watnsw.com.au/_data/assets/pdf_file/0009/119538/Tier-2-Factsheet.pdf).

Summary of reasons for grade

WaterNSW demonstrated that, during the audit period, it had limited the release of operational surpluses to 3.46% across the state (compared to a target of 5%). It also achieved benefits from the implementation of alternative operational and water ordering protocols, and has secured funding under the State Infrastructure Strategy to assess alternative arrangements to reduce transition losses in valleys where high losses are recorded.

On this basis, it is considered that WaterNSW had taken reasonable steps to conserve water and minimise water losses that result from undertaking its operations during the audit period. Accordingly, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

WaterNSW advised that it had:⁷⁰

“WaterNSW undertakes continuous monitoring of river flows in the regulated river systems and targets to operate river systems with less than 5% operational surplus.”

WaterNSW reports against a *Water Delivery Operational Surplus Performance Indicator*⁷¹ as an indicator of performance of its river operations. During 2016/17, the operational surplus across the whole of the state was 3.46% (compared to the target 5%). Cumulative surplus remained at or less than 5% throughout the year in all valleys except the Hunter, where it reached a maximum of 17% against relatively low total volumes.

WaterNSW advised that operators monitor system performance on a daily basis through CAIRO, specifically in areas or periods of high loss. Furthermore, it has secured funding under the State

⁷⁰ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 6.

⁷¹ MS Excel Spreadsheet: *Water Delivery Operational Surplus Performance Indicator 2016'2017* (Reference: D2016/86962).

Infrastructure Strategy to look at alternative arrangements to reduce transition losses in valleys where high losses are recorded. It is noted that, under the State Infrastructure Strategy (announced in June 2014):⁷²

“The Government will examine the options proposed by Infrastructure NSW:

- *Upper Hunter – modelling to identify water delivery efficiency investments, including in respect of the Lostock and Glennies Creek Dams.*
- *Gwydir River Valley – a re-regulating dam at Gravesend or a new dam on the Horton River.*
- *Macquarie River Valley – augmentation of Burrendong Dam or a re-regulating dam on the Macquarie River.*
- *Lachlan River Valley - a new dam on the Belubula River.*

In addition to these projects, Infrastructure NSW recommend considering other possible delivery efficiency projects in these catchments. The Government will examine a state-wide delivery efficiency program to identify optimum additional delivery efficiency projects.”

WaterNSW cited the Operational Protocol in relation to the Rate of Change of Releases from Pindari Dam as an example of measures taken to conserve water and minimise losses. It advised as follows:⁷³

“There have been no defined release constraints at Pindari Dam since its enlargement in 1995. Releases of water from Pindari Dam are for the primary purpose of satisfying Town Water supply demand, irrigation and environmental flows requirements.

Pindari Dam has a minimum release capacity of 10 ML/day and a maximum of approximately 8500 ML/d. Regulated releases from Pindari have peaked at approximately 3500ML/Day since the upgrade and before commencement of the NSW Border Rivers Regulated Water Sharing Plan. A height of approximately 2.03 metres is recorded at the downstream gauge at 3500ML and 0.6 metre at 10ML/day. During regulated releases no change in release of greater than 1 meter has occurred during a 24 hour period.

Following commencement of the BRWSP, WaterNSW is required in certain circumstances to release a stimulus flow with a maximum discharge of 4000ML/Day.

Operational Commitments:

- *Releases from storage will ordinarily reflect demand for water. Variation in release will accordingly reflect variation in demand. The historic practice of making changes based on demand will be continued;*
- *Releases of “stimulus flows” will be designed to mimic a natural hydrograph;*
- *Pre-releases may occur in anticipation of a flood event.”*

It is noted that, as indicated by this example, WaterNSW is constrained by the requirements of the respective Water Sharing Plan in undertaking its water management activities.

Water conservation initiatives implemented during the audit period also included the use of block release strategies for the delivery of small remaining volumes of water. Given that transmission losses are relatively high when flows are low, this continues to be an effective strategy.

In respect of the initiatives discussed during the 2015/16 Operational Audit,⁷⁴ WaterNSW advised that:

- The revised water ordering protocol in the Lachlan Valley had simplified arrangements for smaller customers and was therefore proving beneficial in respect of water loss. Under the revised protocol, customers that hold a single access licence up to 150 ML, multiple access licences totalling up to 150 ML or access licences totalling up to 150 ML and nominating more than one work approval can

⁷² Extract from State Infrastructure Strategy webpage at: <https://www.nsw.gov.au/improving-nsw/projects-and-initiatives/state-infrastructure-strategy/#water>.

⁷³ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 6.

⁷⁴ Cobbitty Consulting/Viridis Consultants, 2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0), November 2016, section 4.1 and table A.3.1.

either order water as required (as they historically have) or order once per year with estimated rates and periods of extraction.⁷⁵ Under the simplified arrangements, water ordering more accurately reflects actual water use from an overall perspective, thereby reducing the incidence of over-ordering and the resultant operational surpluses.

- The Water Order Debiting protocol proposed for the Macquarie Cudgegong Valley is available, but has not yet been triggered. This protocol also applies in the Namoi, Gwydir and Northern Rivers Valleys and is being implemented.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

⁷⁵ WaterNSW, *Fact Sheet, Tier 2 – Water Ordering: As grouped under the 2015-16 water order trial, Lachlan Valley Regulated Customers* (available on the WaterNSW website at: http://www.waternsw.com.au/_data/assets/pdf_file/0009/119538/Tier-2-Factsheet.pdf).

Table A.2.5 Advance notification of changes to flow release patterns (Sub-clause 3.2.1)

Sub-clause	Requirement	Compliance Grade
3.2.1	WaterNSW must maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes.	Full Compliance

Risk

Inability to provide advance notification of significant changes to flow release patterns presents a high risk of unexpected impact on the downstream environment (including stakeholders' assets and/or interests).

Target for Full Compliance

Evidence that WaterNSW has an effective system in place to provide advance notification of any significant changes to flow release patterns.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016.
- Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016.
- Early Warning Network webpage at: <http://www.waternsw.com.au/about/ewn>.
- MS Excel Spreadsheet: *EWN Notification Levels* (Reference: DOC12/40883).
- EWN – All Dams Notifications webpage at: <http://www.waternsw.com.au/about/ewn/all-dams-notifications>.
- WaterNSW, *EWN – Fish River – Supply Change Notification Instructions* (Reference: CD2015 295).
- WaterNSW, *EWN- Instructions – Hume Dam* (Reference; CD2015 337).
- Document: *EWN Group Registrations* (Reference: D2017/116005).
- Document: *EWN Group Statistics* (Reference: D2017/115985).
- Letter (undated) from DPI Water to IPART (Reference: BN17/5712), (re: *IPART Operational Audit 2016-2017 – WaterNSW (State Water and SCA) and Sydney Water*).
- Emails dated 22 September 2017 and 29 September 2017 from WaterNSW to DPI Water and email dated 29 September 2017 from DPI Water to WaterNSW (re: *EWN notices in 2016/17*).
- Document: *DPI Early Warning Network Member Subscriptions* (Reference: D2017/135072).

Summary of reasons for grade

WaterNSW demonstrated that it continues to maintain an effective system to provide advance notification of any significant changes to flow release patterns from its Water Management Works, to Customers and other stakeholders that have registered to be notified of such changes. Interested parties can register via the WaterNSW website, and are able to select specific notifications to suit their individual needs.

Concerns raised by DPI Water regarding the absence of notifications appear to have resulted from a misunderstanding within DPI Water of WaterNSW's requirements under the Operating Licence and those under Works Approvals.

Accordingly, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

Maintenance and Implementation of the Early Warning Network:

Compliance with this obligation was audited as part of the 2014/15 Operational Audit⁷⁶ and the 2015/16 Operational Audit.⁷⁷ In both cases WaterNSW was assessed to have demonstrated full compliance.

WaterNSW continues to maintain an automated Early Warning Network (EWN) notification system to improve notification of dam and supply activities to the public. The WaterNSW website⁷⁸ indicates that there are four categories of notifications: Dam safety notifications, Flood notifications, High regulated releases and Fish River Supply Interruptions. The website also provides information regarding How to register; How do I change or update my details?; What is a notification?; How do I receive notifications?; and More Information.

WaterNSW advised that:⁷⁹

“A significant change to release patterns is defined by individual valleys and is based on historical notifications of downstream land holders and agreed flood levels. While a high regulated release in the Peel is triggered at flows greater than 500ML/day, a high regulated flow is not triggered in the Namoi Valley until a flow of 5000ML/day is reached.

The notification is undertaken by the Water Operations group after determining the release requirements for the specific day.”

Trigger levels for Flood, High Regulated Release and Dam Safety notifications are defined for individual dams/valleys in a Notifications Level Register.⁸⁰ Information regarding notification levels and what will be communicated is available on the website; this can be accessed via the “EWN” tab on each dam’s information page.

Notifications issued in the last three months are available on the WaterNSW Early Warning Network webpage; notifications prior to the last three months are available at the Early Warning Network – All Dams Notifications webpage.⁸¹

Interested parties can register on-line and may elect to receive EWN notifications through SMS to a mobile phone, a message to a landline, or an email. The WaterNSW help desk can also register interested parties and/or direct interested parties to the registration page.

⁷⁶ Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016, table A.2.5.

⁷⁷ Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.2.4.

⁷⁸ Early Warning Network webpage at: <http://www.watarnsw.com.au/about/ewn>.

⁷⁹ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 7.

⁸⁰ MS Excel Spreadsheet: *EWN Notification Levels* (Reference: DOC12/40883).

⁸¹ EWN – All Dams Notifications webpage at: <http://www.watarnsw.com.au/about/ewn/all-dams-notifications>.

WaterNSW advised that:⁸²

“Media releases have been undertaken over the past four years as well as discussion at the local CSC meeting. In addition, there is a self-register link on the WaterNSW web site.”

WaterNSW provided two examples of EWN notification instructions:

- Notifications Instructions for Supply Changes in the Fish River system:⁸³

These instructions cover notifications about supply interruptions and boil water alerts. They detail approvals and authorisations for release of EWN messages; groups for this service, defined by the section of the pipeline that is of interest to the customer; and pro-forma texts for notification messages.

- Early Warning Network – Guideline – Hume Dam Notifications:⁸⁴

These instructions include directions about issuing notifications, approvals, escalation and alternates, and pro-forma texts for notification messages. They cover high flow advices and notifications about floods and dam safety.

WaterNSW has provided subscription details for the EWN.⁸⁵ This shows that registration numbers continued to grow throughout the audit period, increasing from approximately 1110 in July 2016 to 1400 in June 2017. There was a significant increase in subscriptions during late August and September 2016, a period during which there was extensive flooding. A detailed breakdown showing registrations by valley and notification type was also provided.⁸⁶

DPI Water Concerns: In comments provided to IPART in respect of WaterNSW’s performance during the audit period, DPI Water identified a number of concerns. In respect of advance notification of changes to flow release patterns, DPI Water commented that:⁸⁷

“Condition 3.2.1 requires WaterNSW to provide notification in advance of changes to flow release patterns to stakeholders.

Historically, WaterNSW has been diligent in providing advance notice of potential changes in flow release patterns to DPI Water and its predecessor agencies. In recent times however there has been no notification and this affects DPI Water’s business.”

This issue was raised with WaterNSW during the audit interviews. WaterNSW advised that, when it became aware of this feedback it had contacted DPI Water (via both email⁸⁸ and personal discussion) to determine the specific issue(s) of concern. On the basis of discussions with specific officers, it appears that there was some confusion/miscommunication within DPI Water regarding the requirements of this obligation.

WaterNSW has requirements for notification/reporting to DPI Water under the provisions of various Works Approvals. As a result of the floods that occurred during the audit period, there had been minimal requirement to notify DPI Water under the provisions of any Works Approval. Notwithstanding, WaterNSW had maintained close consultation with the DPI Water operational personnel during these

⁸² WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 7.

⁸³ WaterNSW, *EWN – Fish River – Supply Change Notification Instructions* (Reference: CD2015 295).

⁸⁴ WaterNSW, *EWN- Instructions – Hume Dam* (Reference; CD2015 337).

⁸⁵ Document: *EWN Group Registrations* (Reference: D2017/116005).

⁸⁶ Document: *EWN Group Statistics* (Reference: D2017/115985).

⁸⁷ Letter (undated) from DPI Water to IPART (Reference: BN17/5712), (re: *IPART Operational Audit 2016-2017 – WaterNSW (State Water and SCA) and Sydney Water*).

⁸⁸ Emails dated 22 September 2017 and 29 September 2017 from WaterNSW to DPI Water and email dated 29 September 2017 from DPI [Water to WaterNSW](#) (re: *EWN notices in 2016/17*).

events prior to giving formal notification pursuant to Works Approvals.

WaterNSW provided an extract from its Early Warning Network (EWN) subscription list which identifies nineteen (19) DPI Water staff members that have registered for the EWN service.⁸⁹ This indicates that DPI Water would have continued to receive notifications for which its staff members have subscribed during the audit period.

In summary, it appears that there was a misunderstanding within DPI Water of the requirements under the Operating Licence and those under Works Approvals.

Summary:

On the basis of the analysis and observations detailed above, it was assessed that WaterNSW had continued to demonstrate full compliance with this Licence obligation during the audit period.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

⁸⁹ Document: *DPI Early Warning Network Member Subscriptions* (Reference: D2017/135072).

Table A.2.6 Water balance reporting (Sub-clause 3.3.1)

Sub-clause	Requirement	Compliance Grade
3.3.1	Water NSW must prepare water balance reports for each of the Valleys in which it operates, in accordance with the Reporting Manual.	Full Compliance

Risk

This requirement represents a moderate operational risk. It is important that WaterNSW has a clear understanding of water use in each of the valleys in which it operates; it is less important that this information is available to the public.

Target for Full Compliance

Evidence that WaterNSW had prepared water balance reports for each valley in accordance with the Reporting Manual.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- *Water Balance Reports* for all Valleys (Reference: D2017/90748 to D2017/90759).
- Link to Water Balance Reports: <http://www.waternsw.com.au/customer-service/news/balance>.
- Screenshot of ARK record D2016/134641 *Water Balance Report 2015-2016 for placement on WaterNSW Internet* (Reference: D2017/102554).
- Email dated 30 November 2016 from WaterNSW to IPART (re: *WaterNSW Reporting for 30 Nov and 1 Dec 2016*).

Summary of reasons for grade

WaterNSW demonstrated that it had prepared water balance reports for each of the valleys in which it operates and the reports included the requisite information. The auditors confirmed that the water balance reports were available on the WaterNSW website for downloading.

Although the auditors did not seek to obtain or access a copy of the water balance reports at a WaterNSW office as part of this audit, it is assessed that WaterNSW is fully compliant with this obligation.

Discussion and notes

The *Reporting Manual* requires that:⁹⁰

“[WaterNSW] must complete water balance reports for each financial year. [WaterNSW] must complete final reports by 1 December following the end of the financial year, or at such later date as agreed to by IPART.

The water balance reports must be prepared consistently for each Valley, and must include an annual account of:

- *water delivery, including sources and distribution of water*
- *breakdown of the distribution of water by each major category of water user,*
- *the percentage of time that planned environmental water delivery requirements were met; and*
- *water that is unaccounted for.”*

The *Reporting Manual* also requires that:⁹¹

⁹⁰ IPART, *State Water Corporation Reporting Manual*, July 2013, section 3.1.1.

⁹¹ IPART, *State Water Corporation Reporting Manual*, July 2013, section 3.2.

“[WaterNSW] must make the water balance reports (referred to in section 3.1.1 of this Reporting Manual) available free of charge:

- on its website for downloading by any person, and
- at its offices for access or collection by any person.

WaterNSW provided copies of 2015/16 Water Balance Reports⁹² for all valleys (except Paterson) as well as a link to where all reports are available on its website.⁹³ It also provided an ARK (document management system) extract,⁹⁴ which demonstrated that the 2015/16 Water Balance Reports were approved for publication by the Manager Water Systems Operations on 24 November 2016.

The auditors sighted an email⁹⁵ advising IPART that the 2015/16 Water Balance Reports had been uploaded to the website.

Review of the water balance reports confirmed that:

- they included the requisite information; and
- reports published on the WaterNSW website are consistent with those provided as evidence.

The auditors did not seek to obtain or access a copy of water balance reports at a WaterNSW office as part of this audit.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

⁹² Water Balance Reports for all Valleys (Reference: D2017/90748 to D2017/90759).


⁹³ Link to Water Balance Reports: <http://www.waternsw.com.au/customer-service/news/balance>.

⁹⁴ Screenshot of ARK record D2016/134641 Water Balance Report 2015-2016 for placement on WaterNSW Internet (Reference: D2017/102554).

⁹⁵ Email dated 30 November 2016 from WaterNSW to IPART (re: WaterNSW Reporting for 30 Nov and 1 Dec 2016).

A.3 Section 4 – Assets

Table A.3.1 Asset Management System (Sub-clause 4.1.1)

Sub-clause	Requirement	Compliance Grade
4.1.1	By 30 June 2018, Water NSW must develop a Management System that is consistent with: <ul style="list-style-type: none"> a) the <i>International Standard ISO 55001:2013 Asset Management - Management systems - Requirements</i>; or b) another asset management standard agreed to by IPART, (Asset Management System).	 Full Compliance

Risk	Target for Full Compliance
Failure to develop and implement an Asset Management System presents a high risk that WaterNSW may not have an effective framework for managing risks to its asset portfolio. This in turn presents a high risk of reduced levels of service and ultimately asset failure. In the case of dam failure, potential consequences are significant.	Evidence that WaterNSW has developed an Asset Management System prior to 30 June 2018.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

Summary of reasons for grade

WaterNSW’s Asset Management was certified as being compliant with the requirements of *ISO 55001:2014* on 10 January 2017. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Discussion and notes

WaterNSW advised that:⁹⁶

“A Stage 1 pre audit of the WNSW Asset Management System against ISO 55001 was undertaken by BSI in September 2016 and Stage 2 certification Audit completed in December 2016.

WaterNSW gained certification in Asset Management to ISO 55001 without any non-conformances on 10 January 2017.”

Review of the Stage 2 (Certification) Audit *Assessment Report*⁹⁷ revealed that:

⁹⁶ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 7.

⁹⁷ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.

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- The audit was conducted over ten (10) days commencing on 28 November 2016;
 - Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
 - No new nonconformities were identified; and
 - It was recommended that certification be granted.

A *Certificate of Registration* (No: AMS 659130),⁹⁸ effective from 10 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Asset Management System which complies with the requirements of *ISO 55001:2014* for the following scope:

“Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification.”

This scope is consistent with/captures the principal asset management activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence*.

Given that the Asset Management System was certified on 10 January 2017, it is apparent that the system had been developed by that date (which is well ahead of the required date, i.e. 30 June 2018). On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

⁹⁸ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

Table A.3.2 Asset Management System (Sub-clause 4.1.2)

Sub-clause	Requirement	Compliance Grade
4.1.2	<p>In the case of an Asset Management System which is developed under the <i>International Standard ISO 55001:2013 Asset Management - Management systems - Requirements</i>, Water NSW must ensure that:</p> <p>a) by 30 June 2018, the Asset Management System is certified by an appropriately qualified third party to be consistent with the <i>International standard ISO 55001:2013: Asset Management - Management systems - Requirements</i>; and</p> <p>b) once the Asset Management System is certified under clause 4.1.2(a) above, the certification is maintained during the remaining term of this Licence.</p>	<p>Full Compliance</p>

Risk

Failure to have the Asset Management System certified to *ISO 55001:2013* presents a moderate risk that the Asset Management System may not provide an effective framework for WaterNSW to manage risks to its asset portfolio. This in turn presents a high risk of reduced levels of service and ultimately asset failure.

Target for Full Compliance

Evidence that the Asset Management System was certified to *ISO 55001:2013* prior to 30 June 2018 and that certification has been subsequently maintained.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.
- WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017.
- MS Excel Spreadsheet: *WaterNSW Mandatory Training Matrix 2017* (Reference: D2017/25731).
- MS Excel Spreadsheet: *WaterNSW External Training Database 2016/2017* (Reference: D2017/7260).
- PowerPoint presentation: WaterNSW, *Asset Management System (AMS); Central BU/Team Awareness Sessions – November 2016* (Reference: D2016/122300).
- Maintenance Work Management Process Documents, as referenced.
- United Kingdom Accreditation Service (UKAS), *Schedule of Accreditation* (Issue: 005), issued to BSI Assurance UK Limited, 26 September 2017.
- PowerPoint presentation: WaterNSW, *IPART 2016-17 Annual Audit; Update – Asset Management System Progress* (Reference: D2017/115499).

Summary of reasons for grade

WaterNSW's Asset Management System was certified as being consistent with *ISO 55001:2014*; a *Certificate of Registration* was issued by BSI Group, which holds the required accreditation, on 10 January 2017. Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Asset Management System, a prerequisite to maintaining certification, throughout the audit period.

Accordingly, WaterNSW was assessed to have demonstrated compliance with this obligation.

Discussion and notes

Certification of Asset Management System:

As reported in Table A.3.1, a certification audit of the WaterNSW Asset Management System was undertaken in November/December 2016 and a *Certificate of Registration* (No: AMS 659130),⁹⁹ effective from 10 January 2017, was subsequently issued to WaterNSW. As also reported, the scope of the certification is consistent with/captures the principal asset management activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence*.

The *Certificate of Registration* was issued by BSI Group (specifically BSI Assurance UK Limited), which is accredited by the United Kingdom Accreditation Service (UKAS). A *Schedule of Accreditation*¹⁰⁰ indicates that BSI Assurance UK Limited is “Accredited to ISO/IEC 17021-1:2015 to provide asset management systems certification”.

It is therefore apparent that the WaterNSW Asset Management System was certified by a qualified third party to be consistent with *ISO 55001:2014* prior to 30 June 2018.

Maintenance of Certification:

Certification is typically maintained through the successful completion of a program of surveillance and re-certification audits, undertaken by the third party certifying body (in this case BSI Group). The audit program, which is prepared by the certifying body, typically comprises annual compliance audits and a re-certification audit every three years.

In its *Compliance and Performance Report* (for 2016/17),¹⁰¹ WaterNSW advised that the external surveillance audit was scheduled for September 2017. It is understood that an external surveillance audit was undertaken by BSI Group as planned (the auditors did not sight evidence of this audit).

Implementation of the Asset Management System:

General:

Maintenance of certification will be dependent (in part) upon WaterNSW demonstrating the ongoing effective implementation of the Asset Management System. Implementation of the Asset Management System is demonstrated by (for example) the following activities undertaken by WaterNSW:

- implementing an effective training program;
 - the development of Maintenance Work Management process documents;
 - implementation of a Change Management Process;
 - undertaking Management Reviews of the Asset Management System; and
 - implementing a program of internal and external audits.
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⁹⁹ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

¹⁰⁰ United Kingdom Accreditation Service (UKAS), *Schedule of Accreditation* (Issue: 005), issued to BSI Assurance UK Limited, 26 September 2017.

¹⁰¹ WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017, sections 4.1.4 and 4.2.3.

These activities are discussed in the following; further relevant discussion is presented in Table A.3.3.

Training:

WaterNSW advised that:¹⁰²

“Staff are trained in asset management through awareness sessions tailored to individual group needs or requirements. This training was deemed sufficient and suitable by BSI during audit to satisfy ISO55001 clause 7.2 as indicated in the attached assessment report.”

Review of the Stage 2 (Certification) Audit *Assessment Report*¹⁰³ confirmed that WaterNSW’s training arrangements were assessed as satisfactory for the purposes of *ISO 55001*.

WaterNSW further advised that training requirements are identified in a *Mandatory Training Matrix*¹⁰⁴ with records of completed training recorded in an *External Training Database*¹⁰⁵ document.

Review of the *Mandatory Training Matrix* revealed that it identifies twelve training modules specifically related to asset management, namely: AMS Awareness; Asset Change Management Procedure; Asset Condition Assessment/Recording; Dam Safety Surveillance; Asset Operation – Water Operations Certificate III; Asset Operation – Water Operations Certificate IV; Trade Certificate; Electrical Licence; Tertiary Engineering; Engineering Degree; RCM/FMECA; and Root Cause Analysis (RCA). The allocation of training to roles across the organisation appeared to be appropriate.

Review of the *External Training Database* revealed that a considerable number of staff had undertaken training in respect of AMS Awareness; Asset Change Management Procedure; and Asset Condition Assessment/Recording during the audit period. Other asset management related training included (for example): IPWEA Professional Certificate in Asset Management Planning; Effective Shutdown Planning & Management; Maintenance Planning & Scheduling; Bridge Asset Management & Renewal Workshop; and White Card (Safety Training).

WaterNSW provided a copy of a presentation¹⁰⁶ used as the basis for Asset Management Awareness Training as presented to the central business units. It advised that training is tailored to the target audience, which is considered good practice. Review of the presentation revealed that it provided an appropriate overview of the Asset Management System, with a focus on new and amended processes.

Maintenance Work Management:

WaterNSW advised¹⁰⁷ that development of its Maintenance Work Management process documentation has been undertaken through consultation with System Operation and Asset Maintenance teams. This was reiterated in the *Compliance and Performance Report*,¹⁰⁸ which indicates that:

“As the AMS matures, opportunities to make the AMS more robust have been pursued by the development of new procedures and processes. Furthermore key procedures in the AMS have been reviewed and updated to meet the needs of WaterNSW as it implements the Consolidated Information Management System.”

A sample of *Maintenance Work Management* documents, including the following, were reviewed and found to provide effective guidance for the process/activity involved. The inclusion of flow charts/process maps is considered to be an effective means of defining, communicating and managing workflow for maintenance activities:

- CD2017/75 *Work Execution Procedure*;

¹⁰² WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 8.

¹⁰³ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.

¹⁰⁴ MS Excel Spreadsheet: *WaterNSW Mandatory Training Matrix 2017* (Reference: D2017/25731).

¹⁰⁵ MS Excel Spreadsheet: *WaterNSW External Training Database 2016/2017* (Reference: D2017/7260).

¹⁰⁶ PowerPoint presentation: *WaterNSW, Asset Management System (AMS); Central BU/Team Awareness Sessions – November 2016* (Reference: D2016/122300).

¹⁰⁷ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 8.

¹⁰⁸ WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017, sections 4.2.2.

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- CD2017/76 *Work Order Initiation Procedure*;
 - CD2017/77 *Work Order Planning Procedure*;
 - CD2017/78 *Work Request Form*;
 - CD2017/79 *Work Review Procedure*; and
 - CD2017/80 *Work Order Scheduling Procedure*.

Change Management Process:

WaterNSW has introduced an *Asset Change Management Procedure*¹⁰⁹ (and supporting documentation), which is to be implemented in respect of all changes to assets and related information/systems, including:

- New assets, replacement of assets or decommissioning of assets;
- Change to how assets are operated or maintained, including operating limits/settings;
- Change to the physical environment in which assets operate;
- Physical change to an existing asset, including hardware, firmware, software;
- Change to asset related information/systems (for example: drawings, O&M Manuals, the Computerised Maintenance Management System (CMMS)); and
- Change due to external factors (for example: changes to legislation, standards, availability of support, etc).

The process involves the submission of an Asset Change Request for approval prior to any proposed change being implemented. The proposed change is initially triaged, then investigated as necessary to enable an appropriately informed assessment, which results in approval or decline of the proposal. The assessment and approval process, which is managed through an on-line interface, has a risk based focus. It is aimed at maintaining the integrity of assets and related systems throughout their life cycle, whilst underpinning the standardisation of assets and the adopted approach to their management.

Management Review:

One of the requirements under *ISO 55001* is for top management of the organisation to review the asset management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

WaterNSW provided a document recording a *Management Review*¹¹⁰ undertaken by WaterNSW, although the date of the review, details of the management representatives that had participated in undertaking the review and the date of the next planned review were not recorded.¹¹¹ An opportunity for improvement (**OFI-2016/17-04**) has been identified in respect of this deficiency.

Notwithstanding, this document provided a detailed review of the Asset Management System and related activities, including an assessment of:

- Key Asset Management Documentation (including the *Asset Management Policy* and *Strategic Asset Management Plan*);
- External Audits;
- Internal Audit Results;
- Evaluation of Compliance with Applicable Legal Requirements;
- Performance Measurement;
- Follow-up from Previous Management Review;
- Changing Circumstances (including changes in external and internal issues that are relevant to the Asset Management System); and
- Changes in the Profile of Risks and Opportunities.

¹⁰⁹ WaterNSW, *Asset Change Management Procedure* (Reference: CD2016/57).

¹¹⁰ WaterNSW, *Management Review; Asset Management System* (Reference: D2017/97405).

¹¹¹ References within the document to actions taken in July 2017 and the surveillance audit scheduled for September 2017 suggest that the Management Review was likely undertaken in August 2017.

Recommendations and opportunities for improvement were identified.

Internal and External Audit:

External audits of the Asset Management System, including the certification audit undertaken in November/December 2016 and the surveillance audit undertaken in September 2017, are discussed above.

WaterNSW advised that it had implemented a program of internal audits and provided a copy of its *Audit Schedule*¹¹² for 2016/17, which indicated that a program of audits had been implemented. The auditors did not sight any internal audit reports; however, it is noted that details of internal audits and their findings were documented as part of the *Management Review*.¹¹³

Summary:

The preceding discussion provides a snapshot of evidence that WaterNSW continued to implement its Asset Management System throughout the audit period. As previously indicated, further discussion in respect to implementation of the system is presented in Table A.3.3.

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-04:** It is suggested that WaterNSW ensures that the record of each Management Review of the Asset Management System includes the date of the review, details of the management representatives that had participated in undertaking the review and the date of the next planned review.

[Note: WaterNSW advised, prior to issue of the Final Audit Report, that it is reviewing its management review processes with a view to rationalising implementation across all of its management forums (systems). This approach is supported.]

¹¹² MS Excel Spreadsheet: *Audit Schedule for Systems* (Reference: D2015/48040[v2]).

¹¹³ WaterNSW, *Management Review; Asset Management System* (Reference: D2017/97405), sections 4.3 and 6.2.

