

Independent Pricing and Regulatory Tribunal

Hunter Water Corporation Operational Audit 2015-16

Report to the Minister

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

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Executive summary

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has completed the fourth operational audit (the audit) of Hunter Water Corporation's (Hunter Water) compliance with the requirements of its 2012-2017 Operating Licence (the licence). This audit covers the period from 1 July 2015 to 30 June 2016 (2015-16).

We engaged a specialist auditing firm, Aurecon Australasia Pty Ltd (Aurecon), in partnership with Risk EdgeTM and Atom Consulting, to assist with the audit. We have prepared this report to summarise the audit findings for the Minister for Lands and Water (the Minister).

The 2015-16 audit findings demonstrate that Hunter Water has shown an overall high level of compliance with its licence. No non-compliances were identified.

Hunter Water has completed some of the recommendations from previous audits and has shown progress in others. We have made new recommendations for Hunter Water to continue to improve, and generally maintain, compliance with its licence.

Our recommendations

The auditor prepared a final audit report detailing its findings and recommendations to improve compliance (Appendix C). We endorsed all but one of the recommendations, where we identified it instead as an opportunity for improvement. We also extended the due date of another recommendation. There were six clauses for which the auditor did not assign full compliance. Our recommendations are listed below.

Recommendations

Water Quality – Drinking Water Quality Management System (Clauses 2.1.1, 2.1.2)

1 By 30 June 2017, review all system process flow diagrams including all process steps, inputs, monitoring points, key characteristics, handover points between parties and raw water customers, to ensure that:

- each flow diagram matches the SCADA diagram,
- each flow diagram and SCADA diagram is signed off by someone with appropriate authority, and
- each flow diagram has associated version history and review cycle information.
- 2 By 30 June 2017, use the revised flow diagram to revise the risk assessment for Lemon Tree Passage Water Treatment Plant.
- 3 By 30 June 2017, review and revise documentation associated with the emergency management process including:
 - Veolia's Crisis Management Plan,
 - cross-referencing in the Hunter Water Emergency Management Plan, and
 - the currency across all document history fields in Veolia's Incident Recording and Reporting procedure.

Water Quality – Recycled Water Quality Management System (Clauses 2.2.1, 2.2.2)

- 4 By 30 June 2017, Hunter Water should review the implementation of recommendations from its Environmental Compliance Audit for the Karuah Effluent Reuse Enterprise, and develop appropriate deadlines for any recommendations that have not been addressed.
- 5 By 30 June 2018, Hunter Water should ensure that a gap analysis is completed of all RWQMPs, against the Framework for Management of Recycled Water Quality and Use. Particular focus should be given to the gaps in compliance areas detailed in the 2015-16 audit report.

Assets – Asset Management System implementation (Clause 4.1.2)

6 By 31 December 2017, review the Asset Standards Management Plan and the Asset Class Management Plans, which were overdue for review. Ensure all Asset Class Management Plans meet Hunter Water's document control system.

Performance monitoring - Maintain record systems (Clause 8.2.2)

7 By 30 June 2017, Hunter Water should ensure all compliance related documents are consistent with Hunter Water's procedure for managing document control.

Subject to the Minister's endorsement of the recommendations, we will request Hunter Water provides us with a report on its progress in implementing these recommendations by 31 March 2017.

Overview of audit findings

The compliance grades that we applied to the audit are explained in Appendix A. Hunter Water achieved Full Compliance with 13 of the 21 clauses audited, High Compliance for five clauses and Adequate Compliance for one clause. Two clauses were deemed 'No Requirement', as there were no significant changes made to the Asset Management System or the customer contract, therefore notification to IPART was not required. In summary, the auditor assigned Hunter Water:

- **Full Compliance** with all auditable requirements relating to:
 - Water quantity water conservation target and economic level of leakage (clause 3.1.1 and 3.2.3)
 - Assets management system and system performance standards (clauses 4.1.1, 4.2.2, 4.2.3 and 4.2.4)
 - Customers and consumers financial hardship and internal dispute resolution process (clauses 5.4.1, 5.4.3, 5.6.1, 5.6.2 and 5.6.3)
 - Performance monitoring reporting and performance indicators (clauses 8.2.1 and 8.4.1).
- High Compliance with requirements relating to:
 - Water quality drinking water management (clauses 2.1.1 and 2.1.2)
 - Water quality recycled water management (clause 2.2.1)
 - Assets management system (clause 4.1.2)
 - Performance monitoring reporting (clause 8.2.2)
- Adequate Compliance with requirements relating to:
 - Water quality recycled water management (clause 2.2.2)
- ▼ **No Requirement** in regards to notification of IPART as no significant changes were made to the asset management system and the customer contract clauses 4.1.3 and 5.1.2.