Table A.3.3 Asset Management System (Sub-clause 4.1.4)

Sub-clause	Requirement	Compliance Grade
4.1.4	<p>Until the Asset Management System has been developed in accordance with clause 4.1.1 and certified in accordance with clause 4.1.2 (if applicable), Water NSW must:</p> <p>a) maintain programs to manage risks to its assets and to maintain the appropriate levels of service of those assets; and</p> <p>b) ensure that all its activities are carried out in accordance with those programs.</p>	Full Compliance

Risk	Target for Full Compliance
Failure to manage risk to the assets presents a high risk of reduced levels of service and ultimately asset failure. In the case of dam failure, potential consequences are significant.	Evidence that WaterNSW maintains and implements programs to manage risks to its assets and maintain appropriate levels of service.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Site inspection of assets in the Murrumbidgee Valley on 27 September 2017.
- Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016.
- Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, section 4.1 and table A.3.1.
- WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017.
- WaterNSW, *Asset Management Policy*, 27 February 2015 (Reference: CD2015/488[v2]).
- WaterNSW, *Strategic Asset Management Plan; Asset Management Manual (Version 3.0)*, 22 November 2016 (Reference: CD2015/436[V4]).
- WaterNSW, *Asset Condition and Reliability Audit Procedure* (Reference: CD2016/15[v2]).
- WaterNSW, *Asset Condition and Capability Audit of Avon Dam; 20th–21st July 2016* (Reference: D2017/5222).
- WaterNSW, *Asset Condition and Capability Audit of Burrinjuck Dam; 1st–4th May 2017* (Reference: D2017/68072).
- Document (extract from SmartAsset system): *Gogeldrie 12 month Vertical Gates* (Reference: D2017/120064).
- Email (internal) dated 4 October 2017 (re: *IPART Audit – additional evidence*) (Reference: D2017/120072).
- State Water, *Maintenance Audit of Murrumbidgee Lot 1 River Structures; 26-29th July 2010* (Reference: D2017/120073).

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- State Water, *Project Approval to Spend – Berembed Weir and Offtake Regulator*, 21 November 2014 (Reference: D2017/120057).
 - WaterNSW, *Berembed Weir and Offtake Regulators; Final Business Case*, 23 November 2016 (Reference: D2017/120063).
 - WaterNSW, *Berembed Weir and Offtake Regulators Commissioning Plan* (Reference: D2017/120058).
 - Document (extract from SmartAsset system): *Gate 8 Service and Repair by Rotork Technician* (Reference: D2017/120056).
 - Document: *Leeton Maintenance Schedule September* (Reference: D2017/120062).
 - MS Excel Spreadsheet: *Routine Completion Annual Maintenance Plan Report for 2016/17* (Reference: D2017/120075).
-

Summary of reasons for grade

WaterNSW demonstrated that it continues to maintain and implement programs to manage risks to its rural (former State Water) assets and to maintain the appropriate levels of service of those assets. Risks to assets and levels of service are managed through a rigorous condition and reliability audit program, supported by the implementation of effective operation and maintenance practices.

Assessment of the field implementation of asset management practices in the Murrumbidgee Valley revealed that site based personnel undertake an extensive range of operations and maintenance activities. They demonstrated a high level of ‘ownership’ and pride in their work and it was apparent that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

On the basis of the evidence presented and the observations made during the audit, it is assessed that WaterNSW has demonstrated full compliance with this obligation.

Discussion and notes

Overview

The auditors undertook a detailed review of WaterNSW’s Asset Management System as part of the 2014/15 Operational audit. That audit concluded that:¹¹⁴

“WaterNSW demonstrated that it continues to maintain and implement programs to manage risks to its rural (former State Water) assets and to maintain the appropriate levels of service of those assets. Operating under a well-established framework, these programs involve extensive activity associated with the management of its dam assets in accordance with NSW Dam Safety Committee and ANCOLD guidelines, as well as condition monitoring, maintenance and ongoing renewal/replacement/upgrade (as appropriate) of individual assets.”

This assessment was reiterated by the 2015/16 Operational Audit, which concluded that:¹¹⁵

“WaterNSW demonstrated that it continues to maintain and implement programs to manage risks to its rural (former State Water) assets and to maintain the appropriate levels of service of those assets. Risks to assets and levels of service are managed through a rigorous maintenance audit program, supported by the implementation of effective operation and maintenance practices.”

This year’s audit has been focused on reviewing and gaining an understanding of changes that have occurred during the audit period (i.e. the 2016/17 financial year), whilst also seeking to ensure that the key elements of the Asset Management System have been maintained and continue to be implemented.

¹¹⁴ Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016, section 4.1 and table A.3.1.

¹¹⁵ Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, section 4.1 and table A.3.1.

During the audit period, WaterNSW's Asset Management System was certified as being consistent with *International Standard ISO 55001:2014 Asset Management - Management systems - Requirements*. This is reported in more detail in Table A.3.1 and Table A.3.2.

Discussion in respect of implementation of the asset management system during the audit period is also presented in Table A.3.2. This includes a discussion of system support activities, including:

- implementing an effective training program;
- the development of Maintenance Work Management process documents;
- implementation of a Change Management Process;
- undertaking Management Reviews of the Asset Management System; and
- implementing a program of internal and external audits.

The *Compliance and Performance Report* (for 2016/17),¹¹⁶ provides a detailed account of asset management activities undertaken during the audit period, which includes the above initiatives. As advised by WaterNSW,¹¹⁷ it also involves rationalisation of its maintenance management systems:

“WaterNSW has embarked on the development and staged implementation of a Consolidated Information Management System (CIMS) which includes an Enterprise Asset Management module which will replace the current CMMS function of the Maximo and Smart.Asset applications. The CIMS EAMS module is scheduled to be implemented in January 2018.”

It is noted that this clause is principally applicable for the audit period prior to certification of the Asset Management System in January 2017, although the following discussion relates to activities undertaken throughout the audit period, including:

- Asset Risk Management; and
- Implementation of Asset Management Practices in the Murrumbidgee Valley.

Asset Risk Management

WaterNSW advised that:¹¹⁸

“Risks to Assets and Levels of Service - is managed through a rigorous audit program that complies with IIMM, NSW Dams Safety Committee and ANCOLD guidelines. A defined audit process is established to verify maintenance practices are being undertaken to acceptable standards as specified by Asset Management System requirements and compliant with approved maintenance work management processes. The Asset Condition and Capability Audit Procedure interrogates maintenance procedures for pertinence, accuracy and currency during the preparatory phase of the audit, and then reviews records, inspection results and testing processes. The site based audit component focusses on physical inspection of the assets with operation witnessed where appropriate to ascertain asset capability and condition. Outcomes from the audit may include:

- *Updates of technical procedures for the conduct of maintenance work (both inspections and repairs);*
- *Recommendations for training of personnel; and*
- *Refinement of work management practices.*
- *Update of asset recommendations from audits are managed through respective Computerised Maintenance Management Systems (CMMS).”*

This approach is consistent with the *Asset Management Policy*¹¹⁹ and, more specifically, the *Strategic Asset Management Plan*,¹²⁰ which outlines the structure and operational details of WaterNSW's Asset Management

¹¹⁶ WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017, part 4.

¹¹⁷ WaterNSW, *Compliance and Performance Report; Under the State Water Operating Licence 2013-2018*, 1 September 2017, section 4.1.2.

¹¹⁸ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2016, page 9.

¹¹⁹ WaterNSW, *Asset Management Policy*, 27 February 2015 (Reference: CD2015/488[v2]).

¹²⁰ WaterNSW, *Strategic Asset Management Plan; Asset Management Manual* (Version 3.0), 22 November 2016 (Reference: CD2015/436[V4]).

System. WaterNSW reviewed its *Asset Management Policy* during the audit period and found that it remained appropriate; the *Strategic Asset Management Plan* was updated.

WaterNSW provided a copy of its *Asset Condition and Reliability Audit Procedure*¹²¹ (which had been reviewed and renamed during the audit period). This procedure sets out a detailed approach for conducting and reporting on asset condition and capability.

Sample *Asset Condition and Reliability Audit Reports* were provided in respect of:

- Avon Dam (undertaken in July 2016)¹²² – which provided an assessment of assets associated with the dam wall, scour outlet house, lower discharge outlet works, lower outlet works valve block, spillway bridge, and ancillary works. Ninety eight (98) recommendations from the audit were clearly presented.
- Burrinjuck Dam (undertaken in May 2017)¹²³ – which provided an assessment of assets associated with the dam wall, galleries, stairways and access platforms, lifts, cableway, intake works, sector gates, outlet works, and associated facilities. Progress on previous condition audit recommendations was assessed and 104 new recommendations from the audit clearly presented. A Maintenance Management System Report for Burrinjuck Dam demonstrated that all recommendations have been captured in the maintenance management system, and identified as corrective maintenance work orders (breakdown maintenance in one case).

It is noted that the maintenance audits are undertaken by the Asset Solutions and Delivery – Reliability Engineering team. The Asset Solutions and Delivery team has responsibility for maintaining the capability of the assets, whilst the System Operation and Asset Maintenance team has responsibility for implementing the maintenance plans.

The implementation of dam surveillance practices, which are applicable under both the *State Water Operating Licence* and *SCA Operating Licence*, is discussed in Table B.4.2.

Implementation of Asset Management Practices

As part of the audit, site visits/inspections to a number of assets in the Murrumbidgee Valley were undertaken. Assets inspected included: Tombullen Storage; Yanco Weir; Gogeldrie Weir; Berembed Weir; and Beavers Creek Regulator. A visit was also made to the Leeton Maintenance Office.

The principal objective was to assess the field implementation of asset management practices. A summary of the understanding derived from discussions at the site is as follows:

Tombullen Storage:

- This is an off-stream storage which is used as a balancing storage to manage shortfalls during the summer. Surplus water in the river can be captured at this location. Both the outlet and inlet structures were inspected. There is one radial gate on the outlet and three on the inlet.
- Both sites are automated, with Water Delivery managing the inflow/outflow from this storage. The SCADA system (iSmart) is accessible within a control shed at each site; this shows status of the local infrastructure. Alarm conditions include: solar power unavailable, overload on the outlet gate and an intruder alarm.
- The control sheds are alarmed for protection against vandalism. A recent site maintenance audit resulted in the installation of new handrails. This demonstrates that WaterNSW supports remote sites in a meaningful way which is taken note of by local staff.
- The site adjacent to the outflow control shed was kept neat and tidy demonstrating that the staff has pride in the work they do. Improvement works were evident at the site of the inlet structure. This work is undertaken by contractors with supervision being provided by WaterNSW staff.
- Gauging stations are inspected monthly and calibration is undertaken if required. This is undertaken

¹²¹ WaterNSW, *Asset Condition and Reliability Audit Procedure* (Reference: CD2016/15[v2]).

¹²² WaterNSW, *Asset Condition and Capability Audit of Avon Dam; 20th–21st July 2016* (Reference: D2017/5222).

¹²³ WaterNSW, *Asset Condition and Capability Audit of Burrinjuck Dam; 1st–4th May 2017* (Reference: D2017/68072).

as part of the scheduled monthly maintenance program.

- The staff demonstrated their knowledge of the monitoring system, calibration of equipment and reporting requirements.

Yanco Weir:

- There are two weir structures at the site; the original structure constructed in 1930s and a new, recently constructed structure comprising two sluice gates (the new weir could not be accessed on the day of the inspection).
- The operators indicated that there is some difficulty in programming/undertaking maintenance due to the need to maintain a high weir pool level to ensure supply to a large customer along Yanco Creek.
- There is an emergency generator located permanently on site. Operation is triggered as part of each monthly inspection.
- Consistent with all weir structures visited, the operations staff guiding the auditors have very limited input to the operation of the weir. Water Delivery manages the operations including release/input/outputs. The SCADA system is standardised across this area of WaterNSW's operations; as reported in respect of Tombullen Storage, the status of the local infrastructure can be viewed on site.

Gogeldrie Weir:

- The adjacent park was previously managed by WaterNSW. It has now been leased to Leeton Shire Council which in turn has sub-leased it to a commercial entity.
- In addition to the control of water flow along the river, the weir also facilitates the release of water to adjacent wetlands.
- Maintenance work is undertaken during the 'low season', i.e. from May to August/September. Vegetation management impacting the assets is planned work for which a preventive maintenance work order is in place.
- Weir maintenance activities include inspection, cleaning and (when required) re-painting of the gates, as well as maintenance (painting) of the superstructure. Details of the relevant Work Order (No: P0079261)¹²⁴ were provided; these showed that the "12 Month Vertical Lift Gates General Inspection" had been last completed on 24 August 2017 (i.e. subsequent to the audit period).
- Gate inspection/maintenance involves dropping the flow level (riparian flows only required during the winter); lifting the gates; pressure cleaning; refurbishing the gate rollers; re-greasing ropes and inspection of gearboxes. WaterNSW advised that the gates were last repainted in 1995; annual water washing had kept the gates in good condition.
- It was noted that some paintwork on the superstructure was flaking. In response to the auditor's enquiry as to whether this had been captured in the maintenance management system, WaterNSW provided a summary document (email)¹²⁵ citing evidence that a coatings program has been approved by the WaterNSW ATS and Board, and that repainting at Gogeldrie is included as part of a Murrumbidgee Valley Coatings Package that will also include the repainting of Berembed Weir gates, Berembed Weir bridges 2 & 3 (TBC) (along with other structures).

Berembed Weir and Offtake Regulator:

- Originally constructed in 1910, this structure has since been upgraded with ten 'Rotork' actuated penstocks to divert water along Bundidgerry Creek, which is the main offtake for Murrumbidgee Irrigation. Two vertical gates control the release of the water downstream along the Murrumbidgee.

¹²⁴ Document (extract from SmartAsset system): *Gogeldrie 12 month Vertical Gates* (Reference: D2017/120064).

¹²⁵ Email (internal) dated 4 October 2017 (re: *IPART Audit – additional evidence*) (Reference: D2017/120072).

-
- An upgrade project, which was initiated following a maintenance (condition and reliability) audit, has been recently completed. WaterNSW provided a series of documents which demonstrated the process flow for development and implementation of the project, including the following:
 - *Maintenance Audit of Murrumbidgee Lot 1 River Structures* (2010)¹²⁶ – identified new maintenance requirements in addition to items that remained outstanding from previous audits.
 - *Project Approval to Spend – Berembed Weir and Offtake Regulator* (2014)¹²⁷ – seeking approval to spend for a project to “... replace the Offtake Regulator’s gates and trasbrack system, and upgrade the working platform so as to provide a safe, reliable structure that can continue to efficiently divert water to customers and that complies with relevant WHS standards and regulations”.
 - *Berembed Weir and Offtake Regulators; Final Business Case* (2016)¹²⁸ – presents a business in support of a recommendation for Board approval of the project.
 - *Berembed Weir and Offtake Regulators Commissioning Plan* (2017)¹²⁹ – presents a contract defects list and sets out arrangements for commissioning of the new works.
 - The walkways and handrails appear to be in good order with regular maintenance being undertaken. The site is being kept neat and tidy. The two vertical gates are exercised annually. The monitoring system is similar to that at the other sites visited.
 - It was noted that Gate 8 on the offtake regulator was tagged out of service at the time of the inspection. Details of the relevant Work Order (No: C0027136)¹³⁰ “Gate 8 Service and Repair by Rotork Technician” confirmed that the issue was being addressed.
 - Cracks were observed in the central training wall downstream of the weir. WaterNSW demonstrated that Work Oder No: P0091670 (sighted on-line) requires ongoing monitoring of these cracks on an annual basis.
 - Work Order No: P0091334 (sighted on-line) relates to annual inspection of the radial gates. Records indicate that re-coating was undertaken in 2015; detailed commentary was provided and costings recorded.

Beavers Creek Regulator and Fishway:

- This structure was constructed in 2014. Hydraulically actuated radial gates control flow; these are the largest radial gates in the WaterNSW network.
- The fishway appears to be in need of maintenance; silt had been deposited within the structure during the 2016 floods.
- Operators advised that initial monitoring had indicated limited success in respect of the number of fish passing. The structure was designed and built in accordance with NSW Fisheries specifications.
- It is understood that historically, WaterNSW (State Water) was required to construct fish passage when modifying any existing river structures. It is further understood that a rationalised approach, under which the potential benefits are assessed on a state-wide basis, is now being implemented.

Leeton Maintenance Office:

- Reports of maintenance activities were witnessed on screen. The staff demonstrated how they manage the maintenance work, the reporting and performance. The information witnessed by the auditors demonstrated a high level of performance. The maintenance program completion rate is >93% for all sites, compared to the minimum acceptable rate of 80%. The weekly maintenance

¹²⁶ State Water, *Maintenance Audit of Murrumbidgee Lot 1 River Structures; 26-29th July 2010* (Reference: D2017/120073).

¹²⁷ State Water, *Project Approval to Spend – Berembed Weir and Offtake Regulator*, 21 November 2014 (Reference: D2017/120057).

¹²⁸ WaterNSW, *Berembed Weir and Offtake Regulators; Final Business Case*, 23 November 2016 (Reference: D2017/120063).

¹²⁹ WaterNSW, *Berembed Weir and Offtake Regulators Commissioning Plan* (Reference: D2017/120058).

¹³⁰ Document (extract from SmartAsset system): *Gate 8 Service and Repair by Rotork Technician* (Reference: D2017/120056).

report, which is comprehensive, was witnessed on screen.

- Copies of the *Leeton Maintenance Schedule*¹³¹ for the week of the audit (outside the audit period) were provided as an example. This showed time allocation of maintenance team members against scheduled work orders on a daily basis.
- A new work planning process has been revised and implemented during the audit period. Staff acceptance of the new processes is high. They also see the benefits of the new system. No work is undertaken without a work order. The planning processes implemented have led to improved communication among the maintenance staff.
- The SmartAsset work order system was demonstrated on-line. The example shown was the Jerilderie Weir maintenance schedule. Twelve ‘Rotork’ actuated vertical gates control the diversion of water at this location. Maintenance reports were witnessed (e.g. report for Work Order No: P0079261).
- The maintenance reporting processes were comprehensive. It was evident that the information from these reports was fed into a wider maintenance schedule and prioritised. The processes, which are following the recently introduced Maintenance Work Management procedures (refer Table A.3.2 for further discussion) are in the early stages of maturity; however, the staff appear to have accepted that the new processes assist them in doing their work more effectively and efficiently.
- A copy of the *Routine Completion Annual Maintenance Plan Report for 2016/17*¹³² provided a detailed assessment of maintenance performance across WaterNSW’s operations.

In summary, the operators with whom the site inspections were undertaken demonstrated a high level of ‘ownership’ and pride in their work, which involves a range of operational and maintenance activities. The explanations provided gave the impression that they have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

Capital Projects:

Fish River Pipeline Replacement Project:

WaterNSW identified this project as a typical example. It provided an overview of the project during the audit interviews and a portfolio of supporting documentation.

In summary, the Fish River Pipeline Replacement Project was initiated as a response due to a combination of condition assessments and failure history. Analysis was undertaken to determine how best to replace the lengths that need to be replaced, one of the challenges being the use of lead joints in the existing pipeline.

The final business case was approved in November 2016 and the project is now approaching completion.

Burrundong Dam Temperature Control Curtain:

In the knowledge that “*the Burrundong temperature control curtain is not currently operational due to some critical component failures*”, the auditors sought an understanding of what actions WaterNSW is taking to analyse the failures, assess the possible repair/reinstatement options or the use of alternative technologies, and plan repair or replacement facilities for the prevention of cold water pollution of the downstream water way.

WaterNSW advised that:¹³³

“Following the removal of the curtain (after curtain failure), WNSW established a project team to initiate the investigation into the failure and commence planning for the reinstatement of the curtain. To enable the reinstatement of the curtain in shortest possible timeframe, WNSW is undertaking many of these activities in parallel including:

- *Reliability Analytics undertaking a Root Cause Analysis.*
- *Internal Design Team undertaking a thorough design review of all components to reinstate or augment*

¹³¹ Document: *Leeton Maintenance Schedule September* (Reference: D2017/120062).

¹³² MS Excel Spreadsheet: *Routine Completion Annual Maintenance Plan Report for 2016/17* (Reference: D2017/120075).

¹³³ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2016, page 9.

components (curtain, cable, sliders etc.).

- *Delivery team managing other specialist investigations/inspections including metallurgical assessment, curtain condition assessment and survey, and divers' inspection (which is underway).*
- *Asset planning team developed a preliminary business case to seek approval to continue planning activities and obtain endorsement for the project – Preliminary Business Case (PBC) – completed.*

The investigations into the failure are still ongoing with the final divers' inspections are expected to be completed by September. WNSW design team has completed the design of most components but the anchor reinstatement works is subject to divers' inspections and report.”

This report was corroborated by a portfolio of supporting documentation and discussions during the audit interviews.

In summary, the original design was found to be faulty and a prototype that was installed to test a different design failed. Currently the whole assembly is being redesigned and is expected to be manufactured and installed shortly. The anchor system failure is of concern, with significant cost to be incurred (due to the involvement of divers) for either recovery or replacement.

Capital Delivery:

To the extent that it was reviewed as part of this audit, the approach to capital delivery appears robust and well implemented. The investment review committee (IRC) reviews all Capex projects. Once the IRC endorses a project it will be reviewed by the Executive. Once the Executive agrees the CEO presents the project to the Board (depending on the value of the project) for funding approval.

The Planning team has the stewardship responsibilities for the Capex program.


Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Table A.3.4 Water metering and monitoring (Sub-clause 4.2.1)

Sub-clause	Requirement	Compliance Grade
4.2.1	Water NSW must read each of its Customers' meters.	 High Compliance

Risk	Target for Full Compliance
This requirement represents a high operational risk. Without meter reads, WaterNSW is unable to effectively implement its water accounting obligations and does not have a basis for invoicing.	Evidence that WaterNSW has read its customers meters.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- State Water, *Meter Reading Procedure*, 7 November 2012 (Reference: D2015_294[v1]).
- MS Excel Spreadsheet: *Regulated Meter Reads* (Reference: D2017/117382).
- MS Excel Spreadsheet: *Groundwater Meter Reads 16-17 Macquarie Sample* (Reference: D2017/120012).
- MS Excel Spreadsheet: *Groundwater Meter Reads 16-17 Murrumbidgee Sample* (Reference: D2017/120014).
- MS Excel Spreadsheet: *Barwon Darling Meter Reads 16-17* (Reference: D2017/117109).
- MS Excel spreadsheet: *Barwon-Darling Meter Readings 2 years Final* (Reference: D2017/136192).
- MS Excel Spreadsheet: *Macquarie Regulated Example Meter Reads* (Reference: D2017/116172).
- Document: *Macquarie Regulated Allocation Account Summary Reconciliation* (Reference: D2017/116171).
- Submission to IPART from NSWIC dated 19 May 2017 (re: *NSWIC Submission to 2016-17 Operating Licence Audit – WaterNSW*).

Summary of reasons for grade

WaterNSW demonstrated that it had read the majority, but not all, of its customers' meters during the audit period. The total number of reads (as assessed for regulated source customers) was less than the frequency requirements documented in the *Meter Reading Procedure*. On this basis, it is assessed that WaterNSW has demonstrated high compliance with this obligation.

It is recommended that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. To facilitate the implementation of this recommendation, it is suggested that WaterNSW updates its *Meter Reading Procedure* to reflect the change in WaterNSW's responsibilities in respect of water take measurement and the requirements of the *WaterNSW Operating Licence 2017-2022* (i.e. develop a *Determination of Water Take Procedure*). Such procedure should detail all methods used to determine and/or validate water take measurements.

Discussion and notes

Overview:

Subsequent to the transfer of responsibilities from DPI Water to WaterNSW (refer Table A.3.5), WaterNSW's obligations under this sub-clause of the Licence now include meter reading functions for unregulated and groundwater sources as well as regulated rivers.

Meters are read in accordance with the *Meter Reading Procedure*,¹³⁴ which sets out details of the meter reading process. It sets out a detailed approach to the meter reading process, including:

- General Procedures – including procedures if unable to read a meter due to a work health and safety issue;
- Meter Reading Procedures – including reading water flow meters, collection of other information, data entry, the frequency of meter readings, quarterly billing, end of year finish and record keeping;
- Standard Water Apportioning Rules and Procedures; and
- Compliance Procedures.

Meter read data is captured in the Water Accounting System (WAS). In some cases (only a small proportion), customers can enter readings into the WAS; these are subsequently confirmed by Customer Field Officers (CFOs).

In the Murrumbidgee Valley, meter readings from WaterNSW owned meters are transmitted via telemetry. High relative usage is a trigger to confirm the reading, which can be achieved by CFOs undertaking spot checks or monitoring of crops (for example).

Other measures that can be used to determine water extraction, which is the principle objective of 'meter reading', include:

- channel gauging (for high volume customers such as Murray Irrigation);
- power use as recorded by electricity meters (this is used in the Hunter Valley where there are no meters);
- pump performance curves and pump run hours.

There are a number of factors which complicate the meter reading and assignment process, including (for example):

- Different rules apply under different Water Sharing Plans, which results in inconsistencies across the State;
- A single meter may service multiple customers, who may each have multiple classes of licence;
- Licences include mandatory and discretionary components;
- Unregulated river users may not need to have a licence, depending upon the applicable Water Sharing Plan;
- Extraction may only occur under certain river conditions (which is difficult to correlate with actual extraction times);
- Different tariff arrangements apply (for example, fixed and two-part tariffs).

Assessment of Meter Reading Activity:

In order to assess compliance with this obligation, the audit has focussed on water metering and monitoring in the Macquarie, Murrumbidgee and Barwon-Darling Valleys. Discussion in respect of regulated, groundwater and unregulated river sources is presented in the following.

Regulated Rivers:

WaterNSW advised as follows in respect of metering of water sourced from regulated rivers:¹³⁵

¹³⁴ State Water, *Meter Reading Procedure*, 7 November 2012 (Reference: D2015_294[v1]).

¹³⁵ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 8.

“WaterNSW read 3032 customer owned meters.

As at 30/6/2017 WaterNSW has completed 10 665 reads which are a combination of assessed and flow meter reads. This is an average of 3.5 reads per active customer meter for the 2016/17 water year.

This is a decrease from 4.2 reads per active meter for the previous year 15/16 due to significantly wet weather in the 1st qtr of the 16/17 water year which prevented a lot of 1st qtr reads being completed.

Macquarie

During 2016/17 80% of active customers owned meter sites were read. The Macquarie has 326 active customer owned meters which on average were read 3.08 times during the 2016/17 water year. As stated above significant flooding at the start of the water year impacted ability for CFOs to complete 1st qtr reads.

Murrumbidgee

During 2016/17 91% of active customers owned meter sites were read. The Murrumbidgee has 189 active customer owned meters which on average were read 3.95 times during the 2016/17 water year. As stated above significant flooding at the start of the water year impacted ability for CFOs to complete 1st qtr reads.

Telemetered meters Southern Valleys

WaterNSW also received SCADA data for 1254 meters with telemetry it owns which was entered into the Water Accounting System by CFOs. During 16/17 water year there were 6985 Telemetered reads entered into WAS which on average was 5.6 reads per active meter.”

The number of meters read in each valley was determined in a *Summary of Regulated Meter Reads*,¹³⁶ which confirmed the figures presented above in respect of the Macquarie and Murrumbidgee Valleys. Telemetered meter reads in the Southern Valleys accounted for 99.4% of active meters, whilst 92% of active regulated meters were read during the audit period.

It is noted that the frequency of reading was less than that proposed (four times per year) in the *Meter Reading Procedure*. It is acknowledged that the reduction of reading frequency in comparison to the previous year was principally due to flooding that occurred during the first half of the audit period.

Groundwater:

WaterNSW advised as follows in respect of metering of water sourced from groundwater:¹³⁷

“Macquarie

A sample of completed meter reads has been taken across 4 Macquarie GW zones. Since 01-07-2016 100% of all active customers meters have been read.

Murrumbidgee

A sample of completed meter reads has been taken across 3 Murrumbidgee GW zones. Since the 01-07-2016 90% of all active customers’ meters have been read.

Frequency of groundwater meter reads for the 16/17 water year was based on the 15/16 GW meter reading schedule D2016/10973.”

The number of meters read in each sample case was determined in a *Summary of Groundwater Meter Reads*,^{138,139} for the Macquarie Groundwater Zones and Mid Murrumbidgee Zone 3 Alluvial Groundwater Source respectively. The reported figures are consistent with those presented above.

Barwon Darling (Unregulated):

WaterNSW advised as follows in respect of metering of water sourced from the Barwon-Darling

¹³⁶ MS Excel Spreadsheet: *Regulated Meter Reads* (Reference: D2017/117382).

¹³⁷ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 8.

¹³⁸ MS Excel Spreadsheet: *Groundwater Meter Reads 16-17 Macquarie Sample* (Reference: D2017/120012).

¹³⁹ MS Excel Spreadsheet: *Groundwater Meter Reads 16-17 Murrumbidgee Sample* (Reference: D2017/120014).

(unregulated source):¹⁴⁰

“Close off date for all meter reads to be completed for the Barwon Darling is the 5th October 2017. As at the 27-09-2017 68% of all active meters in the Barwon darling had been read.

When a customer’s meter is faulty or unable to be read then WaterNSW has in place a 91i procedure which is an authority for a customer to pump water while their meter is broken. For arrangements refer to Authority letter to customer.

If a customer’s meter is unable to be read due to flooding, a usage assessment can be made based on current water orders, or the meter read will be 0 and usage will be captured when access becomes available.”

Review of data presented in a *Summary of Darling-Barwon Meter Reads*¹⁴¹ does not readily confirm the reported percentage of meter reads. It appears to show that there 108 active meters and a total of 172 meter reads, however, the correlation between meters and number of reads is not readily apparent. Notwithstanding, the reported figure indicates that all meters may not have been read within the nominated reporting period (ending 4 October 2017).

WaterNSW subsequently provided revised information¹⁴² which demonstrated that there are actually 88 active meters, and that 89% were read during the 2016/17 cycle and 88% were read during the 2015/16 cycle (which ended during the audit period). Only 13% of inactive meters were read in each cycle.

WaterNSW’s comments in respect of the ‘91I procedure’ are noted. Implementation of this section of the *Water Management Act 2000* is discussed in Table A.1.1.