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

Liconco port	Number of audited	Co	ompliand	e grade	assigı	ned
Licence part	clauses	Full	High	Adeq	NC	NR
Part 1 – Licence & Licence authorisation	-	-	-	-	-	-
Part 2 – Water quality	4	-	3	1	-	-
Part 3 – Water quantity	2	2		-	-	-
Part 4 – Assets	6	4	1	-	-	1
Part 5 – Customers and Consumers	6	5	-	-	-	1
Part 6 – Environment	-	-	-	-	-	-
Part 7 – Quality management	-	-	-	-	-	-
Part 8 – Performance monitoring	3	2	1	-	-	
Total	21	13	5	1	-	2

Table 1Hunter Water's compliance in 2015-16, the fourth year of its
2012 - 2017 Operating Licence

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

Source: Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

Annual statement of compliance

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

Progress with previous recommendations

Finally, we note that Hunter Water has completed two out of nine outstanding recommendations from previous operating audits. Seven recommendations were ongoing. We will continue to monitor and report on progress against each of these ongoing recommendations during each future audit.

Most of the outstanding recommendations relate to the Water Quality Management Systems for drinking water and recycled water. The outstanding issues relate to:

- Completing and implementing critical control points (CCPs) to the satisfaction of NSW Health,
- Gaps in system process flow diagrams, which may mean there are gaps in hazard and risk assessments across different sites and processes, and
- Document and version control.

Hunter Water has made progress against each of these recommendations but has not yet achieved completion to the satisfaction of the auditor.

Two outstanding recommendations relate to the asset management clauses, and the implementation of improvement initiatives aimed at transitioning to ISO 55001. These recommended actions are not due for completion until December 2017.

1 Introduction and scope

Hunter Water Corporation (Hunter Water) is a State Owned Corporation, wholly owned by the NSW State Government. Hunter Water's principle functions are to provide, construct, operate, manage and maintain systems and services for supplying water, providing sewerage and drainage services and disposing of wastewater in its Area of Operations.¹ These roles and responsibilities, as well as Hunter Water's objectives, are prescribed by the *State Owned Corporations Act 1989* (NSW), the *Hunter Water Act 1991* (NSW) (the Act) and the Operating Licence (licence) issued to Hunter Water under Section 12 of the Act.

We have completed the 2015-16 annual operational audit of Hunter Water's compliance with obligations outlined in its licence. We do this by receiving and reviewing reports, attending audit interviews with utility staff, and undertaking field verification to investigate how effectively requirements of the licence are met in practice. At the completion of the audit we publish the audit report and report our findings to the Minister for Lands and Water (the Minister).

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

1.1 Purpose and structure of this report

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

- ▼ This chapter (Chapter 1) explains the scope of the audit review and the process followed in undertaking the audit.
- Chapter 2 presents a summary of the audit findings and recommendations.
- Chapter 3 summarises the progress by Hunter Water to address and implement recommendations from previous audits.

¹ As defined in Schedule B of Hunter Water's Licence.

- Appendix A contains the table of compliance grades used for this audit.
- Appendix B contains the audit scope.
- Appendix C provides the auditor's detailed audit report.
- Appendix D provides Hunter Water's annual statement of compliance.

1.2 Audit scope

This audit covers the period from 1 July 2015 to 30 June 2016.

The audit scope for this year included obligations relating to:

- Water Quality (Part 2) requirements relating to the maintenance and implementation of the Drinking Water and Recycled Water Quality Management Systems.
- Water Quantity (Part 3) requirements relating to Hunter Water's water conservation efforts.
- Assets (Part 4) requirements relating to the maintenance and implementation of the Asset Management System, and Hunter Water's efforts to meet its system performance standards.
- Customers and Consumers (Part 5) requirements relating to procedures for financial hardship, payment difficulties, water flow restriction and disconnection, and its internal dispute resolution process.
- Performance monitoring (Part 8) requirements relating to reporting and the provision of performance indicators.

No clauses from Part 1 (Licence and Licence Authorisation), Part 6 (Environment) and Part 7 (Quality Management) were audited this year, following the risk-based approach used in the auditing program.

We consulted with the NSW Ministry of Health (NSW Health) and sought public submissions in determining the scope of the audit. The audit scope is provided in Appendix B. This year, NSW Health identified the following areas of interest² which were included in the audit:

- Drinking water reticulation disinfection optimisation.
- Drinking water the review of the critical limits and operation against Critical Control Points (CCPs) for drinking water treatment plants.
- Drinking water the review of the risk of *Cryptosporidium* in drinking water catchments, and the development of an event-based *Cryptosporidium* monitoring program tailored to individual supply systems.
- Recycled Water Quality Management Plans for each of the recycling schemes.

² Letter, Prof D. Durrheim, NSW Health, 16 August 2016.

 Environment and drinking water – the management of per and poly fluorinated alkyl substances (PFAS) associated with the use of fire-fighting chemicals at Williamtown Airbase, and its ongoing impact on bore use and availability within the Tomago Borefield.

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, Newcastle Herald on 6 July 2016 and the Land on 7 July 2016. We received one public submission from a residential customer. The submission related to the increase in water prices by Hunter Water, as recommended by IPART. It was not relevant to the operational audit and was addressed separately.

1.3 The audit process

The audit is the main regulatory process that we use to assess compliance with the licence. We apply a risk based approach to the audit. Under this approach, we assess the risk of non-compliance with a licence obligation to determine an appropriate audit frequency for that requirement. We audit clauses that we consider to be 'high risk' more frequently, while low risk clauses are audited less frequently. We audit all requirements of the 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 Aurecon Australasia Pty Ltd (Aurecon), in partnership with Risk EdgeTM and Atom Consulting, to assist with the 2015-16 audit of Hunter Water. The auditor was required to undertake the following tasks:

- 1. Consider stakeholder submissions and comments for inclusion in the audit scope.
- 2. Prepare an information request (questionnaire), setting out all information and evidence requirements, at least two weeks prior to the commencement of audit interviews.
- 3. Review reports and documents provided by Hunter Water in response to the questionnaire.
- 4. Conduct face-to-face interviews with Hunter Water staff at its offices.
- 5. Conduct field verification and assess the implementation of Hunter Water's systems and procedures.

- 6. Assess the level of compliance the Hunter Water 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 Hunter Water in addressing any comments made by the relevant Minister and/or recommendations endorsed by us following previous audits, providing supporting evidence for these assessments.
- 8. Verify the calculation of performance indicators associated with requirements of the relevant licence and undertake an assessment of any underlying trends in performance arising from these indicators.
- 9. Provide drafts of the audit report to us and address comments from Hunter Water and us regarding draft audit findings.
- 10. Prepare a final report outlining audit findings.

The auditor adopted an audit methodology that was consistent with *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.

The auditor also carried out the audit according to our *Audit Guideline for Public Water Utilities May 2016.*³ Under this guideline, the auditor can make recommendations to improve compliance 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 has suggested opportunities for improvement, we take a different approach. Hunter Water can decide to implement an opportunity, based on its own assessment of whether the improvement is a prudent and efficient way to achieve its objectives. 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 28 July 2016, to agree on the project milestones, audit timing, and outline our expectations.⁴ We also held an audit inception meeting with Hunter Water and the auditor on the first day of the audit interviews, on 26 September 2016. At this meeting, expectations and protocols for the conduct of the audit were agreed. All parties adhered to the agreed protocols throughout the audit.

³ Available on our website (www.ipart.nsw.gov.au).

⁴ Meeting minutes, IPART, Aurecon and Risk Edge, 28 July 2016.

The licence audit interviews were conducted from 26 to 28 September 2016 at Hunter Water's offices in Newcastle. On 27 September 2016 the auditor also undertook a site visit to the following locations:

- Tomago Sandbeds Borefields
- Lemon Tree Passage Water Treatment Plant
- Karuah Wastewater Treatment Plant and the reuse enterprise
- Boulder Bay Wastewater Treatment Plant

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

2 Summary of audit findings and recommendations

This chapter provides a summary of the auditor's findings and recommendations for each of the audited clauses of the licence. The 2015-16 audit is the fourth audit of the 2012-2017 licence.

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

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

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

2.1 Water Quality

Hunter Water was assigned high compliance for clauses 2.1.1, 2.1.2 and 2.2.1, and was assigned adequate compliance for clause 2.2.2.

Part 2 of the licence, Water Quality, outlines the obligation for Hunter Water to maintain and implement Drinking Water and Recycled Water Quality Management Systems. Under the risk based auditing framework, we consider that this part of the licence poses a high risk with respect to likelihood and consequence of non-compliance.

The Drinking Water and Recycled Water Quality Management Systems were subject to a 'systems audit'. In summary, the auditor did not have prescriptive water quality objectives on which to assess compliance but rather was required to consider whether the Water Quality Management Systems that Hunter Water had in place were consistent with the relevant Australian Drinking Water Guidelines (ADWG) and the Australian Guidelines for Water Recycling (AGWR). Both guidelines incorporate a Quality Management Framework (Framework). In making its assessment, the auditor was directed by the elements, components and actions of the Framework, but also relied on their own experience.

Clause	Requirement	Compliand	e grading			
2	Water quality	2012-13 a	2013-14 ^a	2014-15 ª	2015-16 ^b	2016-17
2.1.1	Maintain Drinking Water Quality Management System	Adeq	Adeq	Full	High	
2.1.2	Fully implemented system	Adeq	High	Full	High	
2.1.3	Notification of significant changes	-	-	Full	-	
2.1.4	Obtain NSW Health's approval for any significant changes	-	-	Full	-	
2.2.1	Maintain Recycled Water Quality Management System	Full	High	Full	High	
2.2.2	Fully implemented	Adeq	High	High	Adeq	

 Table 2.1
 Summary of compliance with Part 2 of the licence – Water Quality

a IPART, Hunter Water Operational Audit 2014-15 – Report to the Minister – Compliance Report, March 2016.
 b Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

Clause 2.1 - Drinking Water Quality

The auditor assigned compliance grades for each element as outlined in the Framework for Management of Drinking Water Quality in the Australian Drinking Water Guidelines.