Verification Activities:

WaterNSW advised that:¹⁴³

“Meter reads accuracy/integrity are checked through a number of methods by WaterNSW staff. These include desktop audits by CFO Team leaders of calibration factors and meter read entries.

Also the following reports are generated from the WaterNSW Water Accounting System to complete additional checks.

- *Unreconciled orders report,*
- *negative account balance reports,*
- *Last Meter Read date and value report,*
- *Usage reports.*

The above reports are used by WaterNSW staff to look for any anomalies and correct any issues.”

Evidence provided by WaterNSW demonstrated reconciliation of meter read data against water accounts for sample regulated, groundwater and unregulated source customers (for example, for Licence No: 80AL701755 (WAL No: 3256) – Regulated River (General Security) (*Macquarie and Cudgong Regulated Rivers Water Source*)).^{144,145}

Summary:

On the basis of the information provided by WaterNSW, it appears that it did not read all of its customers’ meters during the audit period. Assessment of data for the sample of valleys provided revealed that, on a weighted average basis, 90% of active meters had been read across all valleys, including regulated, groundwater and unregulated river sources.

Whilst the Licence is silent in respect of the required frequencies of readings, the frequencies nominated in the *Meter Reading Procedure*¹⁴⁶ sets a basis for assessment; on this basis the minimum requirement is one

¹⁴⁰ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 8.

¹⁴¹ MS Excel Spreadsheet: *Barwon Darling Meter Reads 16-17* (Reference: D2017/117109).

¹⁴² MS Excel spreadsheet: *Barwon-Darling Meter Readings 2 years Final* (Reference: D2017/136192).

¹⁴³ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 8.

¹⁴⁴ MS Excel Spreadsheet: *Macquarie Regulated Example Meter Reads* (Reference: D2017/116172).

¹⁴⁵ Document: *Macquarie Regulated Allocation Account Summary Reconciliation* (Reference: D2017/116171).

¹⁴⁶ State Water, *Meter Reading Procedure*, 7 November 2012 (Reference: D2015_294[v1]), section 3.15.

read per year for inactive works (and greater for other situations). Although the target four (4) reading per year (which could be considered aspirational) for regulated water customers was not achieved in the 2016/17 water year, it is acknowledged that this would have been affected by flooding as reported.

It is noted that, under the *WaterNSW Operating Licence 2017-2022*:¹⁴⁷

“WaterNSW must determine the volume of water Extracted by, or Supplied to, each of its Customers, at least annually, for the purpose of accurate account management, billing and reporting.”

It is therefore recommended (**REC-2016/17-01**) that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually.

To facilitate the implementation of this recommendation, as an opportunity for improvement (**OPI-2016/17-05**), it is suggested that WaterNSW updates its *Meter Reading Procedure* to reflect the change in WaterNSW’s responsibilities in respect of water take measurement and the requirements of the *WaterNSW Operating Licence 2017-2022* (i.e. develop a *Determination of Water Take Procedure*). Such procedure should detail all methods used to determine and/or validate water take measurements.

Bega/Bemboka Metering:

In comments provided to IPART in respect of WaterNSW’s performance during the audit period, the New South Wales Irrigator’s Council (NSWIC) identified a number of concerns, some of which had been effectively addressed. In respect of metering, NSWIC commented that:¹⁴⁸

“NSWIC is concerned about the unclear delineation of responsibilities around metering in NSW. In the case of the NSW South Coast, NSWIC members have been waiting for meter repairs and calibration in the unregulated Bega/Bemboka system but are not certain which agency is responsible for this work. As this work is critical for the appropriate implementation of water sharing plan obligations in the valley, NSWIC seeks IPART’s assistance through this audit to make this process more transparent. In addition, further clarity must be provided around the determination of appropriate meter reading frequency.”

In response to the auditors’ enquiries, WaterNSW advised that:

- Metering assets were transferred with the conference of metering functions on 1 July 2016.
- DPI Water had installed some 1,500 telemetry linked meters. Of those, some 700 were in questionable condition.
- Those meters are now the responsibility of WaterNSW, which is actively undertaking the required repairs. At the time of the audit, all meters are now functioning and recording. Telemetry transfer of data is still not working in some cases.

On the basis of the explanation provided, it appears that WaterNSW has worked actively to address the issue identified by the NSWIC. In support of this action, as an opportunity for improvement (**OPI-2016/17-06**), WaterNSW may wish to consider providing information to affected customers outlining the change in responsibilities in respect of metering of unregulated and groundwater sources and the action subsequently taken by WaterNSW (if this has not already been done). Such information could be provided in a mailed brochure, email notice or other appropriate means.

Recommendations

The following recommendation is made in respect of this sub-clause:

- **REC-2016/17-01:** It is recommended that WaterNSW takes action to ensure that it determines the volume of water extracted by (or supplied to) each of its Customers at least annually. This action should be completed by 30 June 2018.

¹⁴⁷ *WaterNSW Operating Licence 2017-2022*, sub-clause 6.3.1.

¹⁴⁸ Submission to IPART from NSWIC dated 19 May 2017 (re: *NSWIC Submission to 2016-17 Operating Licence Audit – WaterNSW*).

Opportunities for improvement

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

- **OFI-2016/17-05:** It is suggested that WaterNSW updates its *Meter Reading Procedure* to reflect the change in WaterNSW's responsibilities in respect of water take measurement and the requirements of the *WaterNSW Operating Licence 2017-2022* (i.e. develop a *Determination of Water Take Procedure*). Such procedure should detail all methods used to determine and/or validate water take measurements.
 - **OFI-2016/17-06:** WaterNSW may wish to consider providing information to affected customers outlining the change in responsibilities in respect of metering of unregulated and groundwater sources and the action subsequently taken by WaterNSW (if this has not already been done). Such information could be provided in a mailed brochure, email notice or other appropriate means.
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Table A.3.5 Water metering and monitoring (Sub-clause 4.2.2)

Sub-clause	Requirement	Compliance Grade
4.2.2	Where provided for in any agreement between Water NSW and the Minister or DPI Water, Water NSW must: <ul style="list-style-type: none"> a) read Metering Equipment (if applicable); b) determine water extraction; and c) carry out any other specified water monitoring functions; at the locations and within the timeframes set out in the agreement.	No Requirement

Risk

This requirement represents a high operational and commercial risk. If meters are not read, water extraction is not determined or other monitoring functions are not undertaken, DPI Water is unable to account water use and WaterNSW may be subject to penalty under the terms of any agreement.

Target for Full Compliance

If there is an agreement in place, evidence that WaterNSW has read metering equipment, determined water extraction and carried out other specified water monitoring functions as required by any agreement.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- *Deed of Business Transfer* between the Department of Industry, Skills and Regional Development and WaterNSW (effective 1 July 2016) (Reference: D2017/120095).

Summary of reasons for grade

A *Deed of Business Transfer* between the Department of Industry, Skills and Regional Development and WaterNSW, which took effect as of 1 July 2016, facilitated the transfer of meter reading functions for unregulated and groundwater sources from DPI Water to WaterNSW. Service Level Agreements in respect of meter reading functions for unregulated and groundwater sources that were in place prior to this transfer of responsibilities no longer had effect.

In the absence of any other identified agreement between Water NSW and the Minister or DPI Water, there was no requirement for WaterNSW to read meters, determine water extraction or carry out any other specified water monitoring functions pursuant to this obligation.

Discussion and notes

WaterNSW advised that:¹⁴⁹

“As at the 01-07-2016 WaterNSW took over the meter reading functions for Unregulated and Groundwater sources from DPI Water. Previously there were SLA’s/contracts in place for GW and Barwon Darling which highlighted work approvals/licenses that WaterNSW were to read.”

¹⁴⁹ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 9.

The transfer of meter reading functions for unregulated and groundwater sources was facilitated through a *Deed of Business Transfer* between the Department of Industry, Skills and Regional Development and WaterNSW,¹⁵⁰ which took effect as of 1 July 2016 (Commencement Date). The *Deed* Recitals, and specifically Recital B, clearly indicate that responsibility for the nominated functions had been transferred, as follows:

- “A In April 2016 the NSW Cabinet endorsed the implementation of the Water Transformation Project.*
- B Water Transformation took effect on 1 July 2016 and saw transfer of certain staff, functions and assets from DPI Water to WaterNSW.*
- C The parties intend to perform the functions, exercise powers and discharge the responsibilities arising from the Business Transfer in complementary ways, in accordance with the terms of this Deed.”*

The metering function is transferred pursuant to clause 4.1 of the *Deed*:

“Customer services to be provided by WaterNSW

- a) From the Commencement Date, WaterNSW will provide all persons with the following customer services:*
- i) Processing and managing water orders;*
 - ii) Water supply;*
 - iii) Maintaining water allocation accounts for water access licences;*
 - iv) Metering;*
 - v) Billing, invoicing, collection, credit management, administration, debt collection and enquiries; and*
 - vi) Border Rivers activities, as provided for in the Operating Licences (together WaterNSW Customer Services).*
- b) From the Commencement Date, DPI Water will not perform any WaterNSW Customer Services unless otherwise agreed between the parties.”*

More specific details of the role of WaterNSW in respect of Water Take Measurement are identified in Schedule 1 to the *Deed*.

Service Level Agreements in respect of meter reading functions for unregulated and groundwater sources that were in place prior to 1 July 2016 no longer had effect following the transfer of responsibilities under the *Deed of Business Transfer*. In the absence of any other identified agreement between Water NSW and the Minister or DPI Water, there was no requirement for WaterNSW to read meters, determine water extraction or carry out any other specified water monitoring functions pursuant to this obligation.

In summary, it is understood that under the new arrangements WaterNSW is fully responsible for the meter reading function; it no longer performs this function in respect of groundwater and unregulated river sources as a service provider to DPI Water.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

¹⁵⁰ *Deed of Business Transfer* between the Department of Industry, Skills and Regional Development and WaterNSW (effective 1 July 2016) (Reference: D2017/120095).

A.4 Section 5 – Customers

Table A.4.1 Valley-based customer service committees (excluding Fish River Scheme Customers) (Sub-clause 5.1.1)

Sub-clause	Requirement	Compliance Grade
5.1.1	Water NSW must regularly consult with Valley-based customer service committees (CSCs) to enable Customer involvement in issues relevant to the performance of Water NSW's obligations to Customers under this Licence or the customer service charter referred to in clause 5.2 of this Licence.	Full Compliance

Risk	Target for Full Compliance
Failure to consult with the customer service committees poses a moderate risk. In the absence of customer input, WaterNSW may not be aware of customer perceptions of issues relevant to its performance.	Evidence to demonstrate that WaterNSW has regularly consulted with its customer service committees regarding issues relevant to the performance of its obligations to Customers.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Document: *Customer Service Committees Meeting Dates – 2016* (Reference: DOC15/17942).
- Document: *Customer Advisory Groups/Key Accounts Meeting Dates 2017* (Reference: D2016/89344).
- Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.4.1.
- WaterNSW, *Customer Service Committees; Terms of Reference and Operating Guidelines*, 1 April 2005 (Revised November 2013) (Reference: DOC11/7748[V2]).
- WaterNSW, *Border Customer Service Committee – Minutes – 9 November 2016, 7 March 2017 and 6 June 2017* (References: D2016/124408, D2017/31736 and D2017/70853).
- WaterNSW, *Macquarie-Cudgegong Customer Service Committee – Minutes – 16 November 2016, 22 February 2017 and 24 May 2017* (References: D2016/131910, D2017/24853 and D2017/66628).
- WaterNSW, *Murrumbidgee Customer Service Committee– Minutes – 22 November 2016, 14 March 2017 and 20 June 2017* (References: D2016/13849, D2017/33512 and D2017/77195).
- WaterNSW, *Fact Sheet; Customer Service Charter* (Reference: DOC15/21356), available at: <https://www.watnsw.com.au/customer-service/charter>.
- WaterNSW, *Customer Service Committee Reference Group – Minutes – 27 October 2016 and 20 March 2017* (References: D2016/121566 and D2017/35947).
- Submission to IPART from NSWIC dated 19 May 2017 (re: *NSWIC Submission to 2016-17 Operating Licence Audit – WaterNSW*).
- Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.4.1.

Summary of reasons for grade

WaterNSW demonstrated that, during the audit period, it regularly consulted with the Valley-based customer service committees (CSCs) regarding issues relevant to the performance of its obligations to customers. It also consulted with a reference group comprising a representative from each CSC in respect of matters of interest across all Valleys.

In respect of concerns raised by the New South Wales Irrigator's Council, minutes of meetings of both CSCs and the CSC Reference Group indicate that WaterNSW has informed/consulted with the CSCs in relation to the items specifically identified.

Accordingly, it is assessed that WaterNSW has fully complied with this obligation.

Discussion and notes

Consultation with Customer Service Committees:

WaterNSW advised that during 2016/17 it met with each of the eight (8) Customer Service Committees (CSCs) in accordance with the meeting schedules for 2016¹⁵¹ and 2017¹⁵² (meetings are scheduled on a calendar year basis). Review of the schedules confirms that each CSC met at least twice during the audit period, as required under the CSC *Terms of Reference*.

As reported in respect of the 2015/16 Operational Audit (in which full compliance with this obligation was assessed),¹⁵³ the CSCs operated in accordance with a *Terms of Reference*.¹⁵⁴ The *Terms of Reference* set out in detail the operating arrangements for the CSCs; they address matters including The Role of Committee Members; Operating Protocols; Member's Expenses; and a Code of Conduct. The Operating Protocols detail arrangements in respect of terms of office; deputies; alternative delegates; vacancies; quorum; conflict of interest; decisions and recommendations; meetings; records; confidentiality; discretion; sub-committees; representation at other meetings; and process of escalation of CSC concerns.

As evidence that CSCs had met, WaterNSW provided copies of minutes of the following CSC meetings (as examples):

- Border Rivers CSC – minutes of meetings held on 9 November 2016, 7 March 2017 and 6 June 2017;¹⁵⁵
- Macquarie-Cudgegong CSC – minutes of meetings held on 16 November 2016, 22 February 2017 and 24 May 2017;¹⁵⁶ and
- Murrumbidgee CSC – minutes of meetings held on 22 November 2016, 14 March 2017 and 20 June 2017.¹⁵⁷

These meetings were held on the dates nominated in the abovementioned meeting schedules.

Review of minutes of the Murrumbidgee CSC meetings (for example) revealed that matters discussed during the audit period had included:

- Water delivery/water systems operations (including details of an investigation into a supply shortfall in January 2017;
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¹⁵¹ Document: *Customer Service Committees Meeting Dates – 2016* (Reference: DOC15/17942).

¹⁵² Document: *Customer Advisory Groups/Key Accounts Meeting Dates 2017* (Reference: D2016/89344).

¹⁵³ Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.4.1.

¹⁵⁴ WaterNSW, *Customer Service Committees; Terms of Reference and Operating Guidelines*, 1 April 2005 (Revised November 2013) (Reference: DOC11/7748[V2]).

¹⁵⁵ WaterNSW, *Border Customer Service Committee – Minutes – 9 November 2016, 7 March 2017 and 6 June 2017* (References: D2016/124408, D2017/31736 and D2017/70853).

¹⁵⁶ WaterNSW, *Macquarie-Cudgegong Customer Service Committee – Minutes – 16 November 2016, 22 February 2017 and 24 May 2017* (References: D2016/131910, D2017/24853 and D2017/66628).

¹⁵⁷ WaterNSW, *Murrumbidgee Customer Service Committee – Minutes – 22 November 2016, 14 March 2017 and 20 June 2017* (References: D2016/13849, D2017/33512 and D2017/77195).

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- 2017-2021 rural pricing submission (including capital expenditure, user cost share review, MDBA cost share pass-through charges, and WaterNSW consultation – continuous improvement);
 - Operating Licence review;
 - Water charge infrastructure rules;
 - Water Resource Plans;
 - Prerequisite Policy Measures;
 - Inter-Valley Transfers update;
 - Water resource information, customer needs and website access/Customer communications;
 - Customer survey;
 - Customer Advisory Group establishment;
 - Levels of service;
 - Annual capital plan;
 - Project updates;
 - Metering update; and
 - General business including:
 - Murrumbidgee Inter-valley Trade and Translucent Flows;
 - Advise Outcome of Investigation into Losses;
 - SDL Offset Project – Yanco Creek;
 - Hydrometric gauging issues;
 - Linked/tagged licences; and
 - CARM update.

This indicates that an extensive range of relevant operational matters related to its obligations under the Licence and the *Customer Service Charter*¹⁵⁸ had been discussed.

CSC Reference Group meetings, which involve representatives of all CSCs (typically chairpersons), were also held on 17 October 2016 and 20 March 2017.¹⁵⁹ Matters discussed at these meetings included:

- WaterNSW Rural Pricing Submission;
 - User Cost Share Review;
 - Capital Planning;
 - Capital Expenditure;
 - Valley Pricing Submission/Issues Feedback;
 - Capital Maintenance Allowance;
 - Fishways Update;
 - Gunidgera Weir Issue (related to submission in relation to Fishways);
 - Operating Licence Review – WaterNSW Submission;
 - Prerequisite Policy Measures (PPM) – customer awareness/engagement;
 - Water Resource Information – customer needs and website access;
 - Voice of Customer Survey;
 - MDBA Charges;
 - Risk Transfer Product (RTP);
 - Assets Levels of Service;
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¹⁵⁸ WaterNSW, *Fact Sheet; Customer Service Charter* (Reference: DOC15/21356), available at: <https://www.watarnsw.com.au/customer-service/charter>.

¹⁵⁹ WaterNSW, *Customer Service Committee Reference Group – Minutes – 27 October 2016 and 20 March 2017* (References: D2016/121566 and D2017/35947).

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- Reforms for CSCs; and
 - General Business including:
 - Shallow Bores in the Murray; and
 - Compliance.

This again indicates that an extensive range of relevant matters had been discussed in a forum, the participants in which could be expected to have provided feedback to the individual CSCs.

In summary, the evidence suggests that WaterNSW has consulted with the CSCs in respect of an extensive range of matters relevant to its obligations to Customers under the Licence and the *Customer Service Charter*.

Irrigator's Council Issues:

In comments provided to IPART in respect of WaterNSW's performance during the audit period, the New South Wales Irrigator's Council (NSWIC) identified a number of concerns. In respect of consultation with the CSCs, NSWIC commented that:¹⁶⁰

“NSWIC has been alerted to some concerns around the lack of information and engagement by WaterNSW with its Customer Service Committees (CSC). NSWIC understands that IPART is currently reviewing WaterNSW's operating licence and is considering replacing the CSC with new Customer Advisory group (CAG) from 1 July 2017. Irrespective of the potential change, NSWIC is concerned that the advisory role of the CSC, as referred to in sections 5.1.1 and 5.1.3 of the operating licence, is being diluted through a lack of technical information that is provided to the CSC, in particular around significant organisational and policy issues such as asset management, pricing and pilot studies. According to feedback from NSWIC's members, the level of information is often insufficient to allow for informed input by the CSC.

An example about the failure for appropriately engage with the CSC (and broader stakeholders) was found in the recent WaterNSW's pricing application to IPART. It is NSWIC's understanding that WaterNSW attributed additional capital expenditure in the Namoi valley (i.e. Gunidgera Weir upgrade) into its pricing application even though WaterNSW's transferred the work to Walgett Weir (whilst not consulting with its customers). In NSWIC's view there has been clear failure in the consultation process which should not have occurred. Furthermore, as a consequence of WaterNSW's new approach to the Asset Management System, there has been less ability for the CSCs to review and advise on asset management priorities, leading to concerns about the efficiency of future capital expenditure projects that are paid for by irrigators.

In addition, WaterNSW undertook preliminary consultations with the CSC on the approach to pricing and tariff structures in early 2016, and provided draft valley pricing information in April 2016. While NSWIC's members who are members of the CSC appreciated the consultation, the actual process and timing was not suitable to consider a major change in approach – particularly due to a lack of detailed information. The Lachlan CSC for example, was provided with the potential draft regulated water charges under three different tariff ratio scenarios (40:60; 60:40; 80:20) but given only limited time to consider the various options, having regard to the significant impacts for licence holders.”

In respect of the replacement of CSCs with Customer Advisory Groups (CAGs) under the provisions of the new (2017-2022) Operating Licence, it is noted that:

- As reported above, minutes of CSC meetings indicate that WaterNSW consulted with the CSCs and the CSC Reference Group in respect of proposed changes to the Operating Licence.
- The Licence review process, which was undertaken by IPART, involved consultation with relevant stakeholders, and public submissions were invited.
- The terms of the new Licence were ultimately approved by the Minister. Whilst WaterNSW was clearly involved in/provided submissions to the review process, it did not determine its final form.

In respect of WaterNSW's pricing submission, it is noted that:

¹⁶⁰ Submission to IPART from NSWIC dated 19 May 2017 (re: *NSWIC Submission to 2016-17 Operating Licence Audit – WaterNSW*).

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- As reported above, minutes of CSC meetings indicate that WaterNSW consulted with the CSCs and the CSC Reference Group in respect of its pricing submission.
 - The report on the 2015/16 Operational Audit noted that:¹⁶¹
“During 2015/16, information was provided to both the CSC’s (as noted above) and the CSC Reference Group in respect of WaterNSW’s rural business pricing submission. This is acknowledged in the minutes of the CSC Reference Group meeting held on 3 December 2015.”

and:¹⁶²

“WaterNSW advised that:

“In addition to the regular consultation with CSCs as scheduled in the CSC Calendar (DOC15/17942), for its Pricing submission consultation this year WaterNSW established a CSC reference group (1 member from each CSC) which met on (3 December 2015, 25 February 2016 and 29 April 2016). Agendas, meeting papers and minutes from these (over 25) meetings are distributed to members and maintained in the document management system.”

Review of the minutes provided confirmed that outcomes from the Pricing submission reference group had also been discussed at individual CSC meetings. WaterNSW advised that feedback in respect of the Pricing submission consultation had been very positive.”

- The pricing determination process implemented by IPART typically involves consultation with relevant stakeholders, and public submissions were invited.
- In relation to expenditure in the Namoi Valley (Gunidgera Weir Upgrade), it is noted that this matter was discussed at the October 2016 meeting of the CSC Reference Group. The meeting minutes indicate that negotiations with NSW Fisheries in relation to satisfying WaterNSW’s fishway obligations had been involved in the budget allocation process. An action for WaterNSW to consult with Namoi customers on the Fishways program was recorded.

Review of meeting minutes indicates that WaterNSW did inform and consult with the CSCs in relation to both the Operating Licence review and Pricing Determination referenced in the NSWIC’s comments. The timing available for consultation, which was also identified as an issue, may/is likely to have been limited by review process timelines rather than WaterNSW’s actions.

It is further noted that CSCs are consultation forums, not decision making bodies. Accordingly, although considered by WaterNSW, the views of any particular individual or stakeholder group may not necessarily be reflected in a final decision.

In summary, whilst there may be opportunities for improvement in WaterNSW’s consultation processes,¹⁶³ it is apparent that it has consulted extensively with the CSCs.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

¹⁶¹ Cobbitty Consulting/Viridis Consultants, 2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0), November 2016, table A.4.1.

¹⁶² Cobbitty Consulting/Viridis Consultants, 2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0), November 2016, table A.4.3.

¹⁶³ As the consultation requirements have changed under the WaterNSW Operating Licence 2017-2022, an opportunity for improvement has not been identified at this time.

Table A.4.2 Valley-based customer service committees (excluding Fish River Scheme Customers) (Sub-clause 5.1.2)

Sub-clause	Requirement	Compliance Grade
5.1.2	<p>For each CSC, Water NSW must invite at least 1 representative from each of the groups or bodies identified in paragraphs (a) to (e) below to be a member of that CSC:</p> <p>a) Customers which are Unregulated River water users;</p> <p>b) Customers which are groundwater users;</p> <p>c) the NSW environmental water entitlement holder;</p> <p>d) the Commonwealth Environmental Water Holder;</p> <p>e) Local Land Services; and</p> <p>f) DPI Water.</p> <p>For the purposes of this clause 5.1.2, Customer does not include a Fish River Water Scheme Customer.</p>	Full Compliance

Risk	Target for Full Compliance
<p>Failure to invite representatives of the nominated groups or bodies poses a moderate risk. WaterNSW needs to consult across its customer base to ensure that issues relevant to its performance are fully captured.</p>	<p>Evidence that WaterNSW has invited at least one representative from each of the nominated groups or bodies to be a member of its customer service committees.</p>

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016.
- MS Excel Spreadsheet: *CSC Member Listings 2012 - 2016 Consolidated* (Reference: D2017/443399).
- Letter (undated) from DPI Water to IPART (Reference: BN17/5712), (re: *IPART Operational Audit 2016-2017 – WaterNSW (State Water and SCA) and Sydney Water*).
- Email invitation dated 27 July 2016 to attend 24 August 2016 meeting of Gwydir CSC (Reference: D2017/118905).
- Email invitation dated 10 August 2016 to attend 8 September 2016 meeting of Namoi-Peel CSC (Reference: D2017/118902).
- Email invitation dated 18 October 2016 to attend 9 November 2016 meeting of Border Rivers CSC (Reference: D2017/118897).
- WaterNSW Response Register to IPART's Comments, 16 November 2017.
- Email correspondence and attachments: *Agenda and Meeting notes WNSW and DPI* (Reference: D2017/117488).

Summary of reasons for grade

Based on the findings of the 2015/16 Operational Audit, it was assessed that membership of Customer Service Committees (CSCs), which continued from previous years, was compliant with the requirements of this obligation with the exception of the new requirement (effective from 1 July 2016) to include a representative of DPI Water. WaterNSW demonstrated that it had invited DPI Water representatives to attend CSC meetings during the first six-months of the audit period and had initiated an alternative Partnership Forum through which to engage with DPI Water.

In respect to concerns expressed by DPI Water that “...a DPI Water representative is no longer required ...”, it is considered that this comment may relate to the changes to consultation arrangements under the *WaterNSW Operating Licence 2017-2022*, and is therefore not directly applicable to this obligation.

On this basis, it is assessed that WaterNSW has demonstrated compliance with this obligation.

Discussion and notes

In respect of membership of the customer service committees (CSCs), WaterNSW advised that:¹⁶⁴

“Membership for CSCs is renewed every 4 years via public advertisement and direct written correspondence to existing nominated organisations. This was last completed in early March 2012 effective 1 July 2012.

With the transfer of DPI Water functions on 1 July 2016 and the implementation of new operating licence for WaterNSW effective 1 July 2017, the 2012-16 term of office for CSCs (now CAGs) was extended to 30 June 2017. This extension had the endorsement of all CSCs during the February/March 2016 round of meetings.”

The 2015/16 Operational Audit found that:¹⁶⁵

“WaterNSW demonstrated that it has invited at least one representative of the nominated groups or bodies to be members of each of the Valley-based customer service committees (CSCs). It also demonstrated that it had commenced the process of renewing membership of the CSCs in accordance with the CSC Terms of Reference, although the process has been deferred with CSC agreement.”

A consolidated list of the membership for each of the eight (8) CSCs was provided as evidence.¹⁶⁶ Given the findings of the 2015/16 Operational Audit (that membership was compliant at June 2016) and the 4 year cycle for membership renewal (which was extended to 30 June 2017 as reported by WaterNSW), a detailed assessment of membership of each CSC has not been undertaken for this audit.

It is noted, however, that the CSC membership requirements of the Licence were revised to include DPI Water effective from 1 July 2016. In comments provided to IPART in respect of WaterNSW’s performance during the audit period, DPI Water noted that:¹⁶⁷

“Condition 5.1.2 requires WaterNSW to invite at least one representative from DPI Water to customer service committee meetings.

I have been advised that WaterNSW has indicated a DPI Water representative is no longer required for these meetings, which is a matter of concern for DPI Water.”

DPI Water’s comment was provided to IPART in late August 2017, so it is possible that the comment that “...a DPI Water representative is no longer required ...” relates to the changes to consultation arrangements under the *WaterNSW Operating Licence 2017-2022*. Under the provisions of the new Operating Licence, the CSCs have been (effectively) replaced by Customer Advisory Groups, of which DPI Water is not identified as a member (it is not a Customer).

¹⁶⁴ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 11.

¹⁶⁵ Cobbitty Consulting/Viridis Consultants, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table A.4.2.

¹⁶⁶ MS Excel Spreadsheet: *CSC Member Listings 2012 - 2016 Consolidated* (Reference: D2017/443399).

¹⁶⁷ Letter (undated) from DPI Water to IPART (Reference: BN17/5712), (re: *IPART Operational Audit 2016-2017 – WaterNSW (State Water and SCA) and Sydney Water*).

Notwithstanding, WaterNSW advised as follows in response to DPI Water's comment:¹⁶⁸

“Regarding DPI Water being invited to nominate a representative for CSCs, WaterNSW notes that in accordance with our new operating licence (effective 01 July 2017) CSCs were replaced with Customer Advisory Groups (CAGs) which DPI as the Regulator, is no longer required to be a participant. WaterNSW supports this approach as it more accurately reflects the purpose of customer advisory groups, where WaterNSW seeks to engage with its customers and discuss matters relevant to its operations. While DPI Water may not have attended a number of CSC's in the 16/17 year, they were specifically invited on a number of occasions, but did not attend. It's also important to note, that during 2016/17 WaterNSW established regular forums for WaterNSW and DPI Water to engage directly and discuss relevant issues. These forums now continue between the parties as a regular monthly meeting between DPI Water and WaterNSW.”

WaterNSW provided copies of meeting invitations/agenda for a number of CSC meetings covering most Valleys. Review of these confirmed that DPI Water representatives had been invited to attend meetings of (for example):

- Gwydir CSC – 24 August 2016 meeting;¹⁶⁹
- Namoi-Peel CSC – 8 September 2016 meeting;¹⁷⁰
- Border Rivers CSC – 9 November 2016 meeting.¹⁷¹

Whilst WaterNSW may not have invited DPI Water to attend all CSC meetings during the audit period, it is apparent that it did issue invitations to meetings held during the first six-months. Given the impending changes to the Operating Licence, it seems reasonable that WaterNSW may not have issued further invitations, particularly if representatives were not attending meetings and it had initiated an alternative forum.

WaterNSW advised that it has no record of DPI Water enquiring as to when or where a CSC was due to meet, or requesting that invitations be issued (i.e. it did not actively pursue attendance at CSC meetings).¹⁷² WaterNSW also indicated that it believed that DPI Water was satisfied with WaterNSW's engagement and consultation through the alternative Partnership Forum initiative.

The initiative to directly engage with DPI Water through the Partnership Forum is commended. Evidence was provided of meetings held on 28 February 2017 and 20 June 2017, as well as reference to other engagement through “...*intermittent (sometimes monthly) ICT, water data and water licensing/planning/policy exec meetings.*”¹⁷³

On the basis that:

- there is evidence that DPI Water was invited to attend CSC meetings (and reportedly did attend/participate in some, but not all, meetings), albeit only during the first six-months of the audit period;
- whilst it was not specifically invited, there is no evidence that DPI Water had taken action to actively pursue its attendance at CSC meetings during the second six-months of the audit period (noting that it had previously been invited);
- there is evidence that WaterNSW consulted with DPI Water through an alternative, arguably more appropriate, forum during the second six-months of the audit period;
- the focus of this Licence obligation is on Customer engagement; and

¹⁶⁸ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 11.

¹⁶⁹ Email invitation dated 27 July 2016 to attend 24 August 2016 meeting of Gwydir CSC (Reference: D2017/118905).

¹⁷⁰ Email invitation dated 10 August 2016 to attend 8 September 2016 meeting of Namoi-Peel CSC (Reference: D2017/118902).

¹⁷¹ Email invitation dated 18 October 2016 to attend 9 November 2016 meeting of Border Rivers CSC (Reference: D2017/118897).

¹⁷² WaterNSW Response Register to IPART's Comments, 16 November 2017.

¹⁷³ Email correspondence and attachments: *Agenda and Meeting notes WNSW and DPI* (Reference: D2017/117488).

-
- it is possible that DPI Water's comments to IPART related more specifically to changes under the *WaterNSW Operating Licence 2017-2022*;
- it is considered that WaterNSW has adequately demonstrated compliance with this obligation.
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Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Table A.4.3 Valley-based customer service committees (excluding Fish River Scheme Customers) (Sub-clause 5.1.3)

Sub-clause	Requirement	Compliance Grade
5.1.3	Water NSW must provide the CSCs with adequate information within its possession or under its control to enable the CSC to discharge the tasks assigned to it, other than information or documents over which Water NSW or another person claims confidentiality or legal professional privilege and subject to any limitations on disclosure of the information at law.	Full Compliance

Risk

Failure to provide adequate information poses a moderate risk. In the absence of adequate information, the customer service committees would be unable to provide effective input in respect of the issues discussed.

Target for Full Compliance

Evidence that WaterNSW had provided adequate information so as to enable the customer service committees to discharge the tasks assigned to it.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- WaterNSW, *Customer Service Committees; Terms of Reference and Operating Guidelines*, 1 April 2005 (Revised November 2013) (Reference: DOC11/7748[V2]).
- WaterNSW, *Border Customer Service Committee – Agenda – 9 November 2016, 7 March 2017 and 6 June 2017* (References: D2017/118893, D2017/35138 and D2017/73728).
- WaterNSW, *Macquarie-Cudgegong Customer Service Committee – Agenda – 16 November 2016, 22 February 2017 and 24 May 2017* (References: D2017/118910, D2017/35143 and D2017/69109).
- WaterNSW, *Murrumbidgee Customer Service Committee – Agenda – 30 August 2016* (Reference: D2016/103614).

Summary of reasons for grade

WaterNSW demonstrated that it provides the customer service committees (CSCs) with adequate information within its possession or under its control so as to enable the CSCs to discharge the tasks assigned to it. It was noted that the CSC *Terms of Reference and Operating Guidelines* identify restrictions in respect of the provision of confidential information.

Accordingly, it is assessed that WaterNSW has fully complied with this obligation.

Discussion and notes

The tasks assigned to the customer service committees (CSCs) are defined in the *Terms of Reference*.¹⁷⁴

WaterNSW advised that:¹⁷⁵

“WaterNSW provides CSCs with varying information ranging from Water Systems Operations Report, Water resourcing information to Financial and Customer compliance performance reports.”

¹⁷⁴ WaterNSW, *Customer Service Committees; Terms of Reference and Operating Guidelines*, 1 April 2005 (Revised November 2013) (Reference: DOC11/7748[V2]), section 1.3.

¹⁷⁵ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 12.

Copies of agenda and business papers were provided for the following CSC meetings:

- Border Rivers CSC – agenda for meetings held on 9 November 2016, 7 March 2017 and 6 June 2017;¹⁷⁶
- Macquarie-Cudgegong CSC – agenda for meetings held on 16 November 2016, 22 February 2017 and 24 May 2017;¹⁷⁷ and
- Murrumbidgee CSC– agenda for meetings held on 22 November 2016, 14 March 2017 and 20 June 2017.¹⁷⁸

Review of the business papers for the 7 March 2017 meeting of the Border Rivers CSC (for example) revealed that information provided included:

- Incoming correspondence from the Commonwealth Environmental Water Holder, MDBA and IPART (in relation to pricing and the review of the Operating Licence).
- An Operations Report, which addressed: Current State (storage volumes, water availability, resource assessment, supplementary events), Influences (recent rainfall and inflow, operational loss, budget, river losses), and Forecast and Planning (storage forecasts, System operations plan, system outage plan, prognosis).
- Highlights from Voice of the Customer Research.
- Regulatory Update in respect of Water Charge Infrastructure Rules, Operating Licence Review, Water Resource Plans and Prerequisite Policy Measures.
- Establishment of the Customer Advisory Group (CAG).
- Pricing submission update.
- Border Rivers Annual Capital Plan.
- Customer Levels of Service.
- Financial Reports.
- Quarterly Compliance Report.

WaterNSW further advised that:¹⁷⁹

“Any additional information requests made during a CSC meeting will be noted, taken as an action item and if deemed appropriate will be provided, either out of session or during the next CSC meeting. CSC members can also request additional information via e-mail or phone call direct to CSC support officers.”

In respect of confidentiality and privileged information, WaterNSW further advised that:¹⁸⁰

“All information requests are assessed in line with the Customer Service Committee Terms of Reference in particular section 3.11 Confidentiality.”

The *Customer Service Committees Terms of Reference*¹⁸¹ include requirements in respect of conflict of interest:

“All members of the committee declare their interests before the second meeting of the CSC. (Appendix 2 defines pecuniary and non-pecuniary interests). Declaration forms are available from the ESO. A register of declared interests will be kept by the ESO. The declarations will cover non-specific interests.

At the start of each meeting, the chair will ask for a declaration of specific interests related to agenda items. Any declaration will be recorded in the minutes of the meeting. The meeting will determine if the member who declares an

¹⁷⁶ WaterNSW, *Border Customer Service Committee – Agenda – 9 November 2016, 7 March 2017 and 6 June 2017* (References: D2017/118893, D2017/35138 and D2017/73728).

¹⁷⁷ WaterNSW, *Macquarie-Cudgegong Customer Service Committee – Agenda – 16 November 2016, 22 February 2017 and 24 May 2017* (References: D2017/118910, D2017/35143 and D2017/69109).

¹⁷⁸ WaterNSW, *Murrumbidgee Customer Service Committee– Agenda – 30 August 2016* (Reference: D2016/103614).

¹⁷⁹ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 12.

¹⁸⁰ WaterNSW response to 2017 Operational Audit Supplementary Questionnaire, 6 October 2017, page 12.

¹⁸¹ WaterNSW, *Customer Service Committees; Terms of Reference and Operating Guidelines*, 1 April 2005 (Revised November 2013) (Reference: DOC11/7748[V2]), sections 3.7 and 3.11.

interest can remain in the room during discussion of the relevant item, and/or speak about, or vote on the matter. Non-disclosure of pecuniary interest does not necessarily invalidate any decision unless the chair and MOAR [Manager Operations Assurance and Risk] so decide.”

and confidentiality:

“Information which can be provided to the CSCs is generally limited to publicly available information. In addition, information which may not be publicly available but which is not considered commercial in confidence may also be provided, at the discretion of the MOAR.

All members will treat information declared to be confidential appropriately.”

Review of the meeting agendas and minutes for meetings held during the audit period confirms that the declaration of interest(s) was called for at each meeting. The minutes of the 6 June 2017 meeting of the Border Rivers CSC (for example) recorded that:¹⁸²

“Declaration of Interest(s) and Meeting Confidentiality:

- Declarations of interest were sought from CSC members in relation to the meeting’s agenda items. No interests were declared.*
- All items included in the agenda are not considered confidential unless declared as such.”*

In summary, on the basis of the evidence provided, it is apparent that WaterNSW provides the CSCs with information to enable them to discharge the tasks assigned to them. There are appropriate arrangements in place in respect of confidentiality and privileged information.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

¹⁸² WaterNSW, *Border Customer Service Committee – Minutes – 6 June 2017* (Reference: D2017/70853).

Table A.4.4 Fish River Customer Council (Sub-clause 5.3.1)

Sub-clause	Requirement	Compliance Grade
5.3.1	Water NSW must regularly consult with a Fish River Customer Council to enable Fish River Water Scheme Customer involvement in issues relevant to the performance of Water NSW in its obligations to Fish River Water Scheme Customers under this Licence and any Fish River Customer Contract.	Full Compliance

Risk	Target for Full Compliance
Failure to consult with the Fish River Customer Council poses a moderate risk. In the absence of Customer input, WaterNSW may not be aware of Customer perceptions of issues relevant to its performance.	Evidence to demonstrate that WaterNSW has regularly consulted with a Fish River Customer Council regarding issues relevant to the performance of WaterNSW in its obligations to Fish River Water Scheme Customers.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- WaterNSW, *Fish River Customer Council – Minutes – 20 September 2016* (Reference: D2016/105554).
- WaterNSW, *Fish River Customer Council – Minutes – 6 December 2016* (Reference: D2016/138408).
- WaterNSW, *Fish River Customer Council – Minutes – 28 February 2017* (Reference: D2017/33163).
- WaterNSW, *Fish River Customer Council – Minutes – 30 May 2017* (Reference: D2017/67602).
- WaterNSW, *Fish River Water Supply Customer Council – Agenda – 20 September 2016* (Reference: D2017/98747).
- WaterNSW, *Fish River Water Supply Customer Council – Agenda – 6 December 2016* (Reference: D2017/98653).
- WaterNSW, *Fish River Water Supply Customer Council – Agenda – 28 February 2017* (Reference: D2017/20831).
- WaterNSW, *Fish River Water Supply Customer Council – Agenda – 30 May 2017* (Reference: D2017/67456).
- WaterNSW, *Fish River Customer Council; Terms of Reference* (Reference: D2016/30235).

Summary of reasons for grade

WaterNSW demonstrated that it has regularly consulted with the Fish River Customer Council to enable Fish River Water Scheme Customer involvement in issues relevant to the performance of WaterNSW in its obligations to Fish River Water Scheme Customers. A review of meeting agendas, business papers and meeting minutes revealed that relevant topics were addressed.

Accordingly, is assessed that WaterNSW has fully complied with this obligation.

Discussion and notes

WaterNSW demonstrated that the Fish River Customer Council had met four (4) times during the audit period (2016/17 financial year). The minutes of meetings held on 20 September 2016,¹⁸³

¹⁸³ WaterNSW, *Fish River Customer Council – Minutes – 20 September 2016* (Reference: D2016/105554).

6 December 2016,¹⁸⁴ 28 February 2017¹⁸⁵ and 30 May 2017¹⁸⁶ were provided as evidence, together with the Agenda and Business Papers for each meeting.^{187,188,189,190}

The Fish River Customer Council operates in accordance with the *Fish River Customer Council Terms of Reference*.¹⁹¹ These *Terms of Reference* sets out guidelines in respect of: the role of Customer Council members, operating protocols and members' expenses. The specific role (terms of reference) of the Council is defined as:

“The Fish River Customer Council provides a forum for communication and consultation between WATERNSW and its Fish River customers. In this forum, the FRCC ensures that the interests of all Fish River users are considered when WATERNSW develops projects, policies and priorities.

FRCC members and WATERNSW exchange information so that a positive, constructive and efficient service provider-customer relationship can be maintained.

The terms of reference of the FRCC are:

- 1. To create an environment for successful operations.*
- 2. To provide a link between Fish River customers and WATERNSW to identify customer service requirements and appropriate service delivery standards.*
- 3. To monitor, review and enhance information exchange and communications between WaterNSW Corporation and Fish River customers.*
- 4. To review and advise on asset management priorities in relation to assets critical to water delivery, including asset renewal, levels of service and maintenance.*
- 5. To provide input to water pricing strategies.*

Members have an obligation to provide feedback to their organisations and to respect the confidentiality of information presented to them during FRCC meetings.”

WaterNSW advised that it consults with the Fish River Customer Council in respect of issues including major capital upgrade work, pricing determinations and planned shutdowns. Review of the minutes provided revealed that these and other appropriate topics were addressed. The agenda for the meetings, which has been standardised, typically includes:

- Confirmation of agenda and declaration of interests;
- Previous Meeting Minutes - adoption and actions arising;
- Water Delivery;
- Presentations and consultation;
- Projects;
- Finance;
- Customer Service; and
- General Business.

Business papers included with the meeting agenda typically include:

- Operating Statement (including financial information);
- Capital Expenditure Statement;
- Key Projects Update; and
- Action list showing status.

¹⁸⁴ WaterNSW, *Fish River Customer Council – Minutes – 6 December 2016* (Reference: D2016/138408).

¹⁸⁵ WaterNSW, *Fish River Customer Council – Minutes – 28 February 2017* (Reference: D2017/33163).

¹⁸⁶ WaterNSW, *Fish River Customer Council – Minutes – 30 May 2017* (Reference: D2017/67602).

¹⁸⁷ WaterNSW, *Fish River Water Supply Customer Council – Agenda – 20 September 2016* (Reference: D2017/98747).

¹⁸⁸ WaterNSW, *Fish River Water Supply Customer Council – Agenda – 6 December 2016* (Reference: D2017/98653).

¹⁸⁹ WaterNSW, *Fish River Water Supply Customer Council – Agenda – 28 February 2017* (Reference: D2017/20831).

¹⁹⁰ WaterNSW, *Fish River Water Supply Customer Council – Agenda – 30 May 2017* (Reference: D2017/67456).

¹⁹¹ WaterNSW, *Fish River Customer Council; Terms of Reference* (Reference: D2016/30235).

Further discussion in respect of information provided to the Customer Council is presented in Table A.4.5.

It was noted that the February 2017 minutes outlined the proposed replacement of Customer Council with Customer Advisory Groups (CAGs) under the then draft new Licence (*WaterNSW Operating Licence 2017-2022*). WaterNSW sought input from the Customer Council regarding how these new groups will operate; this is considered to constitute positive proactive action.


Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Table A.4.5 Fish River Customer Council (Sub-clause 5.3.3)

Sub-clause	Requirement	Compliance Grade
5.3.3	Water NSW must provide the Fish River Customer Council with adequate information within its possession or under its control to enable the Fish River Customer Council to discharge the tasks assigned to it, other than information or documents over which Water NSW or another person claims confidentiality or privilege and subject to any limitations on disclosure of the information at law.	 Full Compliance

Risk

Failure to provide adequate information poses a moderate risk. In the absence of adequate information, the Customer Council would be unable to provide effective input in respect of the issues discussed.

Target for Full Compliance

Evidence that WaterNSW had provided adequate information so as to enable the Customer Council to discharge the tasks assigned to it.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Meeting agenda (including business papers) and minutes, as referenced in Table A.4.4.
- WaterNSW, *Fish River Customer Council; Terms of Reference* (Reference: D2016/30235).
- Email correspondence dated 24 April 2017/30 April 2017/1 May 2017 between WaterNSW and a Council member (re: *Agenda Items - Fish River Customer Council Meeting - 30 May 2017*).
- Accessing our Information website at: <http://www.waternsw.com.au/about/information>.

Summary of reasons for grade

WaterNSW demonstrated that it provides the Fish River Customer Council with adequate information within its possession or under its control so as to enable the Customer Council to discharge the tasks assigned to it. WaterNSW also demonstrated that it has a procedure in place that provides guidance in respect of information that cannot be provided to the Customer Council due to confidentiality or privilege.

Accordingly, it is assessed that WaterNSW has fully complied with this obligation.

Discussion and notes

WaterNSW noted that procedures in relation to the provision of information to the Customer Council are presented in the *Fish River Customer Council Terms of Reference*.¹⁹² These indicate that:

“Members will be provided with adequate information, within WaterNSW possession or under its control, to enable them to discharge the tasks assigned, other than information or documents that are confidential (including documents that are subject to client legal privilege).

Issues monitoring and follow up is affected via standard meeting minuting and action procedures.”

Review of the business papers for the 28 February 2017 meeting (for example) revealed that information provided included:

¹⁹² WaterNSW, *Fish River Customer Council; Terms of Reference* (Reference: D2016/30235).

-
- An Operations Report, which addressed: Rainfall and Inflows; Storage Level in Oberon Dam; Weekly Water Balances; Water Quality; Outages; Climate Outlook; Storage Projections; and Other matters.
 - Statements of expenditure in comparison to the ACCC Determination were provided (together with explanatory notes).
 - A Key Projects Update, which detailed status of projects including: Rydal Dam Safety Upgrade; Oberon to Duckmaloi Replacement Concrete Pipe; Rydal Dam Downstream Valve, Trashracks & Outlet Structure; and Duckmaloi Water Filtration Plant (WFP) Membrane Replacement and Minor Works.

WaterNSW advised that:¹⁹³

“All members are invited to submit requests for additional agenda items prior to each meeting, via email.”

As evidence, it provided a copy of email correspondence between WaterNSW and a Council member in which:¹⁹⁴

- WaterNSW advised members of the time and date of the next meeting (May 2017) of the Customer Council, and invited that any additional items of business of inclusion on the meeting agenda.
- The Council member responded, requesting that: *“Just wondering if an update on the progress for the installation of the dam wall buoy barrier? Can this be added for discussion/update, thanks.”*
- WaterNSW confirmed that an update would be included.

Review of the business papers (action list) attached to the May 2017 meeting agenda confirmed that an update had been included.¹⁹⁵

In respect of confidentiality and privileged information, WaterNSW further advised that:¹⁹⁶

“Determination on provision of specific information to the Customer Council is made based on the scope of the Fish River Customer Council Terms of Reference.

Customers who require information that is out of scope of the Fish River terms of reference can request information via a GIPA request which can be found on the WaterNSW website:

<http://www.waternsw.com.au/customer-service/forms>”

The *Fish River Customer Council Terms of Reference*¹⁹⁷ include requirements that:

“All members of the committee declare their interests at each meeting of the FRCC. A register of declared interests will be kept by the OM. The declarations will cover non-specific interests.”

and:

“All members will treat information declared to be confidential appropriately.”

Review of the meeting agendas and minutes for the four meetings held during the audit period confirms that the declaration of interest(s) was called for at each meeting. The minutes of the 28 February 2017 meeting (for example) recorded that:¹⁹⁸

“Declaration of Interest(s)

- *Declarations of interest were sought from Customer Council members in relation to the meeting’s agenda items. No interests were declared.*
- *All items included in the agenda are not considered confidential unless declared as such.”*

¹⁹³ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 10.

¹⁹⁴ Email correspondence dated 24 April 2017/30 April 2017/1 May 2017 between WaterNSW and a Council member (re: *Agenda Items - Fish River Customer Council Meeting - 30 May 2017*).

¹⁹⁵ WaterNSW, *Fish River Water Supply Customer Council – Agenda – 30 May 2017* (Reference: D2017/67456).

¹⁹⁶ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 10.

¹⁹⁷ WaterNSW, *Fish River Customer Council; Terms of Reference* (Reference: D2016/30235), sections 3.6 and 3.10.

¹⁹⁸ WaterNSW, *Fish River Customer Council – Minutes – 28 February 2017* (Reference: D2017/33163).

WaterNSW provides details of the *Government Information (Public Access) Act 2009* and how to access information on its website.¹⁹⁹

In summary, on the basis of the evidence provided, it is apparent that WaterNSW provides the Customer Council with information to enable it to discharge its assigned tasks. There are appropriate arrangements in place in respect of confidentiality and privileged information.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

¹⁹⁹ Accessing our Information website at: <http://www.waternsw.com.au/about/information>.

A.5 Section 6 – Environmental Management

Table A.5.1 Environmental management (Sub-clause 6.1.1)

Sub-clause	Requirement	Compliance Grade
6.1.1	By 30 June 2018, Water NSW 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.</i> (Environmental Management System).	Full Compliance

Risk	Target for Full Compliance
Failure to develop and implement an Environmental Management System presents a high risk that WaterNSW may not maintain and implement effective programs to manage risks to the environment from carrying out its activities.	Evidence that WaterNSW has developed an Environmental Management System prior to 30 June 2018.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.
- BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Summary of reasons for grade

WaterNSW's Environmental Management System was certified as being compliant with the requirements of *ISO 14001:2004* on 16 January 2017. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Discussion and notes

WaterNSW advised that:²⁰⁰

“WaterNSW gained certification to ISO14001:2004 on 10 January 2017.”

Review of the Stage 2 (Certification) Audit *Assessment Report*²⁰¹ revealed that:

- The audit was conducted over seven and a half (7½) days commencing on 30 November 2016;
- Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
- No new nonconformities were identified; and
- It was recommended that certification be granted.

A *Certificate of Registration* (No: EMS 659131),²⁰² effective from 16 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Environmental Management System

²⁰⁰ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 11.

²⁰¹ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.

which complies with the requirements of *ISO 14001:2004* for the following scope:

“Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification.”

This scope is consistent with/captures the principal activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence*.

Given that the Environmental Management System was certified on 16 January 2017, it is apparent that the system had been developed by that date (which is well ahead of the required date, i.e. 30 June 2018). On that basis, WaterNSW is deemed to have achieved compliance with this obligation.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

²⁰² BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Table A.5.2 Environmental management (Sub-clause 6.1.2)

Sub-clause	Requirement	Compliance Grade
6.1.2	Water NSW must ensure that: <ol style="list-style-type: none"> by 30 June 2018, 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 once the Environmental Management System is certified under clause 6.1.2(a), the certification is maintained during the remaining term of this Licence. 	Full Compliance

Risk	Target for Full Compliance
Failure to have the Environmental Management System certified to <i>AS/NZS ISO 14001:2004</i> presents a moderate risk that the Environmental Management System may not provide an effective framework for WaterNSW to manage risks to the environment from carrying out its activities.	Evidence that the Environmental Management System was certified to <i>AS/NZS ISO 14001:2004</i> prior to 30 June 2018 and that certification has been subsequently maintained.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: AMS 659131) issued to WaterNSW, 16 January 2017.
- JAS-ANZ Register entry available at: <http://www.jas-anz.org/accredited-bodies/organisation/80a1e08f-c9b3-e411-be4f-005056b24e56?search=all>.
- WaterNSW, *Environmental Management Training Plan* (Version 0.04), 1 December 2016 (Reference: D2016/137094).
- PowerPoint presentation: *Environmental Essentials; WaterNSW* (Reference: D2016/142692).
- MS Excel Spreadsheet: *Enviro Essentials Rapid Induct 31.07.2017* (Reference: D2017/101633).
- MS Excel Spreadsheet: *WaterNSW Mandatory Training Matrix 2017* (Reference: D2017/25731).
- MS Excel Spreadsheet: *Audit Schedule for Systems* (Reference: D2015/48040[v2]).
- WaterNSW, *Internal Audit Report; Completion Audit - Menangle Weir Erosion Rectification Project*, 2 August 2016 (Reference: D2016/89558).
- WaterNSW, *Internal Audit Report; Blue Mountains Pipelines – Vegetation Maintenance*, 28 October 2016 (Reference: D2016/124606).
- WaterNSW, *Internal Audit Report; Burrawang Pumping Station Electrical Systems Upgrade*, 13 April 2017 (Reference: D2017/44103).
- WaterNSW, *Internal Environmental Audit Report; Warragamba Operational Site*, 31 May 2017 (Reference: D2017/65158).

Summary of reasons for grade

WaterNSW's Environmental Management System was certified as being consistent with *ISO 14001:2004*; a *Certificate of Registration* was issued by BSI Group, which holds the required accreditation, on 16 January 2017. The certification covers the full scope of activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence* (and the *SCA Operating Licence*), and WaterNSW is now certified for all except the recently inherited DPI Water functions (hydrometric and compliance services) which have already been subject to a surveillance audit.

Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Environmental Management System, a prerequisite to maintaining certification, throughout the audit period.

Accordingly, WaterNSW was assessed to have demonstrated compliance with this obligation.

Discussion and notes

Certification of Environmental Management System:

As reported in Table A.5.1, a certification audit of the WaterNSW Environmental Management System was undertaken in November/December 2016 and a *Certificate of Registration* (No: EMS 659131),²⁰³ effective from 16 January 2017, was subsequently issued to WaterNSW. As also reported, the scope of the certification is consistent with/captures the principal environmental management activities undertaken by WaterNSW under the provisions of the *State Water Operating Licence*.

The *Certificate of Registration* was issued by BSI Group (specifically BSI Group ANZ Pty Ltd), which is accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).²⁰⁴

It is therefore apparent that the WaterNSW Environmental Management System was certified by a qualified third party to be consistent with *ISO 14001:2004* prior to 30 June 2018.

Maintenance of Certification:

Certification is typically maintained through the successful completion of a program of surveillance and re-certification audits, undertaken by the third party certifying body (in this case BSI Group). The audit program, which is prepared by the certifying body, typically comprises annual compliance audits and a re-certification audit every three years.

It is understood that an external surveillance audit was undertaken by BSI Group in September 2017 (the auditors did not sight evidence of this audit).

WaterNSW advised that it is transitioning its Environmental Management System to be consistent to the current *ISO 14001:2015* standard and to integrate the new DPI Water functions (hydrometric and compliance services) into the certification. Training programs are being implemented to support the transition. The external surveillance audit conducted by BSI Group in August/September 2017 assessed progress on the transition journey. A self-assessment against the new (2015) standard and inclusion of the new functions is planned for February 2018.

Implementation of the Environmental Management System:

General:

Maintenance of certification will be dependent (in part) upon WaterNSW demonstrating the ongoing effective implementation of the Environmental Management System. Implementation of the Environmental Management System is demonstrated by (for example):

²⁰³ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

²⁰⁴ JAS-ANZ Register entry available at: <http://www.jas-anz.org/accredited-bodies/organisation/80a1e08f-c9b3-e411-be4f-005056b24e56?search=all>.

-
- implementing an effective training program; and
 - implementing a program of internal and external audits.

These activities are discussed in the following; further relevant discussion is presented in Table A.5.3.

Training:

WaterNSW advised that:²⁰⁵

“WaterNSW Environmental Management Training Plan was developed (December 2016) outlining the development and delivery requirements for WaterNSW in relation to Environmental Management. An Environmental Essentials E-Learning module was launched to the whole business in May 2017, (target date for completion by employees was set 30 August 2017). Another two priority modules are under development (Environmental Management and Heritage Management), these e-learning modules are due to be rolled out in late 2017.”

The *Environmental Management Training Plan*²⁰⁶ identifies five e-learning modules including: Environmental Essentials; Environmental Management; Environmental Impact Assessment; Environmental Incident Management and Heritage Management. Details of the topic addressed and the target audience for each module are included.

Review of the *Environmental Essentials Training Module*²⁰⁷ provides an appropriate overview of WaterNSW’s commitment and approach to environmental management. A *Register*²⁰⁸ is used to maintain a record of staff who have completed the training, as well as those who are yet to do so.

The *Mandatory Training Matrix*²⁰⁹ identifies a further thirteen training modules specifically related to environmental management. These include: Environmental Impact; Environmental Management (Field Employees and Managers); EIA Procedure; Ecologically Sustainable Development; Authorised Officer Refresher (POEO Act); Environmental Management for Contract & Project Managers; Erosion Sediment Control; Environmental Auditor; Environmental Impact Assessment Training; Re-Fuelling and oil/fuel management practices/spill management; Wildlife Management Protocol; and Handling of Herbicides and Pesticides. The allocation of training to roles across the organisation appeared to be appropriate.

Internal and External Audit:

External audits of the Environmental Management System, including the certification audit undertaken in November/December 2016 and the surveillance audit undertaken in September 2017, are discussed above. It is noted that opportunities for improvement (OFIs) arising from external certification and surveillance audits are tracked via the ‘Tickit’ system.

WaterNSW advised that:²¹⁰

“WaterNSW has an ongoing level 4 environmental assurance program in which WaterNSW’s HSE team conducts independent audits to assess both operational and maintenance activities including capital projects compliance with the EMS.”

Review of the *WaterNSW Audit Schedule*²¹¹ for 2016/17, indicated that a program of audits had been implemented. A sample of audit reports was provided for review, including audits in respect of:

- *Completion Audit - Menangle Weir Erosion Rectification Project* (August 2016);²¹²
 - *Blue Mountains Pipelines – Vegetation Maintenance* (October 2016);²¹³
-

²⁰⁵ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 11.

²⁰⁶ WaterNSW, *Environmental Management Training Plan* (Version 0.04), 1 December 2016 (Reference: D2016/137094).

²⁰⁷ PowerPoint presentation: *Environmental Essentials; WaterNSW* (Reference: D2016/142692).

²⁰⁸ MS Excel Spreadsheet: *Enviro Essentials Rapid Induct 31.07.2017* (Reference: D2017/101633).

²⁰⁹ MS Excel Spreadsheet: *WaterNSW Mandatory Training Matrix 2017* (Reference: D2017/25731).

²¹⁰ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 11.

²¹¹ MS Excel Spreadsheet: *Audit Schedule for Systems* (Reference: D2015/48040[v2]).

²¹² WaterNSW, *Internal Audit Report; Completion Audit - Menangle Weir Erosion Rectification Project*, 2 August 2016 (Reference: D2016/89558).