Element 2 (Assessment of the Drinking Water Supply System) was assigned an adequate compliance grade because:

- Flow diagrams have been developed for each system, however key steps, key characteristics and inputs are sometimes missing and do not match the onground systems.
- Discrepancies in flow diagrams make it difficult to demonstrate that key risks have been identified and assessed.
- Flow diagrams review cycle information and document histories are sometimes missing.

Element 3 (Preventive Measures) and Element 6 (Management of Incidents and Emergencies) were assigned high compliance grades because:

 Some of the choice of critical limits had been 'context-validated' and consulted with NSW Health. However, some values of the critical limits deviated from the ADWG and require improved documentation for validation.

- Operational implementation of some CCPs could cause operational confusion and should be reviewed and clarified.
- Midcoast Water is included as a stakeholder that needs to be notified but there is no contact information in the Emergency Management Plan.
- The Crisis Management Plan stated that it is required to be reviewed annually and updated as required by Veolia, however there is no evidence of a review during the audit period.

The remaining elements were awarded full compliance. Accordingly, the auditor assigned Hunter Water high compliance for both the maintenance and implementation of the Drinking Water Quality Management System (clauses 2.1.1 and 2.1.2).

We make three recommendations in relation to clause 2.1, two for improving Element 2 and one for Element 6, based on the auditor's recommendations.

Recommendation

- 1 By 30 June 2017, review all system process flow diagrams including all process steps, inputs, monitoring points, key characteristics, handover points between parties and raw water customers, to ensure that:
 - each flow diagram matches the SCADA diagram,
 - each flow diagram and SCADA diagram is signed off by someone with appropriate authority, and
 - each flow diagram has associated version history and review cycle information.
- 2 By 30 June 2017, use the revised flow diagram to revise the risk assessment for Lemon Tree Passage Water Treatment Plant.
- 3 By 30 June 2017, review and revise documentation associated with the emergency management process including:
 - Veolia's Crisis Management Plan,
 - cross-referencing in the Hunter Water Emergency Management Plan, and
 - the currency across all document history fields in Veolia's Incident Recording and Reporting procedure.

The auditor identified an additional recommendation for Element 2, which was for Hunter Water to use an independent, Exemplar Global qualified Drinking Water Management System Lead Auditor to undertake an external audit of Veolia's Drinking Water Quality Management System. We consider that Hunter Water has sufficient internal audit procedures in place and has already undertaken an external audit of its Drinking Water Quality Management System. A prescriptive recommendation is therefore not necessary. We consider this an opportunity for improvement for Hunter Water to consider with regards future compliance in this area.

The auditor identified 14 opportunities for improvement for clause 2.1. These opportunities related to improving document control and currency, better labelling and identification of CCPs where they occur on-site, better recognition of the timing and the need for document reviews, and formalisation of the approach to water quality with regards to the handover point with Midcoast Water at North Karuah. Further details of the opportunities for improvement are available in the audit report in Appendix C.

Clause 2.2 - Recycled Water Quality

The auditor assigned compliance grades for each element as outlined in the Framework for Management of Recycled Water Quality in the Australian Guidelines for Water Recycling (AGWR).

Elements 2 (Assessment of the Recycled Water System) and 3 (Preventive Measures) were assigned adequate compliance grades because:

- Not all flow diagrams had document history, verification or sign-off.
- ▼ A component-by-component risk analysis was not undertaken, resulting in the existence of 'gaps' in the risk register.
- ▼ CCP tables were included in the individual Recycled Water Quality Management Plan (RWQMP) however the Karuah RWQMP had discrepancies, eg. the risk assessment and CCP should have been reviewed after the installation of a new UV system and the RWQMP revised.
- The lagoon storage CCP should not be considered a CCP for helminths until validation of residence time is undertaken.

Elements 4 (Operational procedures and process control), 5 (Verification), 6 (Incident management), 9 (Validation, research and development), 10 (Documentation and Reporting) and 12 (Review and Continuous Improvement) were all assigned high compliance grades because:

- Compliance gaps exist in relation to validation of CCPs and incident management information.
- Although site monitoring was undertaken as part of the internal auditing process, site specific monitoring was not itemised in the scheme-specific RWQMPs, creating a compliance gap in the environmental aspects of the recycled water framework.
- Gaps were noted in the Recycled Water Quality Incident Response Protocol, and other corporate and scheme-specific documents relating to the currency of the documentation.