-
- *Burrawang Pumping Station Electrical Systems Upgrade* (March 2017);²¹⁴ and
 - *Warragamba Operational Site* (May 2017).²¹⁵

In each case, the report detailed the objective, scope, methodology and applicable standard for the audit, together with details of the audit findings and recommendations. A brief executive summary provides context as well as presenting the audit outcomes. Both non-conformances and opportunities for improvement are recorded and tracked via the ‘Tickit’ system, with the reference number recorded on the audit report.

Summary:

The preceding discussion provides a snapshot of evidence that WaterNSW continued to implement its Environmental Management System throughout the audit period. As previously indicated, further discussion in respect to implementation of the system is presented in Table A.5.3.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

²¹³ WaterNSW, *Internal Audit Report; Blue Mountains Pipelines – Vegetation Maintenance*, 28 October 2016 (Reference: D2016/124606).

²¹⁴ WaterNSW, *Internal Audit Report; Burrawang Pumping Station Electrical Systems Upgrade*, 13 April 2017 (Reference: D2017/44103).

²¹⁵ WaterNSW, *Internal Environmental Audit Report; Warragamba Operational Site*, 31 May 2017 (Reference: D2017/65158).

Table A.5.3 Environmental management (Sub-clause 6.1.4)

Sub-clause	Requirement	Compliance Grade
6.1.4	<p>Until the Environmental Management System has been developed and certified in accordance with clauses 6.1.1 and 6.1.2, Water NSW must:</p> <p>a) maintain programs to manage risks to the environment from carrying out its activities; and</p> <p>b) ensure that all its activities are carried out in accordance with those programs.</p>	Full Compliance

Risk

Failure to maintain programs to manage risks to the environment from carrying out its activities and ensuring that all activities are carried out in accordance with these programs poses a high operational risk to environmental health, raw water quality and the ability of WaterNSW to meet its business objectives.

Target for Full Compliance

Evidence that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- WaterNSW Environmental Significant Aspects and Impacts Assessment worksheet, 13 June 2017.
- Heritage Management Action Plan – Compliance Status 2016-17 FY – as at 30 June 2017.
- Vegetation Management Braidwood. March 2017.
- Wyangala Dam Spillway Painting REF.

Summary of reasons for grade

The evidence provided demonstrates that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs. Target actions in support of objectives to minimise the environmental impact of infrastructure and activities and to promote an environmentally responsible culture were substantially met.

Accordingly, it was assessed that WaterNSW has fully complied with this obligation.

Discussion and notes

Identification and assessment of relevant risks, aspects and impacts:

The register of Environmental Significant Aspects and Impacts²¹⁶ for the EMS is very high level and contains just 28 risks and identifies some 95 legal instruments. At first sight this was considered too high level to form a credible basis for an EMS. However, WaterNSW explained that this was just the high level overview. Much more detailed registers were developed as part of specific projects or activities as part of Environmental Impacts Assessment (EIA), Review of Environmental Factors (REF) or Construction Environmental Management Plan (CEMP) forms and reports that are required for each site or project. Each site or project has its own site register that includes coverage of environmental risks, aspects and

²¹⁶ D2015/80203[V3] - WaterNSW Environmental Significant Aspects and Impacts Assessment, 13 June 2017.

impacts. Within the EIA and REF forms, the NorBE questions are triggered if relevant in the Sydney catchments along with generic heritage, flora and fauna questions. The forms are completed by the relevant project manager and checked by the environment team. For instance, ‘blackwater’ event risks are listed at sites for which such risks are relevant but not for other sites.

There is no checklist of standard hazards and risks but corporate staff usually input to the risk assessments (e.g. corporate environmental and scientific personnel) to provide consistency.

From an environmental perspective, projects are divided into heavy, medium and light categories. The Project Manager decides on the category. Based on the needs identified by the Project Manager, personnel required are identified and assembled to assess the relevant environmental aspects, impacts and risks. At the very least a simple checklist Environmental Impact Statement is required for most projects prior to receiving a written approval from the relevant environment team. Environmental risks are considered as part of the site-specific integrated risk assessments.

Scope of the Environmental Management System:

At present, as the EMS is new, it is very focused on “*Actively promote an environmentally responsible culture to meet our legal obligations*” rather than being more broadly focused on continual improvement. Furthermore, the scope of the EMS is limited to bulk water supply infrastructure, not catchments, other than for the Sydney region (the objective is to “*Positively influence third party activities to protect Sydney Catchment area*” but not the broader area). This is appropriate given the priorities of WaterNSW although over time a broadening of scope would be anticipated. In other words, the scope is sufficient for now but over time a less narrow focus would be warranted. An *ISO 14001* system isn’t merely about complying with strict legal obligations but is also about environmental management and continual improvement. The new EMS is still limited in focus to key business risks, but WaterNSW advised that it intends to focus more on good practices and improvements over time. An example was seen of a Heritage Management Action Plan²¹⁷ that had divided its actions into categories: first priority was Statutory Compliance; then other legal requirements; and finally Best Practice Opportunities. A similar breakdown was seen for sustainability reporting.

Implementation of the Environmental Management System:

General:

Examples of the *ISO 14001* system in action were shown by WaterNSW in response to a request for relevant evidence. For instance, an EIA was viewed²¹⁸ that consisted of an EIA form template that came to 14 pages completed. A more comprehensive REF²¹⁹ was sighted which came to 51 pages complete using a REF review template. In each case the relevant Project Manager was required to complete the assessment for review and checking by the environment team. For large projects (e.g. a water supply storage project over \$30 million or otherwise considered significant) there is oversight by DPE. An example was sighted of a CEMP for a large project that used standard template form. For such projects risk-based prioritisation is used to drive on-site inspections. For significant projects there is often an inspection in the first month, after six months and at the close-out of the projects. Some 24 such audits were conducted during the audit period.

Water flow gauging and monitoring:

There are some significant differences in gauging and monitoring of rural systems across the state and between rural and metro approaches to monitoring and management. For instance, maintenance regimes for some equipment seem to vary between rural and metropolitan areas. Different Water Quality Data Management systems are employed which use different quality codes. However, all sites meet the Bureau of Meteorology (BOM) standards and provide useful data.

In addition, DPI Water does some of its own monitoring and exercises some controls over monitoring done on its behalf by WaterNSW. It is considered that aligning these various methods and processes will

²¹⁷ D2017/99367 Evidence for Heritage Management Action Plan – Compliance Status 2016-17.

²¹⁸ D2017/47516(v1). Vegetation Management Braidwood. March 2017.

²¹⁹ D2017/69244 Wyangala Dam Spillway Painting REF.

be a significant undertaking. In the meantime, WaterNSW is still collecting data relevant to the historical program. It is acknowledged that WaterNSW has identified this recently inherited issue and is seeking to address it.

A report on non-revenue water for the 2016-2017 release period was witnessed. This showed that WaterNSW accounts for water that is released for environmental purposes.

Cold water pollution and environmental flows:

With respect to cold water pollution and environmental flow risks, WaterNSW has a Cold Water Pollution Program of Works and sets environmental flow and cold water pollution objectives and targets that are actively reported by comparison of planned versus actual releases. WaterNSW is part of a cold water pollution inter-agency group that is developing protocols to help better manage this issue. The group includes DPI Water, DPI Fisheries, OEH and WaterNSW. At present there is an endorsed protocol that WaterNSW utilises to guide its work. WaterNSW actively manages multiple off takes for many of its dams as part of mitigating cold water pollution. Some dams have variable level offtakes which permit control of cold water pollution. However, in most storages there is only one outlet. DPI Water sets the requirements for the control of cold water pollution and WaterNSW is tasked with meeting those requirements. The Strategic Asset Planning Group decide which dams have added variable offtakes or draught outlet towers rather than single spillways or offtakes.

Phytoplankton:

With respect to risks associated with phytoplankton, avoiding hazardous phytoplankton generally takes precedence over avoiding cold water. For dams that have multiple level offtakes or multiple offtakes cold water from depth is likely to be released in preference to water that is from the surface has significant phytoplankton. WaterNSW has an active cyanobacterial monitoring and notification program as part of Regional Algal Coordinating Committee (RACC) activities. Leadership of the RACC functions has been transferred to WaterNSW from DPI Water. The RACCs include dam operators from WaterNSW who manage the alerting and alarm process through the RACC. As part of this work WaterNSW maintains a seasonal phytoplankton monitoring program for both metropolitan and rural sites. The phytoplankton monitoring program has been inherited from DPI Water and is being followed as is for the moment. At this point in time a review and update of the program has not occurred as the program has only recently been inherited from DPI Water. The program is quite extensive with 73 sites monitored monthly as a baseline and up to about 143 other sites monitored periodically. There is room to optimise this program over time and WaterNSW is already in the process of undertaking this work. For instance, WaterNSW has made improvements with respect to communication and now has a website that updates information on phytoplankton daily through an automated process of updates and alerts on phytoplankton risks which is commended as a great improvement on the previous system entailing weekly manual updates. Furthermore, from 1 March 2017 a substantive role for the RACC coordinator was set up.

Other water quality hazards:

Outside of the Sydney catchments, WaterNSW is not addressing hazards beyond phytoplankton and cold water. For instance, pathogens, Fe and Mn are not considered.

Fish passage:

With respect to fish passage objectives and targets, WaterNSW is implementing Section 218 of the Fisheries Management Act and is working on a fish passage strategy and reporting on that strategy under the organisation's asset management system.

Blackwater events:

With respect to the issue of flood plains being periodically impacted by contamination due to low Dissolved Oxygen (DO) and dirty water being released from dams ('blackwater events') there are no specific blackwater risk targets and objectives set by WaterNSW. In practice, OEH control the decision on releases and at this point WaterNSW is simply the dam operator rather than the risk assessor and manager for blackwater events.

Summary:

The preceding discussion provides a snapshot of evidence that during the audit period WaterNSW has been maintaining programs to manage risks to the environment from carrying out its activities; and ensure that all its activities are carried out in accordance with those programs.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Appendix B Detailed Audit Findings **Sydney Catchment Authority Operating Licence**

Detailed audit findings in respect of the *Sydney Catchment Authority Operating Licence* are presented in this Appendix.

B.1 Section 2 – Water Quality

Table B.1.1 Water Quality Management System (Sub-clause 2.1.1)

Sub-clause	Requirement	Compliance Grade
2.1.1	<p>Water NSW 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, (Water Quality Management System).</p> <p><i>[Note: It is generally expected that Water NSW 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 Water NSW's circumstances and/or Drinking Water quality policy and practices within New South Wales.</i></p> <p><i>Water NSW must also manage the Raw Water Supply System in light of its knowledge of the Drinking Water Supply System. That is, Water NSW 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>	
Risk	<p>Without a comprehensive water quality management system, there is a high risk that WaterNSW may not be able to effectively manage risks to water quality and protect public health.</p>	Target for Full Compliance
<p>Evidence that a Management System is established, maintained and kept up to date, and that it is consistent with the ADWG, as specified by NSW Health.</p>	Evidence sighted	
<ul style="list-style-type: none"> ▪ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017. ▪ Interviews with WaterNSW staff, 25-29 September 2017. ▪ Water Quality Management System 2017. ▪ Water Quality Policy. ▪ Legal and Other Requirements Register. ▪ Water Supply System Schematics. ▪ Lake Burrangorang Water Quality Report 1 Feb 2017. ▪ Key findings Report - PSAT 2012-2016. ▪ C2T Risk Assessment 2016 - Oberon Supply. ▪ Catchment Cryptosporidium Risk Dashboard 9 Sep 2016. 		

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- Draft Cyanobacteria Risk Forecast 2016-17.
 - Catchment to Tap Risk Assessment (C2T) Report final – 2014.
 - Annual Cyanobacteria Risk Forecast 2015-16 Revised in September 2015.
 - Critical Control Points in Supply to Greater Sydney.
 - Water Monitoring Program.
 - Water Quality Incident Response Protocol.
 - Hypochlorite Purchasing Procedure for Private Water Supply Chlorination Facilities.
 - Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).
 - Water Quality Awareness eLearning Module.
 - Water Quality Data Review and Reporting Procedure.
 - Asset Change Management Procedure.
 - Water Quality Management System Annual Review and Continual Improvement Cycle.
 - Scanned Training Attendance Lists – Incident Management March 2017.
 - ARC NOM Project proposal.
 - Screenshot – WaterNSW Intranet Documents.
 - Water Quality Improvement Plan.
-

Summary of reasons for grade

Full compliance has been awarded for this sub-clause. WaterNSW has established a Water Quality Management System (WQMS) which addresses and is consistent with the framework prescribed by the ADWG.

Several opportunities for improvement (**OFI-2016/17-075 to 09**) have been identified in respect of some minor deficiencies, which when addressed, will improve the robustness of WaterNSW's WQMS.

Discussion and notes

The WQMS is the principal document that describes WaterNSW's approach to managing water quality in a manner that is consistent with the framework prescribed by the ADWG. The WQMS relies on a number of supporting documents, processes and procedures (including, for example, C2T Risk Assessments, the Water Monitoring Program (WMP) and the Water Quality Incident Response Plan (WQIRP) to fully define the adopted approach.

During the audit period the WQIRP was fully updated and responsibilities further clarified. Whilst largely drafted by May 2017 the document was amended during June and July 2017 in response to the finding of transformer oils leaching into the catchment. The revised document was provided to NSW Health during July 2017 seeking their feedback and *de facto* endorsement. As of the day of the site audit (25 September 2017), NSW Health had not provided final feedback but the documents had been discussed at the SLG with NSW Health on 22 September 2017.

At present the senior officer with overall accountability for water quality management is supported by a Water Quality Systems Officer. In addition there are dedicated Water Quality Advisers. This structure provides clear and credible accountability for water quality management.

Detailed element-by-element discussions are as follows:

■ Element 1 – Commitment to Water Quality Management

○ 1.1. *Water quality policy*

There is a water quality policy,²²⁰ which was endorsed by the WaterNSW Board on 31 March 2016. The content of the policy is adequate.

○ 1.2. *Regulatory and formal requirements*

There is a Legal and Other Requirements Register.²²¹ In addition, the process to review and maintain the register is included in the WQMS document.

○ 1.3. *Engaging stakeholders*

Stakeholder engagement is undertaken through a number of mechanisms, for example, Strategic Liaison Group (SLG) and Joint Operating Group (JOG) meetings. There is a Water Quality Contact List,²²² which includes stakeholders, maintained in ARK/TRIM (the document management system).

During the audit, attention was devoted to accountability and responsibility for key WQMS functions (e.g. responding to exceedances) and any changes to those roles during the audit period. There was no change in the key WQMS functions during the audit period. There were minor operational changes with respect to reporting but the overall responsibilities and accountabilities remained the same as those assessed previously. Hence, there was no significant impact or implications for the WQMS and its compliance.

■ Element 2 – Assessment of the Water Supply System

○ 2.1. *Water supply system analysis*

Subject matter experts undertake research, investigation and overall risk assessment. Water supply system schematics have been prepared and are available.²²³

○ 2.2. *Assessment of water quality data*

The water quality database stores data from the monitoring programs. Water Quality Advisors undertake routine data assessment and prepare routine reports²²⁴ and provide advice as required.

○ 2.3. *Hazard identification and risk assessment*

The risk assessment approach and methodology is explained in the WQMS, including the 'Catchment to Tap' (C2T) risk assessment, pollution source assessment tool (PSAT), annual cyanobacteria risk assessment and catchment *Cryptosporidium* risk assessment.²²⁵

Progress during the audit period was assessed in relation to assessing and mitigating priority hazards (natural organic matter (NOM), pathogens and cyanobacteria). Particular attention was paid to the audit sample site of Nepean Reservoir and the associated catchments. Questions were focused on the priority hazards for this set being NOM, manganese (Mn), iron (Fe) and cyanobacteria. Questions were asked relating to risk assessment and nutrient, NOM, pathogen, Fe and Mn source tracing, budgeting and mitigation activities.

The C2T risk register remains the overall main risk register. It was last reviewed

²²⁰ CD2014_5[v4] Water quality policy.

²²¹ CD2013_26[v2] Legal and Other Requirements Register.

²²² D2013_94543 WaterNSW Water Quality Contact List.

²²³ D2016/96321 Greater Sydney Water Supply System Schematic, D2017/68067 Shoalhaven Water Supply System Schematic, D2017/68141 Blue Mountains Water Supply System Schematic, D2017/71880 Upper Nepean Water Supply System Schematic.

²²⁴ D2017/15888 Lake Burratorang Water Quality Report 1 Feb 2017.

²²⁵ D2015/86785 Key findings Report - PSAT 2012-2016, D2015/35804 C2T Report - Final Report 2014, D2016/61031 C2T Risk Assessment 2016 - Oberon Supply, D2016/104653 Catchment *Cryptosporidium* Risk Dashboard 9 Sep 2016, D2016/97468 Draft Cyanobacteria Risk Forecast 2016-17.

comprehensively in 2014, with a mid-term desktop review planned for later in 2017. Therefore, no major changes occurred to this register during the audit period. Nonetheless, the risk assessment line items have been reviewed based on outcomes from recent incidents (e.g. risks related to spills in the catchment were updated with leaking transformers being added as one of the possible causes). In addition, emerging issues were also considered during the audit period, including per- and poly-fluoroalkyl substances (PFAS), transformer oil spills from disused mining equipment and *Naegleria*. Other risk assessments are ongoing, including the annual cyanobacteria risk assessment and the weekly pathogens risk profile and assessment of operational risks covering key assets.

Based on this analysis, WaterNSW appears to be keeping its drinking water quality risk registers sufficiently current and responsive.

■ Element 3 – Preventive Measures for Drinking Water Quality Management

○ 3.1. *Preventive measures and multiple barriers*

Preventive measures and multiple barriers are explained in the WQMS. Preventive measures are also listed in the C2T risk assessment register as existing controls.

Proactive selection of appropriate depth and reservoir destratification is one of the key operational mitigation actions undertaken by WaterNSW. Monthly water quality reports are produced which provide information on the status of the reservoirs and include information on reservoir stratification and water quality at various depths. The process is informed by the Sydney Catchment Authority Reservoir Management System (SCARMS) which helps in both operations and scenario testing for planning. During the audit the auditors witnessed live SCARMS records for example sites at Nepean Dam (DNE2) and Warragamba Dam (DWA2). At the shorter-term scale, significant East Coast low events are managed using a flood prediction model, which is used to guide risk assessment of such live situations. The incident management team is also put in place as a precaution as the weather system moves in if considered necessary. These processes appear to be functioning at an industry benchmark level of operation and are commended.

In case of power failures, key monitoring, mixing, valving and pumping systems that need to be continually operational are backed up by generators or can be operated manually. Therefore, backup options are available for most process failures. Each fire season a risk assessment is undertaken and measures and contingencies are put in place if necessary, e.g. if an additional generator is thought to be required. At the Nepean Reservoir a backup generator plug-in point was seen although there was no generator on site. This presents some risk since the electrical power supply lines are above ground, close to trees, and in case of a bush fire, are at risk of failure. A partly burnt power line support pole was sighted during the audit. It is, however, understood that an electrical upgrade is planned by WaterNSW that will include the power lines being placed underground, and as such no OFI is noted. Furthermore, in the event of fire, WaterNSW has trained in-house fire crews who work with the RFS to direct maintenance crews, if required, to permit rapid fire control response.

○ 3.2. *Critical control points*

CCPs for raw water have been established and CCP procedures are available.²²⁶

CCPs have also been established for QAPs in discussion with NSW Health for the drinking water supplies managed by WaterNSW (note: these QAPs are outside the audit scope).

■ Element 4 – Operational Procedures and Process Control

○ 4.1. *Operational procedures*

The procedures are stored in ARK/TRIM and can be accessed through the WaterNSW intranet

²²⁶ D2016/64197 Critical Control Points in Supply to Greater Sydney.

page.²²⁷ There is a process for review of procedures.

A formal process for the Notification of Changes to System Operations (NOCTSO) has been set up.

- o *4.2. Operational monitoring*

The operational monitoring is contained within the Water Monitoring Program (WMP).²²⁸

Progress on operational monitoring and control measures during the audit period was assessed. The audit sample site chosen was the Nepean Reservoir. Areas of interest included control of illegal access and the surveillance and enforcement thereof; pest and weed surveillance and control; erosion condition assessment and control; mining site condition assessment and control; reservoir mixing; biomonitoring; early warning and communication; trending; and predictive modelling.

During the audit period online analysers were in place on raw water sampling sites. Sydney Water operators were able to directly view readings from those instruments on SCADA systems at their water treatment plants. Exceedances from set values trigger alarms, which are sent to operators for actioning. These included alarm set points at 10 or 20 NTU for turbidity. There are also vertical profilers at some reservoirs (e.g. Nepean, Warragamba and Woronora) to provide information on incoming inflows. These were placed in the reservoirs based on a strategic risk-based decision. There is a plan to get a second vertical profiler in place at the Nepean Reservoir to further understand how inflows travel, which was noted as a good initiative.

It was good to see that WaterNSW maintains spares for operational monitoring instruments to enable their rapid repair or replacement. The SCADA system seen during the audit displayed the 'live' feed from the instruments. Historical data was maintained in a 'Hydstra' database to support long-term analysis and trending. Hydstra can indicate both data and its reliability, for example, if the instrument was on calibration mode or had an error, then data quality will be coded as such. This Hydstra system was sighted and was functional during the audit.

All lakes have thermistors and some vertical profilers (Nepean, Warragamba and Woronora). WaterNSW is looking to put in a second vertical profiler in Nepean Reservoir. The profilers help support decision-making and go beyond the current SCARMS system. WaterNSW uses this data to forecast inflows as part of pre-event planning, risk prediction and redundancy analysis.

- o *4.3. Corrective actions*

The response actions are stated in the Water Quality Incident Response Plan (WQIRP)²²⁹, and corrective actions for CCPs are also included in the respective procedures. The Water Quality Database flags exceedances and sends an email to relevant staff who initiate notification and response.

The WQIRP is being finalised, with comments already received from stakeholders (e.g. NSW Health). It is currently undergoing internal WaterNSW approval.

- o *4.4. Equipment maintenance*

WaterNSW has a program for routine calibration and renewal of water monitoring devices.

Monitoring instrument calibration is undertaken by contractors Australian Laboratory Services (ALS) and Manly Hydraulics Laboratories (MHL) (each covering a different geographical area). In addition, some in-house cleaning of sensors is undertaken by WaterNSW staff. For the Sydney catchments, monitoring instruments are calibrated monthly, quarterly or annually,

²²⁷ D2017/101890 Screenshot - WaterNSW Intranet Documents (includes operational procedures).

²²⁸ D2017/101900 Copy of CD2011/179[v5] Water Monitoring Program.

²²⁹ CD2004/183[v3] Water Quality Incident Response Plan.

depending on the manufacturer's recommendations. During calibration instruments are verified for accuracy and adjusted to keep their results within a pre-defined tolerance of a verifiable and traceable standard. In most cases this takes place in the field but in some cases it occurs in factory sites. This process appeared to be well-managed by WaterNSW.

- *4.5 Materials and chemicals*

There is a chlorine purchasing and handling procedure,²³⁰ which has been developed and is referenced in the WQMS.

- Element 5 – Verification of Water Quality

- *5.1. Monitoring*

The Water Monitoring Program (WMP) document details the parameters, locations and frequencies for testing. The monitoring program is comprehensive and meets the requirements of the schemes and picnic sites. The revised WMP includes the areas of operations of the former SCA and State Water. The results from the testing laboratory are automatically transferred into the WaterNSW water quality database. The database triggers in response to defined results and sends automatic email notifications for any out-of-specification results to a group for notification and follow-up.

WaterNSW has agreed with NSW Health that it will continue with its program of extensive pathogen monitoring to better understand risks to inform treatment needs to meet health-based treatment targets. The Catchment *Cryptosporidium* Risk Assessment tool is being used to capture pathogen hazards based on a Quantitative Microbial Risk Assessment methodology. The system uses recent oocyst counts and identification of any spills (farm dams), inflows (and avoiding them), sewer spills, etc., to assess any changes in inherent catchment risk for each system. This tool is used to produce weekly risk assessment for *Cryptosporidium* to help NSW Health determine the need for a boil water alert when there is a treated water turbidity exceedance. An example of a cow being found in the Prospect system was recently shown as an example of incident notification in SWIRL and a 'Tickit' notification was sighted.

A sound program for chemical monitoring in the catchments has been proposed, which would make use of passive samplers to better understand chemical hazards and their presence and sources within the catchments. WaterNSW is commended for moving to adopt this best practice and is referred to Seqwater for examples of how this has been successfully applied by a similar water utility and the lessons learnt in doing that.

- *5.2. Customer satisfaction*

Regular meetings and close working relationship with major customers enables the opportunity to discuss issues regarding water quality. Raw Water Supply agreements define the standards for service expected by major customers.

- *5.3 Short-term evaluation of results*

Routine review of data is undertaken according to the Water Quality Data Review and Reporting procedure.²³¹

Every two years a trend analysis is undertaken on ten years of data. In addition, water quality data is reported in an annual report as well as monthly periodic reports. These reports include some prognosis and historical analysis. Sydney Water and the councils drawing from the WaterNSW system can receive copies of the reports. Sydney Water and NSW Health are able to see protozoan enteric pathogen monitoring data. The detailed annual report on water quality is available publicly on the WaterNSW internet site.

²³⁰ D2017/102019 Copy of CD2015/38[v2] Hypochlorite Purchasing Procedure for Private Water Supply Chlorination Facilities.

²³¹ D2017/101852 – Copy of CD2012/130[v4] Water Quality Data Review and Reporting Procedure.

Monthly water quality reports and seasonal risk assessments are conducted. The monthly reports consider variables such as pH, turbidity, conductivity, alkalinity and temperature on vertical profilers that are strategically placed. These systems help to track intrusions, e.g. a cold water intrusion from Werriberri Creek that was successfully avoided during June 2016. Sydney Water has provided preferred ranges for these parameters. Weekly planning meetings are held between WaterNSW and Sydney Water staff to discuss drinking water quality.

Both *E. coli* and enterococci are sampled by way of microbial indicators which helps avoid undue alarm if just one of the indicators is elevated, e.g. due to a bloom.

The protozoan parasite assays are specialised and somewhat subjective. Consequently, as part of the contract with the service provider WaterNSW requires the laboratory to participate in intra-laboratory proficiency testing. WaterNSW relies on the NATA audits and results of proficiency trials undertaken by the laboratory to help ensure that the laboratory's results are reliable. The NATA reports are supplied to WaterNSW. In addition, WaterNSW visits the labs quarterly (down from monthly as it was for the first two years). However, data collection for sufficient 'positive' samples, or 'detects', is proving to be a challenge. It is noted that the analysis is being undertaken by a NATA accredited party using routine methods but not using specialist methods tailored to sampling, collecting and monitoring large volumes of water and capturing water during events as required to properly characterise source waters with protected inner catchments feeding large reservoirs. There is a significant opportunity for improvement (**OFI-2016/17-07**) for WaterNSW to continue to move further towards best practice (rather than routine) monitoring methods for protozoan parasites in source waters. Such methods would capture large volumes (hundreds to thousands of litres) per sample (as Sydney Water has started to do in raw water samples) and gather more event-based samples (as WaterNSW has begun undertaking, but collecting from additional sample points further upstream and using more sensitive methods with larger volumes). It is acknowledged that such a task is not simple and that the assessment of viability and infectivity already occurs. This move would significantly increase the statistical power, credibility and value of the WaterNSW protozoan parasite monitoring program. It is noted that the more specialised water laboratories, such as the Sydney Water laboratories locally, and SA Water laboratories, have set up such methods and strategies. Furthermore, other more generic services providers might be able to offer such monitoring if requested and supported during the initial phase.

Molecular analysis tools are also being used to better understand the protozoan pathogen risk. Preliminary results show differences between *Cryptosporidium hominis* and *C. parvum*. For the risk assessments, WaterNSW conservatively assumes in the first instance that all oocysts detected are infectious to humans.

Cyanobacteria and related data are reviewed annually and a risk profile for each storage is prepared each September to help look at drinking and recreational water and controls. In addition, similar to the process used for protozoan pathogens, there is a weekly process of nitrogen, phosphorus and phytoplankton monitoring and an algal risk forecast.

- *5.4. Corrective actions*

These are undertaken as per the WQIRP (discussed under 4.3 above).

- Element 6 – Management of Incidents and Emergencies

- *6.1. Communication protocols*

Notifications and communications in the case of an incident are undertaken as explained in the WQIRP. The Water Quality Contact list was discussed under 1.3 above.

o 6.2. *Incident and emergency response protocol*

Incidents are managed using the Water Quality Incident Response Plan (WQIRP).²³² It is noted that NSW Health prioritised an update and review of the WQIRP in the light of the transformer oil incident. WaterNSW met with NSW Health on 11 September 2017 to discuss the WQIRP. Questions were raised by NSW Health in relation to response to spills of transformer oils. The transformer oil incident occurred at sites owned by mining companies but thought to have arisen due to vandalism at decommissioned transformers. NSW Health was concerned about the speed of response and the difficulties in determining risk levels. As a result, WaterNSW added a section in the WQIRP to help better manage and respond to spills (or similar events) in the catchment and in particular where there may be significant uncertainties. The approach adopted entails notifying NSW Health and the customer (e.g. Sydney Water) early in the process. In addition, WaterNSW is looking to remove old transformers and is looking at what chemicals are stored in the catchment, including fuels, transformers, pesticides, etc. WaterNSW has sought expert assistance to inform the assessment of risks relating to such spills, albeit after dilution estimates had been made. In addition, consideration has been given to aesthetics and treatability implications of chemicals.

An updated WQIRP was shared with NSW Health for comments/feedback during the audit period.²³³ The WQIRP was fully updated and responsibilities further clarified. Whilst largely drafted by May 2017, the document was amended during both June 2017 and July 2017 in response to the finding of transformer oils leaching into the catchment. The revised document was provided to NSW Health during July 2017 seeking their feedback and *de facto* endorsement. As of the day of the site audit (25 September 2017) NSW Health had not provided final feedback but the document was discussed at the SLG with NSW Health on 22 September 2017. Comments have been received from NSW Health relating to notifications on potential events which can later turn into a water quality incident. The WQIRP has been revised to respond to those NSW Health comments and NSW Health has since confirmed that the amended document is satisfactory. The WQIRP includes the incident and emergency response plans to follow, including notifications. Staff training is undertaken on the WQIRP. Under their respective memoranda of understanding between NSW Health, WaterNSW and Sydney Water, the three agencies jointly undertake a rolling annual program of incident scenarios and exercises to test agency responses to a range of water quality and other hazards. These exercises are conducted as live scenarios or desktop reviews.