- While Hunter Water has document review and reporting processes in place, document control processes for recycled water do not appear to be as well implemented as for drinking water and customer services management.
- Lack of close-out on actions from Karuah Recycled Water Improvement Plan.

Accordingly, the auditor assigned Hunter Water a high compliance grade for the maintenance of its RWQMS (clause 2.2.1) and an adequate compliance grade for the implementation of its RWQMS (clause 2.2.2).

We make two recommendations in relation to clause 2.2, based on the auditor's recommendations.

Recommendations

- 4 By 30 June 2017, Hunter Water should review the implementation of recommendations from its Environmental Compliance Audit for the Karuah Effluent Reuse Enterprise, and develop appropriate deadlines for any recommendations that have not been addressed.
- 5 By 30 June 2018, Hunter Water should ensure that a gap analysis is completed of all RWQMPs, against the Framework for Management of Recycled Water Quality and Use. Particular focus should be given to the gaps in compliance areas detailed in the 2015-16 audit report.

The auditor identified six opportunities for improvement for clause 2.2. These opportunities related to incomplete information in documents, validation needs at Karuah, improved procedures to cover notification under the new contractual situation (ie including Veolia as contractor) and updated document currency information. Further details of the opportunities for improvement are available in the audit report in Appendix C.

2.2 Water Quantity

Hunter Water achieved full compliance for clauses 3.1.1 and 3.2.3.

Part 3 of the licence, Water Quantity, outlines Hunter Water's obligations towards achieving the Water Conservation Target, and determining the economic level of leakage. Under the risk based auditing framework,⁵ we consider that this part of the licence poses a low to moderate risk with respect to likelihood and consequence of non-compliance.

⁵ IPART, Audit Guideline - Public Water Utilities, Water - Guideline, May 2016, p 4.

Clause	Requirement	Compliance Grading				
5	Water Quantity	2012/13 ^ª	2013/14 ^ª	2014/15 ^ª	2015/16 ^b	2016/17
3.1.1	5-year rolling water consumption is less than or equal to 215 kL/yr/property	High	Full	-	Full	-
3.1.2	Hunter Water to report compliance with the Target to IPART	Full	Full	-	-	-
3.2.3	Hunter Water must use the approved ELL methodology	-	-	-	Full	

 Table 2.2
 Summary of compliance with Part 3 of the licence – Water

 Quantity

a IPART, Hunter Water Operational Audit 2014-15 – Report to the Minister – Compliance Report, March 2016.
 b Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

The auditor found that Hunter Water has complied with the requirement to meet the Water Conservation Target. Hunter Water was able to demonstrate that the 5-year rolling average for annual residential water consumption was less than 215 kilolitres per year for each residential property. Furthermore, it was able to demonstrate that the process used to derive the figure is both appropriate and robust.

The auditor also found that Hunter Water has complied with the requirement to use the IPART approved methodology when determining the Economic Level of Leakage (ELL). Hunter Water had received approval from IPART for the methodology to determine (ELL) from its drinking water network. In the letter of approval, IPART recommended some areas for improvement for Hunter Water's consideration in the methodology. Hunter Water responded to each of these issues and committed to including these improvements for the next pricing submission due 2015.⁶ Hunter Water is not required to undertake another review of the ELL methodology under its current operational licence.

As a result, the auditor found that Hunter Water has achieved full compliance for clauses 3.1.1 and 3.2.3, and no recommendations were identified.

The auditor identified one opportunity for improvement for clause 3.1.1. This opportunity related to a review of the revision history and status of a specific document that support calculation of the water consumption. Further details of the opportunity for improvement are available in the audit report in Appendix C.

⁶ Letter to IPART, Kim Wood, Hunter Water, 8 September 2014

2.3 Assets

Hunter Water achieved full compliance for the maintenance of its management system (clause 4.1.1) and was assigned high compliance for the implementation of its management system (clause 4.1.2). Hunter Water achieved full compliance for the system performance standards (clauses 4.2.2, 4.2.3 and 4.2.4).

Part 4 of the licence, Assets, outlines Hunter Water's obligations under its asset management system and its system performance standards. Under the risk based auditing framework,⁷ we consider that the asset management system clauses of the licence pose a high risk with respect to likelihood and consequence of non-compliance.

Clause	e Requirement	Compliant	ce grading			
4	Assets	2012-13 a	2013- 14 ^a	2014-15 a	2015-16 ^b	2016-17
4.1.1	Maintain Asset Management System standard	High	High	High	Full	
4.1.2	Asset Management System implementation	Full	Full	Full	High	
4.1.3	Significant changes to Asset Management System				NR	
4.2.2	Water pressure standard	-	-	-	Full	
4.2.3	Water Continuity Standard	-	-	-	Full	
4.2.4	Wastewater Overflow Standard	-	-		Full	

 Table 2.3
 Summary of compliance with Part 4 of the licence – Assets

a IPART, Hunter Water Operational Audit 2014-15 – Report to the Minister – Compliance Report, March 2016.
 b Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

The auditor found that Hunter Water has an established and effective asset management system overall. However, its decision to transition from the existing Aquamark system to the new ISO 55001 Asset Management System has resulted in a change in focus to develop the additional processes and procedures required under ISO 55001, which has more strident compliance requirements. Based on the information presented the auditor did not find any evidence to suggest Hunter Water's asset management system was no longer consistent with Aquamark. Hunter Water has committed to implementing the ISO55001 based system by July 2017. The auditor found that Hunter Water has achieved full compliance for clause 4.1.1 and no recommendations were identified.