■ Element 7 – Employee Awareness and Training

o 7.1. *Employee awareness*

Changes in staffing levels and expertise and progress on awareness and training were assessed for the audit period. It was noted that during the audit period there had not been significant movements in relation to key staff that would relate to water quality management. Staff awareness relating to water quality has been maintained through the continuing use of an eLearning Module²³⁴ which forms part of the corporate induction program.

o 7.2. *Employee training*

There is no formal workforce succession planning and some key roles are filled by highly credentialed, experienced and specialised individuals that are the primary custodians of some key areas of technical expertise. Vacancies and leave periods are filled on a case-by-case basis but there is no formalised process to have multiple persons with particular expertise and experience or succession planning for such key specialists. This presents a significant risk given that many of these specialities are not widespread and the roles cannot be readily filled by simply recruiting

²³² CD2004/183[v3] Water Quality Incident Response Protocol.

²³³ Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

²³⁴ D2017/58449 Water Quality Awareness eLearning Module.

from outside of the organisation. In practice, informally, some backup is in place. For instance, some Water Quality Adviser roles have been created and two graduate positions exist in the water quality space. The weekly catchment *Cryptosporidium* risk assessment²³⁵ that has been developed has instructions on how to use it in case specific expertise isn't available to complete it. It is understood that the Water Quality Systems Officer can complete that worksheet and has done so in the past. Similarly, it is understood that there is redundancy for the completion of the algal monitoring and reporting. Nonetheless, an opportunity for improvement (**OFI-2016/17-08**) has been raised that suggests that WaterNSW could consider ways to formalise a workforce and succession planning program. The program ought to identify the critical expertise required by WaterNSW to understand and manage drinking water catchments and reservoirs for water quality outcomes. Programs of building and maintaining expertise could be implemented to help ensure that WaterNSW is not left exposed due to periods of staff leave or staff turnover.

- Element 8 – Community Involvement and Awareness

- *8.1. Community consultation*

There is a comprehensive school education program. The Warragamba Dam Visitor Centre provides an opportunity for visitors to engage with staff directly and to learn about the drinking water storages and catchments. The WaterNSW website features information on operation of the water supply system, drinking water catchments, water quality and quantity, and projects.

- *8.2. Communication*

Discussed as part of 1.3 and 6.1 earlier.

- Element 9 – Research and Development

- *9.1. Investigative studies and research monitoring*

The Science Program guides the research projects undertaken by WaterNSW. The status of the program is reviewed and updated annually, and new projects are added as considered necessary. The program is strong in several areas and in some cases leading edge. There is a good translation between the program and the operational and planning activities of WaterNSW including a requirement for business sponsors for research projects. However, the program has become weakened during the audit period with respect to understanding natural organic matter (NOM). There was one significant project being undertaken relating to NOM during the audit period but even that was, by its own admission on the relevant business case,²³⁶ only indirectly relevant to WaterNSW as it focuses primarily on treatability at the water treatment plant. There is insufficient monitoring and research relating to source tracing and mitigation of NOM (and suitable surrogates) within catchments and source waters and there is room for much improvement. NOM has become the most significant challenge to the treatment plants and is adding significant costs to treatment and risks to both treatment plant capacity and the ability of treatment plants to remove pathogens. In addition, disinfection by-product (DBP) chemicals are increasingly difficult to keep within current Australian guideline values and are likely to exceed future Australian guideline values. DBPs already routinely exceed global OECD norms for such guideline values which are often both several-fold more stringent, and cover a broader range of chemicals, than the current and very outdated (largely unchanged since 1996) Australian DBP guideline values.

For some time, it has been hoped that the elevated NOM might be just a cyclical or event-related short-term problem. However, it has become clear that whilst the elevated NOM problem has improved, it has not dissipated as fast as hoped and may remain elevated for the foreseeable future. As such, NOM should be added to the list of priority hazards that is covered under WaterNSW research, monitoring, operational optimisation and development assessment.

²³⁵ ARK reference F2016/4654.

²³⁶ D2017/90457 - ARC NOM Project proposal.

WaterNSW noted that it has undertaken some relevant work prior to the audit period and examples of that work that were provided following the audit showed that WaterNSW was heading in the correct direction previously. However, that work has not been expanded or built upon within the audit period. The current work looking at the relationship between specific NOM fractions and treatment is interesting but based on experience elsewhere it is quite likely that it is the bulk, crude NOM chemicals, particularly the more recalcitrant fractions, that are the factor limiting treatment, rather than any simple fraction. Therefore, NOM may need to be mitigated as a gross contaminant, along with other gross contaminants and that is the position that WaterNSW would be advised to adopt unless proven otherwise.

It was noted that whilst WaterNSW is undertaking leading edge programs in relation to the monitoring and management of pathogens, and is moving to meet industry benchmarks in relation to organic toxicants and many other hazards, NOM is not being given the same level of attention. Sydney Water is experiencing elevated levels of NOM that are causing great difficulties for water treatment. The impact is resulting in elevated treatment costs, reduced treated water quality and increased risks to water supply capacity. At present the NOM hazard presents the most significant residual water quality risk for the Sydney water supply system.

Some collaborative research is taking place in relation to NOM in liaison with both Sydney Water and the University of NSW which is looking at treatability. However, that research alone is too long-term, indirect and not sufficient since it is related to treatability and treatment rather than sources. There is a hypothesis that WaterNSW can await the results of this collaborative research to identify the more important NOM fractions from a treatability perspective before conducting its own research to understand the origin of those fractions within the water source. However, whilst that may turn out to be the case, it is more likely than not that the bulk NOM, rather than a small set of definable sub-fractions, will be the principal limiting factor for treatment. The situation is comparable to that with turbidity where bulk turbidity, rather than sub-fractions, presents the major cause of treatment challenge.

Ideally, for the water sources that can supply water to the affected water treatment plants, WaterNSW would urgently embark upon a systematic program of monitoring, interpretation and analysis. The purpose of the program would be to gather evidence to empirically identify the most significant contributors of bulk NOM (e.g. location, conditions and timing) to inform proactive source selection and, where practicable, source control activities. Even if control options are found to be limited, this understanding will help predict future risk assessment scenarios and direct funding to treatment rather than source management. The program is likely to be both intensive and extensive at first and gradually ramp down as diminishing information returns are realised. The program would monitor concentrations of NOM using suitable indicators and surrogates (such as colour and organic carbon) at multiple points. The program would entail sampling within reservoirs, at major inflows to reservoirs and upstream within tributaries. The program would identify temporal (e.g. seasonal), spatial (e.g. for different tributaries, sub-catchments and any potentially significant source areas) and event-related (e.g. rain events) influences on levels of NOM. This program would include both on line water sources that are in current use as well as water sources that may only be used intermittently under certain conditions. The results of the program could be used to inform source selection priorities, research and catchment operational activities, catchment management actions and communication with Sydney Water.

In summary, the work undertaken to date in respect of NOM is sufficient to meet the intent of the ADWG from a minimalist risk mitigation perspective since, whilst not being proactively mitigated in the source waters, downstream water treatment processes are being managed by Sydney Water to reduce NOM. However, significant water treatment costs are arising due to elevated NOM levels in the source water. To meet the broader 'catchment to customer' spirit of the ADWG, WaterNSW could be taking more action in the catchments and source water reservoirs to minimise the impact of NOM by understanding where the majority of the bulk NOM is originating and seeking to minimise it to the maximum practicable extent.

As an opportunity for improvement (**OFI-2016/17-09**), it is suggested that, building on its existing collaborative work in liaison with Sydney Water, WaterNSW could undertake significantly more monitoring, research and management interventions to fully understand the sources of bulk NOM within its water sources, the fate and transport of bulk NOM through its waterways and reservoirs and the way that interventions can limit its export, transport and residence time. This evidence could directly feed into the various WaterNSW modelling, development assessment and planning tools alongside nutrients, sediments and pathogens. Additional expertise in NOM may need to be recruited within WaterNSW to deliver such a wide-ranging, complex and important program.

- *9.2. Validation of processes*

The validation of processes is being undertaken by system health checks (2/month) to verify correct operation of processes and identify improvements requirements, if any.

- *9.3. Design of equipment*

There is a procurement framework and an asset change management procedure.²³⁷ This ensures that infrastructure maintains continuing reliability.

- Element 10 – Documentation and Reporting

- *10.1. Management of documentation and records*

WaterNSW operates a computerised document management system. All staff members undertake records management training and training records are maintained.

- *10.2. Reporting*

Details of the reporting requirements are present in the WQMS, including monthly, quarterly and annual reporting. This includes the IPART reporting requirements and ad hoc reporting (e.g. water quality incidents).

Actions are tracked for reporting purposes using a spreadsheet and reported to the Board. To support that reporting WaterNSW utilises a ‘report tracker’ tool to help serve to remind, coordinate and track the delivery of various reports and help make sure of on time delivery.

- Element 11 – Evaluation and Audit

- *11.1. Long-term evaluation of data*

Annual statistical evaluation is undertaken and noted in the Water Quality Monitoring Report. Trend analysis is undertaken every two years, not part of this audit period.

Drinking water quality is reported monthly to the executive and quarterly to the relevant Board sub-committee. A water quality ‘dashboard’ is used to help highlight key items for reporting. The report integrates the monitoring and reporting that takes place into a convenient summary form.

- *11.2. Audit*

WaterNSW is audited annually against the Operating Licence for water quality deliverables. The outcomes of the Operational Audit are published by IPART. Catchment audits are undertaken every three years and the outcomes are also published.

Following the audit period an internal auditing system has been set up. A centralised auditing team is being created using the Water Quality Advisers to assess the QAPs within WaterNSW. A standard template QAP audit checklist has been set up and a document audit checklist has been set up. The forward audit plan hasn’t been set up but it has been outlined. It is intended that internal staff will internally audit the QAPs and in doing that involve Local Health District

²³⁷ CD2016/57[v2] Asset Change Management Procedure

staff. The approach is one of self-regulation self-management. In addition it is intended that the Aquality system will be used to benchmark the WQMS.

▪ **Element 12 – Review and Continuous Improvement**

○ *12.1. Review*

The process for the review of the WQMS and key related documents has been clearly articulated, including the review frequency.²³⁸ Monthly management reports are provided to the executive, and monthly dashboard reports are provided to the Board.

○ *12.2. Improvement plan*

A Water Quality Improvement Plan²³⁹ is developed annually. Actions are tracked and reported in monthly, quarterly and annual reporting requirements. WaterNSW also maintains a 5-year rolling Water Quality Improvement Plan.

In summary, the WQMS addresses and is consistent with the framework prescribed by the ADWG.

A number of minor deficiencies are identified in the element-by-element discussion presented above. Opportunities for improvement (**OFI-2016/17-07 to 09**) have been identified in respect of those deficiencies, which when addressed, will improve the robustness of WaterNSW's WQMS.

Recommendations

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

Opportunities for improvement

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

Element 5 – Verification of Water Quality:

- **OFI-2016/17-07:** WaterNSW should continue to move further towards best practice (rather than routine) monitoring methods for protozoan parasites in source waters. Such methods would capture large volumes (hundreds to thousands of litres) per sample (as Sydney Water has started to do in raw water samples) and gather more event-based samples (as WaterNSW has begun undertaking, but collecting from additional sample points further upstream and using more sensitive methods with larger volumes. This move would significantly increase the statistical power, credibility and value of the WaterNSW protozoan parasite monitoring program. It is acknowledged that such a task is not simple and that the assessment of viability and infectivity already occurs. It is noted that the more specialised water laboratories, such as the Sydney Water laboratories locally, and SA Water laboratories, have set up such methods and strategies. Furthermore, other more generic service providers might be able to offer such monitoring if requested and supported in setting them up.

Element 7 – Employee Awareness and Training:

- **OFI-2016/17-08:** WaterNSW could consider ways to formalise a workforce and succession planning program. The program ought to identify the critical expertise required by WaterNSW to understand and manage drinking water catchments and reservoirs for water quality outcomes. Programs of building and maintaining expertise could be implemented to help ensure that WaterNSW is not left exposed due to periods of staff leave or staff turnover.

Element 9 – Research and Development:


- **OFI-2016/17-09:** Building on its existing collaborative work in liaison with Sydney Water, WaterNSW could undertake significantly more monitoring, research and management interventions to fully understand the sources of bulk NOM within its water sources, the fate and transport of bulk NOM through its waterways and reservoirs and the way that interventions can limit its export,

²³⁸ D2017/50060 WQMS Annual Review and Continuous Improvement Cycle.

²³⁹ D2017/87631 Water Quality Improvement Plan (including status of actions and close out).

transport and residence time. This evidence could directly feed into the various WaterNSW modelling, development assessment and planning tools alongside nutrients, sediments and pathogens. Additional expertise in NOM may need to be recruited within WaterNSW to deliver such a wide-ranging, complex and important program.

Table B.1.2 Water Quality Management System (Sub-clause 2.1.2)

Sub-clause	Requirement	Compliance Grade
2.1.2	Water NSW 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.	 High Compliance

Risk

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

Target for Full Compliance

Evidence 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.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Water Quality Management System 2017.
- Water quality policy.
- Stakeholder engagement minutes.
- Annual Water Quality Monitoring Report 2015-16 – Appendices.
- NOCTSO – Lake Nepean Screen and Outlet Change May 2017.
- NOCTSO – Lake Nepean Outlet Change March 2017.
- SCARMS Screenshot Showing Outlet Change in Lake Nepean March 2017 Following Inflow Event.
- Screenshot – WaterNSW Intranet Documents.
- ARK Notification Email - Overdue for Action
- Instrument Calibration Nepean River at Penrith Weir Feb 2017.
- Inspection Report Kowmung River at Cedar Ford Feb 2017.
- Instrument Calibration Kowmung River at Cedar Ford Feb 2017.
- Scanned Training Attendance Lists – Incident Management March 2017.
- Water Quality Awareness eLearning Module.
- Visitor Figures for 2016/17 Financial Year.
- Water Quality Improvement Plan (including status of actions and close out).

Summary of reasons for grade

High compliance has been awarded for this sub-clause. It was assessed that most items/elements that were documented in the WQMS were largely being implemented, including monitoring, incident management, communication and catchment management. The main shortfall noted relates to Element 3 of the ADWG, to ensure that a multiple barrier approach remains in place when implementing that WQMS in the field, with the compressed air diffuser/mixer not working at Nepean Reservoir.

Discussion and notes

Implementation was sampled across the twelve Elements through relevant examples as discussed in the following:

- Element 1 – Commitment to Water Quality Management
 - Water quality policy – the policy document was sighted by the auditors.²⁴⁰
 - Contacts List - the currency of stakeholder contact details (e.g. for incident and emergency contacts, councils, customers) and any changes to those during the audit period was assessed. The contact details continue to be maintained as a list in ARK (TRIM). The list was sighted in ARK and noted as being current. The most recent version was based on the former SCA list and covers Sydney Water and the rest of WaterNSW. The document forms part of the WQMS. The major change during the audit period was the move of WaterNSW office from Penrith to Parramatta. The phone contacts for WaterNSW staff in the contact list were up to date to reflect the current situation.
 - Stakeholder engagement – minutes of meetings²⁴¹ with key stakeholders, SLG and JOG were sighted as evidence.
- Element 2 – Assessment of the Water Supply System
 - Assessment of water quality data – statistical analysis of data was undertaken and presented in the Appendix of the Annual Water Quality Monitoring Report.²⁴²
- Element 3 – Preventive Measures for Drinking Water Quality Management
 - Preventive measures – source selection is one of the key preventive measures. Examples of actions undertaken to change the selection depth were provided to the auditors.²⁴³ However, some concerns were identified in relation to the implementation of destratification preventive measures, as follows.

Aerators and destratifiers are used as preventive measures to achieve destratification and dissolved oxygen penetration within reservoirs to help keep lakes mixed to help reduce risks from cyanobacteria and encourage reservoir turnover to reduce risks from water quality impacts due to Fe and Mn hazards. Silt curtains have been trialled in Wingecarribee Reservoir but these were not found to be effective. These assets were said to be working in most cases during the audit period. However, it was noted that the compressed air diffuser/mixer was not working at Nepean Reservoir. WaterNSW has explicitly identified “artificial destratification” as being a preventive measure as part of their multiple barrier drinking water supply system.²⁴⁴ At Nepean Reservoir, the destratification involves an aerator pumping compressed air into the deepest part of the dam and entails two pipes of approximately 300 and 600 metre length through which air is fed. However, the pipes have become damaged for reasons probably relating to failed anchoring and twisting. As a result, the aerator was underperforming and showing signs of failure since July 2016, wasn’t considered effective since October 2016, and was no longer in use after November 2016. The repair and restoration of the aerator would require divers to conduct a detailed assessment of what has occurred as well as a bespoke engineered solution. Whilst it is acknowledged that such a task would be complex and costly, there were concerns raised during

²⁴⁰ CD2014_5[v4] Water quality policy.

²⁴¹ D2017/82026 Minutes Health SLG meeting 17 March 2017, D2017/70753 Final Minutes Health JOG meeting 29 May 2017, D2016/115930 Minutes EPA SLG Meeting 17 October 2016, D2017/68235 Minutes Meeting with Shoalhaven Council 31 May 2017, D2017/60923 Minutes Meeting with Wingecarribee Shire Council 3 May 2017, D2017/101820 Minutes and Actions SMWG Meeting with Sydney Water 7 Feb 2017.

²⁴² D2016/109218 Annual Water Quality Monitoring Report 2015-16 – Appendices.

²⁴³ D2017/63116 Example NOCTSO – Lake Nepean Screen and Outlet Change May 2017, D2017/35612 Example NOCTSO – Lake Nepean Outlet Change March 2017, D2017/101994 SCARMS Screenshot Showing Outlet Change in Lake Nepean March 2017 Following Inflow Event.

²⁴⁴ CD2013_56[v4] Water Quality Management Framework 12-17.

the audit that this hadn't been a high enough priority to this point given that another summer season is approaching, that the water quality in the reservoir is hard to treat, and that there is no proposed solution yet in place.

The immediate question arising relates to looking at urgent solutions, either replacement or an alternative system. More broadly this incident raises the question of what plans and contingencies WaterNSW has to resolve possible future outages of reservoir mixing and aeration systems at other dams to avoid a similar future scenario. In relation to the Nepean Reservoir aerator, over a year since problems were first reported, this asset has not been repaired nor was there any standby asset or rapid replacement plan in place to prepare for such an eventuality. As of the day of the audit no replacement asset had been ordered nor an installation plan prepared. This finding was considered to represent a non-compliance in that an important operational asset that serves as a formally identified preventive measure within the WQMS to help reduce significant risks from important water quality hazards had failed and not urgently replaced. In general, failure to properly manage preventive measures is a non-compliance with a DWQMS. By way of comparison, if a treated water reservoir roof, or a water filtration or disinfection system, were not properly operated or maintained and the preventive measure were allowed to be in failure mode for over a year, this would not be considered compliant. In this case, the failed preventive measure (aerator) has neither been replaced in over 12 months nor was there any standby replacement asset or any replacement plan as a contingency to allow for the reasonably foreseeable case that this preventive measure might fail. As a recommendation (**REC-2016/17-02**) WaterNSW should repair or replace the failed Nepean Reservoir mixer as a matter of priority; undertake a risk assessment to determine appropriate strategies/controls to address any current reliability concerns or potential future failure of all such mixer/aerator assets within its portfolio; and implement such strategies/controls.

- Catchment management – this has been discussed in detail in Table B.3.1, with the auditors noting that actions have been successfully implemented to enhance and protect water quality in catchment areas.
- CCPs – the SCADA system was sighted during the audit and the limits set for monitoring and alerts matched the relevant procedures. As part of security management, SCADA access is controlled. During the audit 15 minute average results from data polled at various intervals, (e.g. 1 minute or up to hourly) was shown. A sample was audited from December 2016 which showed conductivity data for Nepean Reservoir during which a power loss was indicated via a quality code changing from '5' to '162' (e.g. from 6 December 2016). Live set points were sampled for the Warragamba Pipeline #2 and Nepean Reservoir raw water alarm triggers and set points which were shown to be set at 7, 10, 15 and 20 NTU. There is a process for the formalisation of the alarm limits that involves Sydney Water.
- Element 4 – Operational Procedures and Process Control
 - Operational procedures – operational procedures are stored in ARK/TRIM; the auditors were provided with the intranet page (screenshot),²⁴⁵ which can be used to access the procedures.
 - Operational monitoring - In comments provided to IPART in respect of WaterNSW's performance during the audit period, NSW Health identified a number of concerns, some of which had been effectively addressed. From a water quality perspective, these concerns included:

“... failure of the biological monitor (fish) at Broughtons Pass in September 2016. This provided an opportunity to review the protocols for this monitoring system, including the collection of water samples during events.”

This issue was not specifically assessed as part of the audit since it was considered that the use of live fish to monitor raw water quality was a best practice analytical tool that is still more in the

²⁴⁵ D2017/101890 Screenshot – WaterNSW Intranet Documents.

research realm rather than a monitoring approach routinely expected to be present under the intent of the ADWG. There are very few drinking water supplies that use such monitoring, notwithstanding the great potential for such monitoring to detect contamination and add value. WaterNSW is encouraged to continue with this monitoring but was not considered to be failing to comply with the ADWG due to the temporary failure of the unit during 2016. Adopting leading-edge monitoring approaches to water quality monitoring, but then having some difficulties with those approaches, is reason to seek to restore that monitoring but does not constitute a non-compliance with the ADWG.

- Equipment calibration – examples of instrument calibration undertaken were provided to the auditors.²⁴⁶
 - Element 5 – Verification of Water Quality
 - Monitoring – the annual testing at Nepean WFP raw water (HNED) for gross alpha, gross beta, silver and iodide was checked as a sample.²⁴⁷ These were tested as per the Water Quality Monitoring Program. Evidence of the conduct of water quality verification monitoring results was assessed from the audit period along with the reporting and actioning of those results, both routine and by exception. The live database was viewed during the audit, showing water quality results from the present and audit period.
 - Short-term evaluation of results – an exceedance database triggers Sydney Water West Ryde and ALS laboratories to alert WaterNSW staff if defined thresholds are exceeded. The Water Quality Database was sighted during the audit. Examples were provided of exception reports for May 2017 to September 2017. These are issued midday every day.
 - Element 7 – Employee Awareness and Training
 - Staff training – evidence was sought of incident management practices or simulations undertaken during the audit period. Staff undertook incident management training during the audit period,²⁴⁸ as well as managing some actual incidents. WaterNSW held a mock incident during September 2016 and an inter-agency exercise was held during April 2017 to test the algal incident response system. The ‘Tickit’ system is the internal notification system and in addition WaterNSW is using Sydney Water’s Incident Response and Learning (SWIRL) system to help with reporting. The incidents that occurred were logged into ‘Tickit’, which was shown on screen during the audit. Examples were seen from 15 August 2017 and 8 January 2017 for cyanobacteria incidents in the Wingecarribee Reservoir.
 - Awareness – staff awareness relating to water quality has been maintained through the continuing use of an eLearning Module²⁴⁹ which forms part of the corporate induction program.
 - Element 8 – Community Involvement and Awareness
 - Community consultation – WaterNSW maintained its visitor education program over the audit period. The visitor information was provided to the auditors.²⁵⁰
 - Element 10 – Documentation and Reporting
 - Management of documentation and records – the currency and availability of documentation and records during the audit period was assessed during the audit. WaterNSW was readily able to rapidly retrieve documentation from its Parramatta head office using its Archives of Records and Knowledge (ARK) TRIM document and records management systems. The documents in
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²⁴⁶ D2017/100109 Instrument Calibration Nepean River @Penrith Weir Feb 2017, D2017/100110 Inspection Report Kowmung River @Cedar Ford Feb 2017, D2017/100111 Instrument Calibration Kowmung River @Cedar Ford Feb 2017.

²⁴⁷ D2016/109218 Annual Water Quality Monitoring Report 2015-16 – Appendices.

²⁴⁸ D2017/99241 Scanned Training Attendance Lists – Incident Management March 2017.

²⁴⁹ D2017/58449 Water Quality Awareness eLearning Module.

²⁵⁰ D2017/91184 VC Visitor Figures for 2016/17 Financial Year.

ARK have a trigger date which has a reminder function both for programmed reporting and for other document review processes. Key document links (e.g. policies, frameworks and procedures) are maintained on the WaterNSW intranet site and these were illustrated during the audit and on a screen grab²⁵¹ provided to the auditors. To keep documents under review and up to date, review triggers are sent to the document owner through an automated email notification from ARK.²⁵²

- Element 12 – Review and Continuous Improvement
 - Improvement plan – the Water Quality Improvement Plan²⁵³ was provided, and included the action, responsibility and timeframe.

In summary, most items/elements that were documented in the WQMS were largely being implemented, including monitoring, incident management, communication and catchment management. The main shortfall noted relates to Element 3 of the ADWG, to ensure that a multiple barrier approach remains in place when implementing that WQMS in the field, with the compressed air diffuser/mixer not working at Nepean Reservoir.

Recommendations

The following recommendation is made in respect of this sub-clause:

- **REC-2016/17-02:** WaterNSW should:
 - repair or replace the failed Nepean Reservoir mixer as a matter of priority;
 - undertake a risk assessment to determine appropriate strategies/controls to address any current reliability concerns or potential future failure of all such mixer/aerator assets within its portfolio; and
 - implement such strategies/controls.

Repair/replacement of the Nepean Reservoir mixer by 30 June 2018 would ensure availability for the 2018/19 summer (repair/replacement prior to the 2017/18 summer would be ideal but is considered potentially impractical). Strategies for ensuring continuing functionality of all mixer/aerator assets should then be developed by 30 June 2018 and implemented by 31 December 2018.

Opportunities for improvement

There are no opportunities for improvement in respect of this sub-clause.

²⁵¹ D2017/101890 Screenshot – WaterNSW Intranet Documents.

²⁵² D2017_120066 ARK Notification Action Overdue For Action.

²⁵³ D2017/87631 Water Quality Improvement Plan (including status of actions and close out).

**Table B.1.3 Recommendation 2014/15-01
(Water Quality Management System - Sub-clause 2.1.1)**

Reference	Requirement	Compliance Grade
2014/15-01	WaterNSW should develop and maintain a Water Quality Management System (WQMS) that documents a consistent approach to managing risks, protecting water quality, and public health, across the range of WaterNSW's functions under the Sydney Catchment Authority licence (by 30 September 2016). The WQMS should be consistent with the requirements of the Australian Drinking Water Guidelines 2011.	Addressed

Risk

Without a comprehensive water quality management system, there is a high risk that WaterNSW may not be able to effectively manage risks to water quality and protect public health.

Target for Full Compliance

Evidence that a Management System is established, maintained and kept up to date, and that it is consistent with the ADWG.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Water Quality Management System 2017.
- Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

Summary of reasons for grade

This recommendation has been adequately addressed, although it was not completed until July 2017. The updated WQMS documents a consistent approach to managing water quality risks. The WQMS is consistent with the requirements of the ADWG 2011 and is structured around the 12 Elements of the Framework for Management of Water Quality. It is noted that the WQMS is a 'living' document which needs to be used and kept up to date.

Discussion and notes

WaterNSW has comprehensively updated the WQMS²⁵⁴ document to provide a structured and systematic approach to managing water quality, consistent with the requirements of the ADWG. The structure and approach is clearly and sufficiently documented in the WQMS.

A fully detailed assessment of the adequacy of the WQMS and its implementation is presented in Table B.1.1 and Table B.1.2.

WaterNSW submitted the updated WQMS to NSW Health for review in an email dated 21 July 2017,²⁵⁵ which indicated that WaterNSW had refined the WQMS as recommended in the 2015/16 Operational Audit Report, as follows:

“The rebadged Water Quality Management System (WQMS) is also attached for your comments. The WQMS has been refined as recommended in the 2015-16 Operating Licence Audit. The format has been converted from the former narrative text to a manual, with a separate page for each element of the Australian Drinking Water Guidelines

²⁵⁴ CD2013_56[v4] Water Quality Management Framework 12-17.

²⁵⁵ Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

Framework, focussing on what WaterNSW does to meet the requirements of each element.

The revised WQMS includes an expanded definition of its scope to clarify how the system applies to the different categories of water supplied by WaterNSW, as specified under the new Operating Licence.

Other changes to the revised WQMS include integration of rural and metropolitan systems and comprehensive referencing of related documents and review processes with responsibilities assigned.”

Submission of the revised WQMS to NSW Health on 21 July 2017 (i.e. once the update had been completed) indicates that the recommendation was not fully addressed until after the target date of 30 September 2016.

Recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

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

**Table B.1.4 Recommendation 2015/16-01
 (Water Quality Management System - Sub-clause 2.1.1)**

Reference	Requirement	Compliance Grade
2015/16-01	<p>WaterNSW should improve its processes for reviewing its Water Quality Management System (WQMS), as set out in the Australian Drinking Water Guidelines (ADWG). WaterNSW could achieve this by implementing the following:</p> <ul style="list-style-type: none"> WaterNSW should undertake, at a minimum, annual reviews of the WQMS to check that it accurately reflects WaterNSW's current operations and operational environment, including any changes that may occur to these and any outcomes/lessons learnt. (The first review should be completed by 30 June 2017). WaterNSW should document its review processes in the WQMS specifying the processes to be undertaken and the review frequencies. (This should be completed by 30 June 2017). 	Addressed

Risk	Target for Full Compliance
In the absence of a robust ongoing review process, there is a high risk that the WQMS may not remain relevant to the effective management of risks to water quality and the protection of public health.	Evidence that WaterNSW has documented its WQMS review process, that the process includes, at minimum, annual reviews and that an initial review has been undertaken within the nominated timeline.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Water Quality Management System 2017.
- Water Quality Management System Annual Review and Continual Improvement Cycle.
- Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

Summary of reasons for grade

This recommendation has been adequately addressed. The auditors noted that the review has been undertaken and the WQMS updated to clearly document the review components and annual review process. Undertaking reviews as stated in the updated WQMS will be a routine task for WaterNSW, and implementation of this will be checked as part of the regular Operating Licence audits.