The auditor's review of Hunter Water's implementation of its asset management system found that Hunter Water's change of focus (towards implementing

⁷ IPART, Audit Guideline - Public Water Utilities, Water – Guideline, May 2016, p 4.

ISO 55001) has resulted in several existing asset management documents being overdue for review or being inconsistent with Hunter Water's document control requirements. This included the asset standards management plan, which is a key part of Hunter Water's operational asset management system. The auditor assigned Hunter Water a high compliance grade for clause 4.1.2.

The auditor was satisfied that Hunter Water had met the system performance standards identified in clauses 4.2.2, 4.2.3 and 4.2.4, and assigned Hunter Water full compliance for these clauses. These clauses relate to the water pressure standard, water continuity standard and the wastewater overflow standard.

We make one recommendation in relation to clause 4.1.2, based on the auditor's recommendations.

Recommendation

6 By 31 December 2017, review the Asset Standards Management Plan and the Asset Class Management Plans, which were overdue for review. Ensure all Asset Class Management Plans meet Hunter Water's document control system.

The auditor identified one opportunity for improvement for clause 4.1.2. This opportunity related to amalgamation of existing systems into an integrated management system to reduce the number of systems in use across the organisation. Further details of the opportunity for improvement are available in the audit report in Appendix C.

2.4 Customers and consumers

Hunter Water achieved full compliance for all five of the 'Customers and consumers' clauses audited.

Hunter Water's obligations towards its customers and consumers are outlined in Part 5 of the licence. The audited clauses include obligations relating to its procedures in dealing with financial hardship, payment difficulties, water flow restriction and disconnection, and internal dispute resolution. Under the risk based auditing framework, we consider that this part of the licence poses a low to moderate risk with respect to likelihood and consequence of non-compliance.

Clause	Requirement	Compliand	ce grading			
5	Customers and consumers	2012-13 a	2013-14 a	2014-15 a	2015-16 ^b	2016-17
5.1.2	Notify significant changes to the customer contract	-		NR	NR	
5.2.2	Update the pamphlet explaining the Customer contract	-	-	-	-	
5.4.1	Maintain and implement procedures for financial hardship, payment difficulties, restriction and disconnection.	-	-	-	Full	
5.4.3	Provide an explanation of the procedures free of charge	-	-	-	Full	
5.5.1	Regularly consult through Consultative Forum	-	-	Full	-	
5.5.2	Utilise Consultative Forum advice consistent with Charter	-	-	Full	-	
5.5.3	Membership in accordance with Charter; and use best endeavours to include a person from each of the 10 nominated interests	-	-	Full	-	
5.5.4	Maintain Charter	-	-	Full	-	
5.5.5	Provide information to Consultative Forum	-	-	Full	-	
5.5.6	Make publicly available Charter and meeting minutes	-	-	Full	-	
5.6.1	Maintain a procedure for resolving internal complaints	-	-	-	Full	
5.6.2	Ensure procedure for internal complaints is implemented	-	-	-	Full	
5.6.3	Provide information to customers on the procedure	-		-	Full	

 Table 2.4
 Summary of compliance with Part 5 of the licence – Customers

 and consumers
 Summary of compliance with Part 5 of the licence – Customers

a IPART, Hunter Water Operational Audit 2014-15 - Report to the Minister - Compliance Report, March 2016.

b Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

The auditor found that Hunter Water has complied with the requirements to:

- maintain and implement procedures relating to financial hardship, payment difficulties, water flow restriction and disconnection (Procedure for Payment Difficulties and Actions for Non-payment),
- provide an explanation of the Procedure for Payment Difficulties and Actions for Non-payment free of charge,
- maintain a procedure for receiving, responding to and resolving complaints (Internal Complaints Handling Procedure),
- ensure the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure, and
- provide to Customers at least annually with their bills information concerning the Internal Complaints Handling Procedure.

As a result, the auditor found that Hunter Water has achieved full compliance for clauses 5.4.1, 5.4.3, 5.6.1, 5.6.2 and 5.6.3 and no recommendations were identified.

The auditor identified five opportunities for improvement. These were related to ensuring that the complaint handling guidelines are reviewed for correctness, and met the requirements of the latest relevant international standard; to consider social media; and to review the definition of 'complaint' against the newer standard. Further details of the opportunities for improvement are available in the audit report in Appendix C.