Discussion and notes

WaterNSW has clearly stipulated the review frequencies associated with the various components of the WQMS and the process for the annual review of the WQMS.²⁵⁶ The review of the WQMS has also been undertaken to produce the updated WQMS.

²⁵⁶ D2017/50060 Water Quality Management System Annual Review and Continual Improvement Cycle.

In addition, the updated WQMS and the revised Water Quality Incident Response Protocol have been shared with NSW Health for comments/feedback.²⁵⁷ Comments have been received from NSW Health and considered in updating the Incident Response Protocol, which is a core component of the WQMS. NSW Health can provide feedback on the updated WQMS if they wish to do so, at the discretion of the department.

Recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

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

²⁵⁷ Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

**Table B.1.5 Recommendation 2014/15-02
(Water Quality Management System - Sub-clause 2.1.1)**

Reference	Requirement	Compliance Grade
2015/16-02	WaterNSW should undertake, at a minimum, two yearly comprehensive reviews of the WQMS to check that it is fully consistent with each element of the ADWG. (The first review [the Water Quality Management System Review Project] should be completed by 30 June 2018.)	Addressed

Risk

In the absence of a robust ongoing review process, there is a high risk that the WQMS may not remain relevant to the effective management of risks to water quality and the protection of public health.

Target for Full Compliance

Evidence that WaterNSW has undertaken an initial comprehensive review of the WQMS within the nominated timeline.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Water Quality Management System 2017.
- Water Quality Management System Annual Review and Continual Improvement Cycle.
- Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

Summary of reasons for grade

This recommendation has been adequately addressed. A review of the WQMS has been undertaken to produce the updated WQMS. The WQMS is consistent with the requirements of the ADWG 2011 and is structured around the 12 Elements of the Framework for Management of Water Quality.

Ongoing review frequencies associated with the various components of the WQMS, and the process for the annual review of the WQMS, have also been documented.

Discussion and notes

WaterNSW has undertaken a review of the WQMS and has produced an updated WQMS. The WQMS is structured around the 12 Elements of the Framework for Management of Water Quality of the ADWG. Ongoing review frequencies associated with the various components of the WQMS, and the process for the annual review of the WQMS, have also been documented by WaterNSW (the *Annual Review and Continual Improvement Cycle*).²⁵⁸

Following completion of the review, the updated WQMS and the revised Water Quality Incident Response Protocol were shared with NSW Health for comments/feedback on 21 July 2017.²⁵⁹ Comments have been received from NSW Health and incorporated into the Incident Response Protocol, which is a core component of the WQMS. NSW Health can provide feedback on the updated WQMS if they wish to do so, at the discretion of the department. Undertaking reviews as stated in the updated WQMS will be a routine task for WaterNSW, and implementation of this will be checked as part of the regular Operating Licence audits.

²⁵⁸ D2017/50060 Water Quality Management System Annual Review and Continual Improvement Cycle.

²⁵⁹ Email dated 21 July 2017 from WaterNSW to NSW Health (re: *WaterNSW Water Quality Management System and Water Quality Incident Response Protocol*).

Whilst this recommendation refers to ongoing reviews, a sufficiently comprehensive first review has been completed (refer also to Table B.1.3), and sufficient processes (the *Annual Review and Continual Improvement Cycle*) have been put in place to ensure that future reviews will continue to be undertaken. On that basis, this recommendation is now considered to have been addressed.

Recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

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

B.2 Section 3 – Water Supply Sufficiency

Table B.2.1 Catchment Infrastructure management (Sub-clause 3.1.1)

Sub-clause	Requirement	Compliance Grade
3.1.1	Water NSW must ensure that the Catchment Infrastructure is operated and managed consistent with the Design Criteria.	Full Compliance

Risk	Target for Full Compliance
This requirement represents a high operational risk. Operation and management of the Catchment Infrastructure in accordance with the Design Criteria is essential to ensuring the continuity of water supply.	Demonstration that the Catchment Infrastructure was operated and managed consistent with the Design Criteria during the audit period.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- MS Excel Workbook: *MASTER SCHEDULE 310517* (Reference: D2017/68049).
- Sample flow release/configuration schedules for the Upper Nepean/Shoalhaven, Tallowa and Blue Mountains systems, as referenced.
- Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016.

Summary of reasons for grade

WaterNSW demonstrated that it had continued to operate and manage the Catchment Infrastructure consistent with the Design Criteria during the audit period. Furthermore, it demonstrated that it implements a set of Operating Rules to guide its approach.

There remains an opportunity to optimise system operation on the basis of total cost of water supplied to the consumer (i.e. taking into account both system yield/water security and the cost of treatment). Notwithstanding, WaterNSW is assessed as having demonstrated full compliance with this obligation.

Discussion and notes

The Design Criteria as at the Commencement Date of the current *Operating Licence* are defined therein,²⁶⁰ as follows:

- *Security level of service - WaterNSW'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 is understood that there has been no change to the Design Criteria since the Commencement Date.

WaterNSW advised that:²⁶¹

²⁶⁰ *WaterNSW (Sydney Catchment Authority) Operating Licence 2012-2017*, clause 12.1, page 20.

²⁶¹ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 23.

“WaterNSW has continued to manage the Water Supply System in accordance with the Design Criteria through the application of operating rules developed by the WATHNET system model. The operating rules, in the form of a system nomograph, as implemented in the Master Schedule planning tool, are used to guide our decision making around source selection in addition to considering water quality constraints, availability of assets and drought triggers as detailed in the Water Sharing Plan. Flow schedules are developed up to 12 months in advance to provide information on storage balancing and outline the current drivers governing system configuration. The schedules are reviewed on at least a weekly basis to take into account any changes resulting from inflows, water quality or asset availability.”

As noted, WaterNSW generally operates in accordance with a set of Operating Rules, which have been developed using the WATHNET model. These Operating Rules can be summarised as:

- maintain equal supply security across all zones;
- maintain environmental flows; and
- avoid spills.

In simple terms, the aim is to keep all storages in balance whilst taking account of the likelihood of spills.

As also noted, WaterNSW implements the Operating Rules using:

- a System Nomograph (MS Excel spreadsheet)²⁶² – this is the principal tool used for operational management of the system. It includes a chart for each water supply dam, showing capacity (%) and volume available for the full range of water levels for each dam from full to empty; constraints on various supply modes are also shown.
- a Master Schedule (MS Excel spreadsheet) – this tool is used to model the system over the short term (12 months). Used in conjunction with the *Metro Area Major Outage Program*²⁶³ and other relevant inputs, it allows the impact of various source selection options on storage balances to be assessed, thereby providing planning to ensure that supply security is optimised across all storages and the likelihood of spills is minimised.
- the WATHNET model – this model, which simulates system operation and yield over 2,000 one hundred year scenario sequences, is used to assess true long term system performance against the Design Criteria.

WaterNSW provided a copy of the *Master Schedule*²⁶⁴ and demonstrated its use. It also explained the role of the Master Schedule and its reliance on information presented in the System Nomograph.

The *Master Schedule* is a medium term planning tool, used to plan over a twelve month period, whilst also aiming for a 5-year planning horizon. Planned maintenance is factored into the schedule as flows and volumes can/will be affected by the asset availability. Similarly, any reactive maintenance work triggers a review of the schedule; a review is also required following every rainfall event.

Examples of some of the controls taken into account include:

- The trigger point for operation of the desalination plant, which has changed in the current Metropolitan Water Plan.
- There are no triggers for transfers from the Shoalhaven system; operating costs are passed through directly to Sydney Water to drive water conservation.
- If Nepean Reservoir level drops to 70%, supply to Sydney from this source ceases (to ensure availability of water to supply Wollongong).
- If a reservoir is spilling, there is a requirement to select water from that storage. This eliminates the ability to select source water on the basis of water quality.

²⁶² The System Nomograph (WaterNSW, *System Nomograph June 2015 (Document No: D2015/75957)* (MS Excel Spreadsheet)) has been reviewed by the auditors during previous audits, including the 2014/15 Operational Audit.

²⁶³ A sample of the *Metro Area Major Outage Program* has previously been sighted by the auditor (refer Cobbitty Consulting/Viridis Consultants, *2014/15 Operational Audit of WaterNSW; Final Audit Report (Version 4.1)*, March 2016, table B.2.1).

²⁶⁴ MS Excel Workbook: *MASTER SCHEDULE 310517* (Reference: D2017/68049).

Water quality is taken into account when selecting water source(s) for supply; however, operation of the system to maximise yield (whilst maintaining a balance of supply security across the system) is the primary objective. It is noted that the WATHNET model used to optimise system operation is a volume based model only; it is not cognisant of water quality.

WaterNSW explained that as part of the optimisation process, each layer within each lake (reservoir) is assigned a relative 'cost'; however, this 'cost' relates to volume only. It further explained that it has been unable to obtain information regarding water treatment costs from Sydney Water (due to commercial-in-confidence arrangements with its treatment plant operators). The availability of such cost information would enable water quality implications to be taken into account, and for system optimisation to be undertaken on the basis of total cost to the consumer.

As an opportunity for improvement (**OFI-2016/17-10**), it is suggested that in the absence of actual water treatment cost information, WaterNSW may be able to identify/obtain indicative (or surrogate) cost information that could be used to optimise system operation on the basis of total cost of water supplied to the consumer.

It was noted by WaterNSW that closer collaboration with Sydney Water is taking place. Under the recently implemented Change Management Procedure, all configuration changes are notified to Sydney Water.

WaterNSW provided a sample flow release/configuration schedules, including:

- Upper Nepean/Shoalhaven:
 - Upper Nepean & Shoalhaven Configuration Schedule - Tuesday 4 April 2017 (Reference: D2017/43614); and
 - Upper Nepean & Shoalhaven Configuration Schedule UPDATE - Wednesday 17 May 2017 (reference: D2017/62861).
- Tallowa:
 - Tallowa Release Schedule 29 November 2016 (Reference: D2016/136160); and
 - Tallowa Release Schedule 11 April 2017 (Reference: D2017/46873).
- Blue Mountains:
 - Blue Mountains Schedule 25 January 2017 (Reference: D2017/11669); and
 - Blue Mountains Schedule 15 March 2017 (Reference: D2017/33839).

These schedules typically covered a forward period of two weeks. In the case of the Upper Nepean /Shoalhaven notifications, detailed commentary was provided in the issuing email.

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-10:** It is suggested that in the absence of actual water treatment cost information, WaterNSW may be able to identify/obtain indicative (or surrogate) cost information that could be used to optimise system operation on the basis of total cost of water supplied to the consumer.

B.3 Section 4 – Catchment

Table B.3.1 Catchment management (Sub-clause 4.1.1)

Sub-clause	Requirement	Compliance Grade
4.1.1	SCA must manage and protect the Catchment Area consistent with its objectives and functions under the Act.	Full Compliance

Risk	Target for Full Compliance
Ineffective management of catchment areas impacts the first barrier for water quality protection and therefore represents a high risk to water quality, public health and the environment.	Evidence that WaterNSW has managed and protected catchment areas consistent with its objectives and functions under the Act.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- Site inspection of Nepean System on 26 September 2017.
- Water Quality Policy.
- Source Water Protection Framework 2016-2020.
- NorBE User Guides for Councils and Consultants.
- NorBE Assessment Guideline - for release with NorBE Tool Upgrade.
- NorBE Training for Councils (post-go live; WaterNSW) - updated June 2017 - NorBE Training Presentation.
- WaterNSW Concurrence and Referral Report July 2016 - June 2017.
- Concurrence Environmental Assessment Manual.
- SORAC meeting minutes.
- Catchment Protection Work Program 2016-2017.
- Draft Annual Catchment Management Report – Sydney’s Declared Catchments.
- Water Monitoring Program.
- Annual Water Quality Monitoring Report 2015-16 – Appendices.
- Assessing pasture health on properties a grazing incentive program - impact of grazing program on improved verses unimproved properties.
- Lithgow and Braidwood STP Upgrades.
- Kangaroo Valley and Robertson onsite sewage evaluation study. Report 4: post sewer assessment.
- Riparian Management Assistance Program – Grants Evaluation and Monitoring.
- Project Report - Final Draft Wingecarribee Sewer Refurbishment.
- Land Use Change 2012-2016 (summary of changes).
- Annual Fire Management Planning.

-
- Corporate Incident Management Framework.
 - WaterNSW Bushfire Operational Protocol 2016-18.
 - Water Quality Incident Response Protocol.
 - Notification of Oil Drained from 6.6kv/415v Transformer at Wongawilli Colliery No.3 Shaft
 - Draft Incident Debrief for incidents.
 - Tickit notification - Cataract catchment transformer oil spill incident.
 - Example SWIRL notification: Water Quality Incident INC-15607, WQ-508 Cataract Catchment Oil Spill 4 April 2017.
-

Summary of reasons for grade

Full compliance has been awarded for this sub-clause. WaterNSW has demonstrated that it implements activities to manage and protect the catchment area consistent with its relevant objectives and functions under the Act.

Overall, WaterNSW demonstrated during the audit that it was aware of development pressure in the catchments, was controlling those pressures, and did not have indications from water quality monitoring of significant reductions in yielded water quality (albeit noting that the audit period was drier than average). There was no evidence of any net degradation, complacency or deterioration with respect to catchment management and protection activities.

Discussion and notes

The objectives and functions under the *Water NSW Act 2014* relevant to catchment management and protection include:

- *Objective:* to ensure that declared catchment areas and water management works in such areas are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment.
- *Functions:* to protect and enhance the quality and quantity of water in declared catchment areas; to manage and protect declared catchment areas and water management works vested in or under the control of WaterNSW that are used within or for the purposes of such areas; to undertake research on catchments generally, and in particular on the health of declared catchment areas; and to undertake an educative role within the community.

In order to fulfil the objectives and functions mentioned above, WaterNSW requires effective catchment management strategies, which should include the following (based on ADWG 2011):

- Policies and/or strategies

The Water Quality Policy and Source Water Protection Framework²⁶⁵ outline the objectives and strategies for managing and protecting the declared catchments.

- Land use controls

Broadly, evidence from catchment indicators are reviewed and trended every four years. The land use has generally not changed significantly to warrant any additional/growing threat to source water quality.

WaterNSW works closely with other stakeholders (e.g. Department of Planning and Environment) to ensure development is controlled, including avoiding intensification of existing land uses. This includes working with those that play a role in relation to both point and diffuse source pollution sources.

²⁶⁵ D2016/69118 Source Water Protection Framework 2016-2020.

The point source polluters include, for example, mines, (where WaterNSW works closely with the Department of Planning and Environment and the Division of Resources and Geosciences to control activities), and sewage treatment plants (where WaterNSW works with EPA as the licensing organisation and councils to ensure the sewage treatment plants function well and infrastructure is maintained).

For diffuse polluters, WaterNSW works with stakeholders to undertake riparian vegetation and fencing. This includes grants which require the participant to co-fund part of the project and to ensure ongoing maintenance of the infrastructure (e.g. fences must be maintained for 10 years following installation). As part of this program, spot audits are undertaken for approximately 10% of the work annually to ensure compliance/sustainability of these works.

As part of new initiatives, WaterNSW is looking at promoting recycling of wastewater and stormwater as part of an overall integrated water cycle management approach to improve water quality management in the catchments.

Legal powers can be used for actual and potential pollution. Some actions have been undertaken for direct polluters, however, no action or the like has been exercised for diffuse polluters. WaterNSW tries to work with them (e.g. farmers to promote best practice) rather than taking legal action.

- Criteria for development applications

As part of the audit, planning-level preventive measures were assessed with respect to development assessment and control to ensure protection of catchments and water quality. New developments that had been proposed during the audit period, and their assessment by WaterNSW, were discussed. It was very encouraging to see WaterNSW maintaining the test that new developments must present a neutral or beneficial effect (NorBE) on water quality.²⁶⁶ The firm and credible application of this industry benchmark NorBE test is critical to prevent the otherwise inevitable degradation of the catchments and, in turn, an increase in risks to water quality. Over time the step-wise degradation of catchments and water quality that would arise from a failure to consistently, comprehensively and adequately apply this NorBE test would lead to major increases in water quality incidents and water treatment costs following a period of significantly increased water quality risk and catchment degradation. WaterNSW provided examples of where it had been prepared to support the application NorBE test in courts, and won those cases, which provides important evidence of WaterNSW's commitment to maintaining this benchmark planning assessment tool. WaterNSW is commended for its continuing use and defence of the NorBE test and is encouraged to continue consistently and strongly applying the test into the long-term future.

WaterNSW ensures that *“Third party activities are undertaken in accordance with Environmental Assessment Procedures”* and *“Undertake Environmental Operational Audits of third party activities on WaterNSW sites to ensure compliance with environmental approvals and procedures”*. WaterNSW does this by observing, reporting and proactively influencing the relevant third parties and not by direct regulation. Examples include assessing and influencing access to National Park areas via National Parks and Wildlife Service and proactively influencing activities relating to mining and development via the Department of Planning and Environment; Division of Resources and Geosciences; and local councils. WaterNSW actively compares development assessments to the required set of principles applying in the catchments. During 2016-17 WaterNSW followed up four sites that had identified non-conformances. These findings are reported on the WaterNSW internet which helps provide transparency as well as show that WaterNSW is not a ‘toothless tiger’ when it comes to defending the catchment from degradation.

WaterNSW provided concurrence advice to Councils for Development Approvals (DAs) in 2016/17.²⁶⁷ WaterNSW uses the procedures documented in the Environmental Assessment Manual²⁶⁸ to assess DAs.

²⁶⁶ D2014/47432 NorBE User Guide for Councils 2014, D2014/47435 NorBE User Guide for Consultants, D2014/67758 NorBE Assessment Guideline - for release with NorBE Tool Upgrade, D2015/40934 NorBE Training for Councils (post-go live; WaterNSW) - updated June 2017 - NorBE Training Presentation.

²⁶⁷ D2016/75064 Water NSW Concurrence and Referral Report July 2016 - June 2017.

▪ Responsibility of agencies

The catchment management roles of the various relevant agencies are articulated in respective Acts and statutory roles and responsibilities. As an example, WaterNSW consults with DPE, Department of Premier and Cabinet, DRG, EPA, OEH, the Federal Department of the Environment, and DPI Water as part of the Senior Officers' Resource Assessment Committee (SORAC) convened by DPE. SORAC is also a Government coordination body. Minutes from SORAC meetings during the audit period were sighted by the auditors.²⁶⁹

▪ Water quality risks and planning of management strategies

The C2T risk assessment is used to identify priority pollutants. The PSAT model is re-run every four years, with the most recent PSAT report guiding the development of the Source Water Protection Framework 2016-20.²⁷⁰

WaterNSW annually prepares a Catchment Protection Work Program²⁷¹ that identifies the actions it will take during the financial year to reduce risks to water quality. The progress is reported through the Annual Catchment Management Report. The draft annual report²⁷² for the audit period was sighted by the auditors.

▪ Monitoring program to identify pollution sources

WaterNSW implements a Water Monitoring Program²⁷³ with routine test sites and auto samplers. The water quality and catchment health indicators are also included in the Operating Licence and tested through the program. The results are reported in the Annual Water Quality Monitoring Report.²⁷⁴

Other forms of catchment monitoring undertaken (with examples provided to the auditors) include:

- analysis of remotely sensed imagery;²⁷⁵
- before and after water quality monitoring (BACI);²⁷⁶
- direct field observations;²⁷⁷ and
- modelling.²⁷⁸

Furthermore, PSAT is used to understand where the high risk pollution sources are in the catchment.

▪ Inspections to monitor catchment conditions and land use changes

WaterNSW uses satellite imagery to detect changes in land use. Every two years, a systematic review of existing land use mapping, with reference to recent aerial photographs and satellite imagery, is used to identify and digitise changes in land use. Groundcover is assessed based on MODIS imagery. A summary of land use changes was provided to the auditors.²⁷⁹ There is also 24-hour security monitoring at the dam walls and CCTV raising SCADA alarms.

During the inspection of the inner catchment and reservoir at Nepean Reservoir, there was no

²⁶⁸ CD2012/161[v3] Concurrence Environmental Assessment Manual.

²⁶⁹ D2017/20333 February 2017 meeting, D2017/43820 March 2017 meeting, D2017/53493 April 2017 meeting, D2017/91010 June 2017 meeting.

²⁷⁰ D2016/69118 Source Water Protection Framework 2016-2020.

²⁷¹ D2016/104032 Catchment Protection Work Program 2016-2017.

²⁷² D2017/85062 Draft Annual Catchment Management Report – Sydney's Declared Catchments.

²⁷³ CD2011/179[v5] Water Monitoring Program.

²⁷⁴ D2016/109218 Annual Water Quality Monitoring Report 2015-16 – Appendices.

²⁷⁵ D2016/37053 - Assessing pasture health on properties a grazing incentive program - impact of grazing program on improved versus unimproved properties.

²⁷⁶ D2012/115247[v2] Lithgow and Braidwood STP Upgrades, D2016/71381 - Kangaroo Valley and Robertson onsite sewage evaluation study. Report 4: post sewer assessment.

²⁷⁷ D2011/50884 Riparian Management Assistance Program – Grants Evaluation and Monitoring.

²⁷⁸ D2016/100881 Project Report - Final Draft Wingecarribee Sewer Refurbishment.

²⁷⁹ D2016/96279 Land Use Change 2012-2016 (summary of changes).

evidence of excessive human ingress, erosion or vegetation degradation. The picnic sites were well sign-posted and well-maintained with pump-out toilet facilities, barbeques, hot water, cold water and shaded rest areas. Whilst attractive and therefore potentially likely to encourage access to the site, the facilities would provide a safe location for access for those that wish to attend the site. The dam wall is accessible and there are signs advising persons not to walk on the dam wall or to otherwise access the water. The toilets at the site were understood to be pumped out on a weekly basis as they are in the catchment. The most recent dam inspection report was discussed which found that the maintenance program was progressing as intended with no major recommendations arising.

As part of catchment management, there is a systematic program for pest and weed control that is supported by an ongoing weed inspection program which covers sites on a three-year rolling basis. Standardised surveillance sheets are used to record evidence of pests and weeds and their control. Management is covered by a Special Areas Strategic Plan of Management (SASPOM) and within a Pests and Weeds plan. However, during the audit, some weeds were noted around the Nepean Reservoir site, and it wasn't clear whether the program was adequately supported such that weeds could be kept under control. It can be a false economy to cut back on pest and weed control in the short term as problem flora and fauna can rapidly spread beyond ready control if not kept well-contained. As an opportunity for improvement (**OFI-2016/17-11**), WaterNSW should review current maintenance systems, processes and resources used for the implementation of pest and weed management on WaterNSW owned land, to ensure problem flora and fauna are adequately controlled.

Fire management is undertaken proactively by WaterNSW, including having a plan for the frequency of burns.²⁸⁰ WaterNSW reports fire management to the Board based on targets, which include the extent of fire risk and the burning and slashing undertaken. The NSW Rural Fire Service (RFS) is in overall charge of such monitoring. The RFS actively maintains the status of the fire breaks and roads. During peak fire season there is a helicopter on standby ready to contain small fires. During the audit site inspection, the fire breaks of over 30 metres estimated width into the approach road to the Nepean Reservoir were seen to be in good condition.

- Community awareness to support the catchment management

Community awareness was raised through a number of activities, including school education, community involvement and community information programs. The activities delivered are included in the draft Annual Catchment Management Report 2016-17. For example, a total of 4,055 students participated in the school excursion program and approximately 77,000 visitors were recorded at the Warragamba Dam Visitor Centre.

- Emergency response plan

The Corporate Incident Management Framework²⁸¹ is used in response to incidents and emergencies. The key incidents and emergencies in the declared catchments are bushfires and floods. The NSW Rural Fire Service is the fire authority for all wildfires on WaterNSW land. WaterNSW prevention, preparedness, response and recovery processes for responding to bushfires are provided in the WaterNSW Bushfire Operational Protocol 2016-18.²⁸²

For responding to water quality incidents, WaterNSW uses its Water Quality Incident Response Plan²⁸³ which includes the protocols to follow, notification requirements, contact details and response actions. Staff training is undertaken on the incident and emergency response protocols. Examples of incident management resulting from transformer oil spill (as a result of vandalism) in April and

²⁸⁰ D2013_51987 Annual Fire Management Planning.

²⁸¹ CD2009/2[v4] Corporate Incident Management Framework.

²⁸² D2016/112894[v2] WaterNSW Bushfire Operational Protocol 2016-18.

²⁸³ CD2004/183[v3] Water Quality Incident Response Protocol.

May 2017 on land managed by mining companies within the Cataract, Avon and Cordeaux Special Areas of the catchment were provided to the auditors.²⁸⁴

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-11:** WaterNSW should review current maintenance systems, processes and resources used for the implementation of pest and weed management on WaterNSW owned land, to ensure problem flora and fauna are adequately controlled.
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²⁸⁴ D2017/65449 FW: Notification of Oil Drained from 6.6kv/415v Transformer at Wongawilli Colliery No.3 Shaft, D2017/74526 Draft Incident Debrief for all three incidents, D2017/100187 Tickit notification - Cataract catchment transformer oil spill incident, D2017/88043 Example SWIRL notification: Water Quality Incident INC-15607, WQ 508 Cataract Catchment Oil Spill 4 April 2017.

B.4 Section 6 – Assets

Table B.4.1 Asset Management System (Sub-clauses 5.1.1)

Sub-clause	Requirement	Compliance Grade
5.1.1	<p>By 30 June 2015, Water NSW must develop a Management System that is consistent with:</p> <p>a) the <i>BSI PAS 55:2008 (PAS 55) Asset Management standard</i>;</p> <p>b) the Water Services Association of Australia’s Aquamark benchmarking tool; or</p> <p>c) another asset management standard agreed to by IPART,</p> <p>(Asset Management System).</p>	Full Compliance

Risk	Target for Full Compliance
Failure to develop and implement an Asset Management System presents a high risk of reduced levels of service and ultimately asset failure. In the case of dam failure (the principal assets managed by WaterNSW), potential consequences are significant.	Evidence that WaterNSW had developed an Asset Management System by 30 June 2015 (extended to 31 December 2016 under IPART’s recommendation to the Minister (Recommendation 2015/06-03)).

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.
- WaterNSW, *Statement of Compliance 1 September 2015 for Financial Year 2014/15; Submitted by WaterNSW (Sydney Catchment Authority)* (Reference: D2015/91863), 1 September 2015.

Summary of reasons for grade

In response to the findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 5.1.2), IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Asset Management System was audited and assessed as being compliant with the requirements of *ISO 55001:2014* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Discussion and notes

In the report on the 2015/16 Operational Audit, it was reported (in respect of sub-clauses 5.1.1. and 5.1.2) that:²⁸⁵

“WaterNSW has declared an “imposed non-compliance” in respect of these sub-clauses due to the merger of the SCA and State Water on 1 January 2015, following which it is developing an Asset Management System that will meet its obligations under both the State Water Operating Licence and the SCA Operating Licence, or their replacement.

WaterNSW has advised that the Asset Management System will be in place by June 2016 and certified by December 2016. The auditor has assessed that the Asset Management System was in place by June 2016 and that sufficient progress had been made to have it certified as being compliant with the requirements of ISO 55001 and fully implemented by December 2016 (as proposed).”

In response to this finding, IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

WaterNSW has now advised that:²⁸⁶

“A Stage 1 pre audit of the WNSW Asset Management System against ISO 55001 was undertaken by BSI in September 2016 and Stage 2 certification Audit completed in December 2016.

WaterNSW gained certification in Asset Management to ISO 55001 in January 2017 without any non-conformances.”

Review of the Stage 2 (Certification) Audit *Assessment Report*²⁸⁷ revealed that:

- The audit was conducted over ten (10) days commencing on 28 November 2016;
- Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
- No new nonconformities were identified; and
- It was recommended that certification be granted.

A *Certificate of Registration* (No: AMS 659130),²⁸⁸ effective from 10 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Asset Management System which complies with the requirements of *ISO 55001:2014* for the following scope:

“Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification.”

This scope is consistent with/captures the principal asset management activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence*.

As noted above, WaterNSW has been certified as compliant with the requirements of *ISO 55001:2014*, which effectively replaces the *BSI PAS 55:2008 (PAS 55) Asset Management standard* nominated in the Licence. Although the auditors have not sighted evidence that compliance with this ‘alternative standard’ has been formally agreed by IPART, there is evidence²⁸⁹ that WaterNSW has advised IPART of its intention to adopt *ISO 55001:2014*, which is consistent with the requirements of the *State Water Operating*

²⁸⁵ Cobbitty Consulting/Viridis, *2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0)*, November 2016, table B.4.1.

²⁸⁶ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 29.

²⁸⁷ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.

²⁸⁸ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

²⁸⁹ For example: WaterNSW, *Statement of Compliance 1 September 2015 for Financial Year 2014/15; Submitted by WaterNSW (Sydney Catchment Authority)* (Reference: D2015/91863), 1 September 2015.

Licence.

Given that the Asset Management System was certified (effectively) by the target date specified in IPART's recommendation (i.e. 31 December 2016), it is apparent that the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Table B.4.2 Asset Management System (Sub-clauses 5.1.2)

Sub-clause	Requirement	Compliance Grade
5.1.2	Water NSW 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.	Full Compliance

Risk

Failure to develop and implement an Asset Management System presents a high risk of reduced levels of service and ultimately asset failure. In the case of dam failure (the principal assets managed by WaterNSW), potential consequences are significant.