2.5 Performance monitoring

Hunter Water achieved full compliance for clauses 8.2.1 and 8.4.1, and was assigned high compliance for clause 8.2.2.

Part 8 of the licence, Performance monitoring, outlines the obligations for audits, provision of information, reporting and performance indicators. Under the risk based auditing framework,⁸ we consider that this part of the licence poses a low to moderate level of risk with respect to likelihood and consequence of non-compliance.

⁸ IPART, Audit Guideline - Public Water Utilities, Water - Guideline, May 2016, p 4.

Clause	Requirement	Compliar	ce grading			
8	Performance monitoring	2012-13 a	2013-14 ^b	2014-15 b	2015-16 ^c	2016-17
8.2.1	Must comply with the requirements of the Reporting Manual	Full	-	-	Full	
8.2.2	Maintain sufficient record systems	Full	-	-	High	
8.3.5	Provide water quality information to NSW Health	Full	-	Full	-	
8.4.1	Maintain sufficient record systems to enable accurate measure of performance against indicators	-	Full	Full	Full	

Table 2.5	Summary of compliance with Part 8 of the licence – Performance
	monitoring

a IPART, Hunter Water Operational Audit 2012/13 – Report to the Minister – Compliance Report, December 2013.

b IPART, Hunter Water Operational Audit 2014-15 – Report to the Minister – Compliance Report, March 2016.
 c Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report. December 2016.

For clause 8.2.1, the auditor found that Hunter Water demonstrated that it had met all relevant requirements of its reporting manual, and was assigned full compliance.

The auditors questioned whether recent identification of groundwater contamination at RAAF Airbase Williamtown (covering part of the Tomago Sandbeds) constituted an incident under the reporting manual. Hunter Water responded that when both Hunter Water and NSW Health became aware of the issue, there was no evidence of contamination of drinking water. Hunter Water wrote to NSW Health in September 2014 to confirm the precautionary measures put into place to manage potential risks associated with this issue. Audit interviews found that Hunter Water has committed staff at very senior levels to manage potential risks associated with this issue, and to frequently liaise with other agencies such as NSW Health, Environment Protection Authority and the NSW Government regarding this issue.

The audit found that the contamination issue at RAAF Airbase Williamtown did not constitute a reportable incident under the reporting manual. The guidelines applicable to the contaminant (ADWG) do not provide criteria for the relevant contaminant and in cases where a trigger level is not specified for a contaminant, the US EPA guideline limits are used for reporting purposes. In this case, the levels detected in groundwater were below the US EPA guideline limits and therefore the requirement for an 'incident report' was not triggered. For clause 8.2.2, the auditor found that not all documents displayed a unique document identifier and therefore did not adhere to Hunter Water's procedural requirements for the TRIM system. For this reason, Hunter Water was assigned high compliance for clause 8.2.2.

Hunter Water achieved full compliance for clause 8.4.1, because the auditor concluded that Hunter Water had demonstrated it had an effectively implemented environmental management system, which was reflected by the continuation or improvement of good performance against the environmental indicators specified by IPART.

We make one recommendation in relation to clause 8.2.2, based on the auditor's recommendation.

Recommendation

7 By 30 June 2017, Hunter Water should ensure all compliance related documents are consistent with Hunter Water's procedure for managing document control.

The auditor identified one opportunity for improvement to clause 8.4.1. This related to IPART revising Environmental Indicator 7 (Waste Recycling) to provide better differentiation between recycled waste streams, delineating the bias in reporting of large volume wastes against lighter weight materials (eg. office waste paper). This opportunity for improvement is for IPART's consideration for action and is out of scope of this operational audit. Further details of the opportunity for improvement are available in the audit report in Appendix C.

3 Progress on previous audit recommendations

The previous audits in 2012-13, 2013-14 and 2014-15 identified areas where Hunter Water's performance with its licence obligations did not receive full compliance. We previously made recommendations to the Minister to address these issues.⁹ The following table outlines Hunter Water's progress in implementing these recommended actions.

Hunter Water has completed two out of nine outstanding recommendations from previous audits. Seven recommendations were ongoing.

Where a recommendation is ongoing in Table 3.1, it will be followed up in 2016-17, together with the recommendations from this year's audit.