Target for Full Compliance

Evidence that WaterNSW had fully implemented an Asset Management System by 1 July 2015 (extended to 31 December 2016 under IPART's recommendation to the Minister (Recommendation 2015/06-03)) and that all relevant activities are carried out in accordance with the System.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.
- *Visual Inspection and Monitoring Report Form; Nepean Dam* for week ending Sunday, 2 April 2017 (Reference: D2017/120453).
- *Visual Inspection and Monitoring Report Form; Nepean Dam – Foundation Uplift* for inspection undertaken on 26 February 2017 (Reference: D2017/120452).
- WaterNSW, *Nepean Dam; 2016-17 Intermediate Surveillance Report*, December 2016 (Reference: D2016/142574).
- NSW Public Works, Sydney Catchment Authority; *Metropolitan Dams Electrical Condition Assessment*, September 2010 (Reference: D2011/18714).
- SKM, *Metropolitan Dams Electrical Upgrade Project; Business Case (Draft)*, 23 February 2014 (Reference: D2016/64679).
- *Metropolitan Dams Electrical Systems Upgrade; Combined Concept Drawings* (Reference: D2016/90969).
- WaterNSW, *Metropolitan Dams Electrical Upgrade Project; Project Management Plan* undated (Reference: D2017/13432).
- Email (internal) dated 27 April 2017 with attachments (Submission to Board for Approval and WaterNSW *Metropolitan Dams Electrical System Upgrades; Final Business Case*) (Reference: D2017/52684).
- Letter dated 25 August 2017 from NSW Health to IPART (Reference: H17/59800), (regarding performance of WaterNSW against its operating licences in the area of water quality management).

Summary of reasons for grade

In response to the findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 5.1.1), IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW's Asset Management System was audited and assessed as being compliant with the requirements of *ISO 55001:2014* (effectively) by the target date specified in IPART's recommendation. It is apparent that, in order to obtain certification, the system was being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

An assessment of the practical application of the Asset Management System confirms that activities are carried out in accordance with the System.

Discussion and notes

Overview:

As reported in Table B.4.1, in response to the findings of the 2015/16 Operational Audit in respect of sub-clauses 5.1.1. and 5.1.2, IPART recommended to the Minister (Recommendation 2015/16-03) that:

“WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.”

As also reported, a certification audit of the WaterNSW Asset Management System was undertaken in November/December 2016 and a *Certificate of Registration* (No: AMS 659130),²⁹⁰ effective from 10 January 2017, was subsequently issued to WaterNSW.

In order for the Asset Management System to be certified, WaterNSW would need to have demonstrated that it was being effectively implemented (as required by this obligation). Given that the Asset Management System was certified (effectively) by target date specified in IPART's recommendation (i.e. 31 December 2016), it is apparent that the system was also being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Implementation of the Asset Management System:

General:

Implementation of the Asset Management System is demonstrated by (for example):

- implementing an effective training program;
- the development of Maintenance Work Management process documents;
- implementation of a Change Management Process;
- undertaking Management Reviews of the Asset Management System; and
- implementing a program of internal and external audits.

Information provided by WaterNSW in respect of these activities is discussed in detail in Table A.3.2. It is noted that WaterNSW's Asset Management System is applicable to its obligations under both the *SCA Operating Licence* and the *State Water Operating Licence*.

Maintenance Resourcing Arrangements:

WaterNSW advised that operation and maintenance of the metropolitan system had been brought back in-house at the beginning of 2016/17; it had been contracted to a third party prior to that date. This revealed shortfalls/backlogs in the implementation of maintenance programs (the third party operator managed the maintenance scheduling/work order process), which WaterNSW has subsequently been working to address. The implementation of the abovementioned new maintenance planning and asset management (Maintenance Work Management) processes has aided this endeavour.

During the field verification visit to the Nepean System (discussed below), the auditors identified a sense of 'ownership' on the part of the operational staff with whom discussions were held. When this was mentioned during the audit close-out meeting, management representatives were pleased with this independent observation, noting that the sense of 'ownership' had needed to be re-established following

²⁹⁰ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

the change in resourcing arrangements.

Field Implementation of Asset Management Practices:

As part of the audit, a site visit/inspection to Nepean Dam was undertaken. The principal objective was to assess the field implementation of asset management practices. Assets inspected and/or discussed included the dam, outlet structure (river discharge), offtake structure (upstream of dam), aerator and Nepean-Avon pumping station.

A sample of observations made/understanding gained from the inspections and discussions at the site are as follows:

- Water from Nepean Dam is released into the river (which is used as a flow conduit prior to diversion at Pheasants Nest Weir) via two parallel outlets fitted with hydraulically operated fixed cone dispersion valves. The flow rate is set hydraulically depending upon the required rate of release (minimum discharge rate is 80 ML/day). A separate smaller sized outlet fitted with an electrically operated cone valve is used principally for the release of environmental flows (maximum discharge rate 250 ML/day).
- The Nepean-Avon Pumping Station facilitates the transfer of water via tunnel between Nepean Dam and Avon Dam. This is used to ensure supply of water to Wollongong, for which Avon Dam is the sole source. Storage balancing can also be used to maximise overall system yield.
- Sydney Water draws water from the outlets, just upstream of the cone dispersion valves. The pumping station and connecting pipework are Sydney Water assets, i.e. they are not the responsibility of WaterNSW.
- The offtake structure, located at the upstream face of the dam, facilitates the selection of water offtake level. A combination of screen and bulkhead panels are used to set the extraction levels over an infinitely variable range.
- The dam outlets can be isolated by manually operated penstocks located at the upstream face (downstream of the screens) and ring follower valves located in the lower (downstream) valve house. These penstocks and valves operate on an open/closed basis; the ring follower valves are able to close under full flow and are tested on a 5-yearly cycle.
- The dam, which was originally constructed in the late 1920s, is an “extreme” rated dam. Inspections are undertaken 365 days per year, together with other prescribed surveillance activities. Records provided as evidence that surveillance activities are implemented include:
 - *Visual Inspection and Monitoring Report Form; Nepean Dam* for week ending Sunday, 2 April 2017 – recorded V-notch weir flow levels; seepage rates; and inspections of the dam crest, abutments, area upstream of the dam wall, downstream face, galleries, dam toe, spillway and dissipater, scour outlet works and outlet works.
 - *Visual Inspection and Monitoring Report Form; Nepean Dam – Foundation Uplift* for inspection undertaken on 26 February 2017 – recorded 3-monthly uplift pressure gauge readings.
 - *Nepean Dam; 2016-17 Intermediate Surveillance Report*²⁹¹ – reports on the performance of the dam over the previous 12-months based on visual inspection and the evaluation of recent survey data, pursuant to the requirements of the ANCOLD *Guidelines on Dam Safety Management*.

It is noted that the previous comprehensive (5-yearly) surveillance review was undertaken in 2013, so the next will be due in 2018.

- The dam is a post-tensioned structure. Access for periodic testing of tendons is provided along the dam crest.
- Maintenance is currently managed through the Maximo enterprise maintenance management system (as discussed in Table A.3.3, a new system is currently being implemented). A periodic maintenance schedule has been developed, with work scheduled by a maintenance planner on a weekly basis. All

²⁹¹ WaterNSW, *Nepean Dam; 2016-17 Intermediate Surveillance Report*, December 2016 (Reference: D2016/142574).

maintenance activities are documented in Maximo. In the event that the need for corrective action is identified, either whilst preventive maintenance is being undertaken or independently, a separate Work Order is raised.

To demonstrate that preventive maintenance is implemented, a sample extract of maintenance activities undertaken in respect of the penstocks at Nepean Dam was provided. This showed that the penstocks were inspected and exercised/lubricated in March 2016, September 2016 and March 2017.²⁹²

- It was noted that a full electrical upgrade was about to commence at the time of the audit. This project, which covers all of the metropolitan dam sites, is discussed below.

In summary, site based personnel are responsible for implementing a range of operational and maintenance activities. The explanations provided gave the impression that the operators at Nepean Dam have a clear, well-founded understanding of their roles and responsibilities and effectively fulfil their asset management role.

Capital Project Implementation:

As an example of a typical capital project, WaterNSW provided documentation in relation to the Metropolitan Dams Electrical Upgrade Project. It advised that:²⁹³

“... condition assessments [were] conducted in 2010 leading to the development of concept designs in 2014. In 2016, a review was undertaken of the scope against WaterNSW strategies. Following this review aspects of the scope were deferred to allow better alignment with strategies currently under development.”

Evidence provided to demonstrate the evolution of this project included:

- *Metropolitan Dams Electrical Condition Assessment Report (2010)*²⁹⁴ – which presented a detailed condition assessment of the Nepean Dam, Nepean-Avon Tunnel, Avon Dam, Cataract Dam, Cordeaux Dam and Woronora Dam Assets.
- *Metropolitan Dams Electrical Upgrade Project; Business Case (2014)*²⁹⁵ – which presents a business in support of a recommendation for funding for the project.
- *Metropolitan Dams Electrical Systems Upgrade; Combined Concept Drawings* – which detail the proposed works.²⁹⁶
- *Metropolitan Dams Electrical Upgrade; Project Management Plan*²⁹⁷ – which outlines the arrangements for implementation of the project.
- Submission to Board for Approval (including Final Business Case).²⁹⁸

On the basis of the limited documentation reviewed, it appears that appropriate capital planning and investment procedures have been followed.

NSW Health Concerns: In comments provided to IPART in respect of WaterNSW’s performance during the audit period, NSW Health identified a number of concerns, some of which had been effectively addressed. From an asset management perspective, NSW Health commented that:²⁹⁹

“In November 2016, WaterNSW reported that the aerator at Lake Nepean was inoperative. NSW Health

²⁹² Document: extract from Maximo (Reference: D2017/120454).

²⁹³ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 30.

²⁹⁴ NSW Public Works, Sydney Catchment Authority; *Metropolitan Dams Electrical Condition Assessment*, September 2010 (Reference: D2011/18714).

²⁹⁵ SKM, *Metropolitan Dams Electrical Upgrade Project; Business Case (Draft)*, 23 February 2014 (Reference: D2016/64679).

²⁹⁶ *Metropolitan Dams Electrical Systems Upgrade; Combined Concept Drawings* (Reference: D2016/90969).

²⁹⁷ WaterNSW, *Metropolitan Dams Electrical Upgrade Project; Project Management Plan* undated (Reference: D2017/13432).

²⁹⁸ Email (internal) dated 27 April 2017 with attachments (Submission to Board for Approval and WaterNSW *Metropolitan Dams Electrical System Upgrades; Final Business Case*) (Reference: D2017/52684).

²⁹⁹ Letter dated 25 August 2017 from NSW Health to IPART (Reference: H17/59800), (regarding performance of WaterNSW against its operating licences in the area of water quality management).

understands that the aerator remains inoperative which means that WaterNSW is unable to manage water quality by destratifying the storage if required. WaterNSW has advised NSW Health that the aerator will return to operation later in 2017.”

This issue was raised with WaterNSW during the field inspections and audit interviews.

Operators explained that the aerator system comprises two air diffuser lines, one of 600 metres length and the second of 300 metres length, which are anchored at depth within the reservoir; an air compressor unit feeds air into the pipelines which discharges via the diffusers to mix the water within the reservoir.

It is understood that one of the pipelines has disconnected from its anchorage points and the diffuser lines (and associated service lines) have become entangled. The system went off-line in November 2016.

The operators indicated that it will be necessary to install new diffuser lines. It is anticipated that this will require decompression divers (due to the water depths involved) and will be highly expensive; however, it did not appear that a clear action plan was in place. They were of the view that the impact in respect of water quality had been minimal to date due to the fact that the reservoir remains mixed (it ‘turned over’ in June) and ability to select the level from which water is extracted remains available. The implications in respect of water quality are discussed in detail in Table B.1.2.

Discussions with representatives of the Asset Solutions and Delivery division revealed that a maintenance work order in respect of the failed aerator was first raised in June 2017, indicating that a significant amount of time had been spent on the part of maintenance staff trying to understand the issues involved.

In response to the auditor’s enquiry as to at what stage this issue, which is being treated as a maintenance project (like-for like replacement), would be elevated to project status, WaterNSW advised that the change management process would normally be triggered at the level that costs would be capitalised (typically \$5,000). It was noted that repair/replacement of the aerator may well be referred to a ‘project’/capital investment status.

It is noted that a recommendation (**REC-2016/17-02**) has been made in respect of the aerator being out-of-service from a water quality perspective (refer Table B.1.2). As a further opportunity for improvement (**OFI-2016/17-12**), it is suggested that WaterNSW reviews its processes under which a maintenance activity is elevated to ‘project’ status. This may include a review of ‘trigger points’ based on time for which an asset remains out-of-service or time a work order remains open, in addition to the capitalisation criteria.

Recommendations

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

Opportunities for improvement

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

- **OFI-2016/17-12:** It is suggested that WaterNSW reviews its processes under which a maintenance activity is elevated to ‘project’ status. This may include a review of ‘trigger points’ based on time for which an asset remains out-of-service or time a work order remains open, in addition to the capitalisation criteria.

**Table B.4.3 Recommendation 2015/16-03
(Asset Management System - Sub-clauses 5.1.1 and 5.1.2)**

Reference	Requirement	Compliance Grade
2015/16-03	WaterNSW should finalise its development and certification of the Asset Management System and fully implement it by or before 31 December 2016.	Addressed

Risk	Target for Full Compliance
Failure to develop and implement an Asset Management System presents a high risk of reduced levels of service and ultimately asset failure. Failure to have the Asset Management System certified presents a moderate risk that it may not provide an effective framework for WaterNSW to manage risks to its asset portfolio.	Evidence that WaterNSW had finalised the development and certification of the Asset Management System by 31 December 2016.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

Summary of reasons for grade

This recommendation has been fully addressed. A certification audit of the WaterNSW Asset Management System, which recommended that certification be granted, was completed in November/December 2016 (i.e. prior to the target date of 31 December 2016) and a Certificate of Registration issued on 10 January 2017.

Given that certification was achieved, it is deemed that the Asset Management System was being fully implemented at that time.

Discussion and notes

As reported in Table B.4.1, WaterNSW advised that:³⁰⁰

“A Stage 1 pre audit of the WNSW Asset Management System against ISO 55001 was undertaken by BSI in September 2016 and Stage 2 certification Audit completed in December 2016.

WaterNSW gained certification in Asset Management to ISO 55001 in January 2017 without any non-conformances.”

Review of the Stage 2 (Certification) Audit *Assessment Report*³⁰¹ revealed that:

- The audit was conducted over ten (10) days commencing on 28 November 2016;
- Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
- No new nonconformities were identified; and
- It was recommended that certification be granted.

³⁰⁰ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 29 (and page 30).

³⁰¹ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – ISO 55001:2014)*, Audit Date 28 November 2016.

A *Certificate of Registration* (No: AMS 659130),³⁰² effective from 10 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Asset Management System which complies with the requirements of *ISO 55001:2014* for the following scope:

“Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification.”

This scope is consistent with/captures the principal asset management activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence*.

Although the *Certificate of Registration* was not issued until 10 January 2017, the certification audit was undertaken in November/December 2016. It is therefore deemed that certification was effectively achieved prior to the nominated target date for this recommendation.

It is further noted that, in order for the Asset Management System to be certified, WaterNSW would need to have demonstrated that it was being effectively implemented, therefore fulfilling that element of the recommendation.

Recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

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

³⁰² BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

B.5 Section 7 – Environment

Table B.5.1 Environment management (Sub-clauses 7.1.1)

Sub-clause	Requirement	Compliance Grade
7.1.1	By 30 June 2015, Water NSW 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> .	Full Compliance

Risk

Failure to develop and implement an Environmental Management System presents a high risk that WaterNSW may not maintain and implement effective programs to manage risks to the environment from carrying out its activities.

Target for Full Compliance

Evidence that WaterNSW had developed an Environmental Management System by 30 June 2015 (extended to 31 December 2016 under IPART's recommendation to the Minister (Recommendation 2015/06-04)).

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.
- BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Summary of reasons for grade

In response to the findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 7.1.2), IPART recommended to the Minister (Recommendation 2015/16-04) that:

“WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW's Environmental Management System was audited and assessed as being compliant with the requirements of *ISO 14001:2004* (effectively) by the target date specified in IPART's recommendation. It is apparent that, in order to obtain certification, the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Discussion and notes

In the report on the 2015/16 Operational Audit, it was reported (in respect of sub-clauses 7.1.1 and 7.1.2) that:³⁰³

“WaterNSW has declared an “imposed non-compliance” in respect of these sub-clauses due to the merger of the SCA and State Water on 1 January 2015, following which it is developing an Environmental Management System that will meet its obligations under both the State Water Operating Licence and the SCA Operating Licence, or their replacement.

WaterNSW advised that the Environmental Management System will be in place by June 2016 and certified by

³⁰³ Cobbitty Consulting/Viridis, 2015/16 Operational Audit of WaterNSW; Final Audit Report (Version 3.0), November 2016, table B.6.1.

December 2016. The auditor has assessed that the Environmental Management System was in place by June 2016 and that sufficient progress had been made to have it certified as being compliant with the requirements of ISO 14001 and fully implemented by December 2016 (as proposed)."

In response to this finding, IPART recommended to the Minister (Recommendation 2015/16-04) that:

"WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016."

WaterNSW advised that:³⁰⁴

"WaterNSW gained certification to ISO14001:2004 on 10 January 2017."

Review of the Stage 2 (Certification) Audit *Assessment Report*³⁰⁵ revealed that:

- The audit was conducted over seven and a half (7½) days commencing on 30 November 2016;
- Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
- No new nonconformities were identified; and
- It was recommended that certification be granted.

A *Certificate of Registration* (No: EMS 659131),³⁰⁶ effective from 16 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Environmental Management System which complies with the requirements of *ISO 14001:2004* for the following scope:

"Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification."

This scope is consistent with/captures the principal activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence*.

Given that the Environmental Management System was certified (effectively) by the target date specified in IPART's recommendation (i.e. 31 December 2016), it is apparent that the system had been developed by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Recommendations

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

Opportunities for improvement


No opportunities for improvement have been identified in respect of this sub-clause.

³⁰⁴ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 11.

³⁰⁵ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.

³⁰⁶ BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Table B.5.2 Environment management (Sub-clauses 7.1.2)

Sub-clause	Requirement	Compliance Grade
7.1.2	Water NSW 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.	 Full Compliance

Risk

Failure to develop and implement an Environmental Management System presents a high risk that WaterNSW may not maintain and implement effective programs to manage risks to the environment from carrying out its activities.

Target for Full Compliance

Evidence that WaterNSW had developed an Environmental Management System by 30 June 2015, and fully implemented it by 1 July 2015 (extended to 31 December 2016 under IPART’s recommendation to the Minister (Recommendation 2015/06-04)).

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.
- BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Summary of reasons for grade

In response to the findings of the 2015/16 Operational Audit in respect of this obligation (and that of sub-clause 7.1.2), IPART recommended to the Minister (Recommendation 2015/16-04) that:

“WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.”

which effectively extended the date by which compliance with this obligation should be achieved.

WaterNSW’s Environmental Management System was audited and assessed as being compliant with the requirements of *ISO 14001:2004* (effectively) by the target date specified in IPART’s recommendation. It is apparent that, in order to obtain certification, the system was being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Discussion and notes

As reported in Table B.5.1, in response to the findings of the 2015/16 Operational Audit in respect of sub-clauses 7.1.1.and 7.1.2, IPART recommended to the Minister (Recommendation 2015/16-04) that:

“WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.”

As also reported, a certification audit of the WaterNSW Environmental Management System was undertaken in November/December 2016 and a *Certificate of Registration* (No: EMS 659131),³⁰⁷ effective from 16 January 2017, was subsequently issued to WaterNSW.

In order for the Environmental Management System to be certified, WaterNSW would need to have

³⁰⁷ BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

demonstrated that it was being effectively implemented (as required by this obligation). Given that the Environmental Management System was certified (effectively) by the target date specified in IPART's recommendation (i.e. 31 December 2016), it is apparent that the system was also being fully implemented by that date. On that basis, WaterNSW is now deemed to have achieved compliance with this obligation.

Further discussion in respect of implementation of the Environmental Management Systems is presented in Table A.5.3.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

Table B.5.3 Environment management (Sub-clause 7.1.3)

Sub-clause	Requirement	Compliance Grade
7.1.3	Water NSW must ensure that: <ol style="list-style-type: none"> 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 once the Environmental Management System is certified under clause 7.1.3(a), the certification is maintained during the remaining term of this Licence. 	Full Compliance

Risk	Target for Full Compliance
Failure to have the Environmental Management System certified to <i>AS/NZS ISO 14001:2004</i> presents a moderate risk that the Environmental Management System may not provide an effective framework for WaterNSW to manage risks to the environment from carrying out its activities.	Evidence that the Environmental Management System was certified to <i>AS/NZS ISO 14001:2004</i> by 30 June 2017 and that certification has been subsequently maintained.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.
- BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.
- JAS-ANZ Register entry available at: <http://www.jas-anz.org/accredited-bodies/organisation/80a1e08f-c9b3-e411-be4f-005056b24e56?search=all>.

Summary of reasons for grade

WaterNSW's Environmental Management System was certified as being consistent with *ISO 14001:2004*; a *Certificate of Registration* was issued by BSI Group, which holds the required accreditation, on 16 January 2017. The certification covers the full scope of activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence* (and the *State Water Operating Licence*), and WaterNSW is now certified for all except the recently inherited DPI Water functions (hydrometric and compliance services) which have already been subject to a surveillance audit.

Certification was maintained through the remainder of the audit period, which was also the remaining term of the Licence. WaterNSW also demonstrated that it had continued to implement the Environmental Management System, a prerequisite to maintaining certification, throughout the audit period.

Accordingly, WaterNSW was assessed to have demonstrated compliance with this obligation.

Discussion and notes

Certification of Environmental Management System:

As reported in Table A.5.1 and Table A.5.2, a certification audit of the WaterNSW Environmental Management System was undertaken in November/December 2016 and a *Certificate of Registration* (No: EMS 659131),³⁰⁸ effective from 16 January 2017, was subsequently issued to WaterNSW. As also reported, the scope of the certification is consistent with/captures the principal environmental management activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence*.

The *Certificate of Registration* was issued by BSI Group (specifically BSI Group ANZ Pty Ltd), which is accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).³⁰⁹

It is therefore apparent that the WaterNSW Environmental Management System was certified by a qualified third party to be consistent with *ISO 14001:2004* prior to 30 June 2018.

Maintenance of Certification:

As reported in Table A.5.2, certification is typically maintained through the successful completion of a program of surveillance and re-certification audits, undertaken by the third party certifying body (in this case BSI Group). The audit program, which is prepared by the certifying body, typically comprises annual compliance audits and a re-certification audit every three years.

It is understood that an external surveillance audit was undertaken by BSI Group in September 2017 (the auditors did not sight evidence of this audit).

Implementation of the Environmental Management System:

Maintenance of certification will be dependent (in part) upon WaterNSW demonstrating the ongoing effective implementation of the Environmental Management System. Implementation of the Environmental Management System is discussed in detail in Table A.5.2 and Table A.5.3. It is noted that WaterNSW's Environmental Management System is applicable to its obligations under both the *SCA Operating Licence* and the *State Water Operating Licence*.

Recommendations

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

Opportunities for improvement

No opportunities for improvement have been identified in respect of this sub-clause.

³⁰⁸ BSI, *Certificate of Registration; Asset Management System – ISO 55001:2014* (Certificate No: AMS 659130) issued to WaterNSW, 10 January 2017.

³⁰⁹ JAS-ANZ Register entry available at: <http://www.jas-anz.org/accredited-bodies/organisation/80a1e08f-c9b3-e411-be4f-005056b24e56?search=all>.

Table B.5.4 Environment management (Sub-clause 7.1.4)


Sub-clause	Requirement	Compliance Grade
7.1.4	Until the Environmental Management System has been developed and implemented in accordance with clauses 7.1.1 and 7.1.2, Water NSW 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 Compliance
Risk Failure to maintain programs to manage risks to the environment from carrying out its activities and ensuring that all activities are carried out in accordance with these programs poses a high operational risk to environmental health, raw water quality and the ability of WaterNSW to meet its business objectives.		Target for Full Compliance Evidence that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs.
Evidence sighted		
<ul style="list-style-type: none"> ▪ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017. ▪ Interviews with WaterNSW staff, 25-29 September 2017. ▪ Other evidence as listed in Table A.5.3. 		
Summary of reasons for grade		
The evidence provided demonstrates that WaterNSW has maintained programs to manage risks to the environment from carrying out its activities and has ensured that all its activities are carried out in accordance with those programs. Target actions in support of objectives to minimise the environmental impact of infrastructure and activities, to positively influence third party activities to protect Sydney catchment areas and to promote an environmentally responsible culture were substantially met.		
Accordingly, it was assessed that WaterNSW has fully complied with this obligation.		
Discussion and notes		
Discussion in respect of implementation of the Environmental Management System is presented in Table A.5.2 and Table A.5.3. Given that the Environmental Management System as implemented during the audit period is applicable to activities undertaken by WaterNSW under both the <i>State Water Operating Licence</i> and the <i>SCA Operating Licence</i> , the discussion presented in Table A.5.2 and Table A.5.3 is equally applicable to this obligation.		
Recommendations		
There are no recommendations in respect of this sub-clause.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this sub-clause.		

Table B.5.5 Recommendation 2015/16-04
(Environmental Management System - Sub-clauses 7.1.1 and 7.1.2)

Reference	Requirement	Compliance Grade
2015/16-04	WaterNSW should finalise its development and certification of the Environmental Management System and fully implement it by or before 31 December 2016.	Addressed

Risk

Failure to develop and implement an Environmental Management System presents a high risk that WaterNSW may not maintain and implement effective programs to manage risks to the environment from carrying out its activities. Failure to have the Environmental Management System certified presents a moderate risk that it may not provide an effective framework for WaterNSW to manage risks to the environment from carrying out its activities.

Target for Full Compliance

Evidence that WaterNSW had finalised the development and certification of the Environmental Management System by 31 December 2016.

Evidence sighted

- WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017.
- Interviews with WaterNSW staff, 25-29 September 2017.
- BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.
- BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

Summary of reasons for grade

This recommendation has been fully addressed. A certification audit of the WaterNSW Environmental Management System, which recommended that certification be granted, was completed in November/December 2016 (i.e. prior to the target date of 31 December 2016) and a Certificate of Registration issued on 16 January 2017.

Given that certification was achieved, it is deemed that the Environmental Management System was being fully implemented at that time.

Discussion and notes

As reported in Table B.5.1, WaterNSW advised that:³¹⁰

“WaterNSW gained certification to ISO14001:2004 on 10 January 2017.”

Review of the Stage 2 (Certification) Audit *Assessment Report*³¹¹ revealed that:

- The audit was conducted over seven and a half (7½) days commencing on 30 November 2016;
- Corrective actions in respect of nonconformities identified in the previous (Stage 1) assessment had been effectively implemented;
- No new nonconformities were identified; and

³¹⁰ WaterNSW response to 2017 Operational Audit Questionnaire, 1 September 2017, page 11.

³¹¹ BSI, *Assessment Report; WaterNSW (Stage 2 Audit – BS EN ISO 14001:2004)*, Audit Date 30 November 2016.

-
- It was recommended that certification be granted.

A *Certificate of Registration* (No: EMS 659131),³¹² effective from 16 January 2017, was subsequently issued to WaterNSW. The certificate indicates that WaterNSW operates an Environmental Management System which complies with the requirements of *ISO 14001:2004* for the following scope:

“Bulk water supply in NSW through dams, weirs, pumping stations, pipelines, canals, tunnels and supporting infrastructure.

This is a Multi-site certification and details of site addresses and respective activities are retained with BSI System Certification.”

This scope is consistent with/captures the principal environmental management activities undertaken by WaterNSW under the provisions of the *SCA Operating Licence*.

Although the *Certificate of Registration* was not issued until 16 January 2017, the certification audit was undertaken in November/December 2016. It is therefore deemed that certification was effectively achieved prior to the nominated target date for this recommendation.

It is further noted that, in order for the Environmental Management System to be certified, WaterNSW would need to have demonstrated that it was being effectively implemented, therefore fulfilling that element of the recommendation.

Recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

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

³¹² BSI, *Certificate of Registration; Environmental Management System – ISO 14001:2004* (Certificate No: EMS 659131) issued to WaterNSW, 16 January 2017.

D WaterNSW's statement of compliance



Contact: *Adrian Debrincat*
Telephone: 9865 2465
Our ref: D2017/102090

Mr Hugo Harmstorf
The Chief Executive Officer
Independent Pricing and Regulatory Tribunal of NSW
PO Box K35
Haymarket Post Shop NSW 1240

Dear Mr Harmstorf,

**Statement of Compliance 1 September 2017
For Financial Year 2016-17
Submitted by WaterNSW (Sydney Catchment Authority)**

WaterNSW reports as follows:

1. The statement documents compliance during 2016-17 with all obligations to which WaterNSW is subject by virtue of its Sydney Catchment Authority operating licence.
2. This report has been prepared by WaterNSW with all due care and skill to the best of our knowledge of conditions to which it is subject under the *Water NSW Act 2014*.
3. Schedule A provides information on all obligations with which WaterNSW did not comply during 2016-17.
4. Other than the information provided in Schedule A, WaterNSW has complied with all conditions to which it is subject.
5. This compliance report has been approved by the Chief Executive Officer and the Chairperson of the Board of WaterNSW.



Signed:
David Harris
Chief Executive Officer



Signed:
Anne McDonald
Chairperson WaterNSW Board

Schedule A: Non-Compliances for WaterNSW (Sydney Catchment Authority)

List of requirements breached	Description of non-compliance
NII	NII

Statement of Compliance 1 September 2017
For Financial Year 2016-17
Submitted by WaterNSW (State Water)

WaterNSW reports as follows:

1. The statement documents compliance during 2016-17 with all obligations to which WaterNSW is subject by virtue of its State Water operating licence.
2. This report has been prepared by WaterNSW with all due care and skill to the best of our knowledge of conditions to which it is subject under the *Water NSW Act 2014*.
3. Schedule B provides information on all obligations with which WaterNSW did not comply during 2016-17.
4. Other than the information provided in Schedule B, WaterNSW has complied with all conditions to which it is subject.
5. This compliance report has been approved by the Chief Executive Officer and the Chairperson of the Board of WaterNSW.



Signed:
David Harris
Chief Executive Officer



Signed:
Anne McDonald
Chairperson WaterNSW Board

Schedule B: Non-Compliances for WaterNSW (State Water)

List of requirements breached	Description of non-compliance
Nil	Nil