IPART Recommendation No.	Auditor Recommendation No.	Progress
IPART 2013-14-04	 2013-14-03, 2013-14-04, 2013-14-06, 2013-14-13 Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including: a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health b) develop a process to ensure critical limits are only altered with supervisory consent and there is a failsafe process to ensure that they are reinstated before water quality is compromised 	Ongoing Drinking Water CCPs: Partially completed, with NSW Health querying some critical limits (eg Fluoride) and validation of other critical limits. Recycled Water CCPs: NSW Health has yet to be satisfied regarding submitted RWQMPs
	 c) revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP d) develop a process to record and document corrective actions, and 	

Table 3.1Hunter Water's progress in 2015-16 to address our
recommendations from the previous audits

⁹ IPART, Hunter Water Operational Audit 2014-15 Report to the Minister – Compliance Report, March 2016.

	 preventive measures to reduce risks operational and critical limits must be set in SCADA as alarms, including delay times where appropriate. 	
IPART	2013-14-05	Complete
2013-14-05	Within 18 months, Hunter Water should define and identify significant risks. Determine the preventive measures that manage significant risks, and implement a plan to document the preventive measures and consequent corrective measures.	This recommendation is considered complete but has been replaced in part by Recommendation 2 for drinking water quality in this years' audit.
IPART	2013-14-01	Complete
2013-14-06	Within 12 months, Hunter Water should develop a process to inform customers who receive unfiltered water from the Chichester Trunk Gravity Main about the quality and use of that water. (It was noted that the non- standard agreement for customers receiving this service does not currently provide information on the quality of the water and therefore material is required to educate and inform these customers.)	Hunter Water has provided a letter and a non-standard agreement to address the non- potable nature of unfiltered water. It is now considered to have a sound communication and education process in place based on the evidence provided.
IPART	2013-14-11	Complete
2013-14-09	Within 12 months, Hunter Water should implement a process to formally review the effectiveness of the DWQMS by the executive management team (for example, this could be done by tabling a performance report at a meeting of the executive team, which covers the requirements of the ADWG and how Hunter Water's DWQMS are meeting these elements).	A clear process is now in place and followed in practice.
IPART	2013-14-14 & 2013-14-12	Partially Complete
2013-14-11	 Within 12 months, Hunter Water should review the following matters in respect to the Clarence Town Wastewater Treatment Works: The effectiveness of the CCPs. If the corrective action can be undertaken in a timely manner, and it reduces risk, then implement the CCPs as soon as possible. The risk assessment at Clarence Town Wastewater Treatment Works (WWTW) to take account of irrigation-water ponding at the site. 	Component 1 of the recommendation is still ongoing noting that Hunter Water has submitted its system- specific RWQMPs to NSW Health by end June 2016 and is awaiting comment. The Veolia risk assessment now includes ponding of irrigation water at Clarence Town WWTW. Component 2 of the recommendation is completed.
IPART 2013-14-15	 2013-14-20 Hunter Water should continue implementing the five improvement initiatives identified as part of its 2012 Benchmarking Program including: ✓ develop a holistic approach to asset maintenance 	Ongoing Hunter Water continues to implement the remaining improvement initiatives identified, but with a focus on developing an asset management system

	 the complete capture of all asset and related maintenance information in its Ellipse Asset/ Maintenance Management System. (It was noted that these initiatives should be fully implemented by December 2017, consistent with Hunter Water's ISO 55001 development program). 	consistent with ISO 55001 by December 2017.
IPART	2014-15-01	Ongoing
2014-15-01	It is recommended that Hunter Water commence the implementation of the interim CCPs as soon as possible and finalise validation program.	The RWQMPs have been submitted to NSW Health for comment. There are still areas of non- compliance with AGWR, and these should be checked for completion.
IPART	2014-15-02	Ongoing
2014-15-02	It is recommended that Hunter Water finalise its validation program under its RWQMS and facilitate endorsement of the outcomes by NSW Health. CCPs should then be adjusted or refined in accordance with the outcomes	See comments for previous recommendation.
IPART	2014-15-03	Ongoing
2014-15-03	 It is recommended that Hunter Water continues to fully implement improvement initiatives in respect of: the development and implementation of a holistic approach to maintenance 	Hunter Water is on-track to develop an asset management system consistent with ISO 55001 by December 2017.
	management	
	 the complete capture of all asset and related maintenance information in its Enterprise Resource Planning (Asset/ Maintenance Management) System 	
	 criticality and condition assessment 	
	 review and update of operational and maintenance procedures 	
	across the whole of the asset portfolio.	

a Source: Aurecon and Risk Edge, 2015/16 Operational Licence Audit of Hunter Water Corporation – Final Audit Report, December 2016.

The auditor found that Hunter Water has made progress with the nine previous recommendations:

- ▼ Three of the nine recommendations, IPART2013-14-06, IPART2013-14-05 and IPART2013-14-09 were completed during 2015-16 as planned in accordance with the due dates.
- ▼ Two of the nine recommendations, IPART2013-14-04 and IPART2013-14-11 were not completed before the due dates. These recommendations were identified by the auditor as having 'gaps' affecting the completion of the recommended works. These recommendations also were affected by a requirement for NSW Health to review and provide comment on the water quality management plans for drinking and recycled water.

- Two other recommendations related to the implementation of the RWQMS, IPART2014-15-01 and IPART2014-15-02, are intrinsic to the completion of the three recommendations above. These recommendations require further work by Hunter Water based on the auditor's comments, but are due for completion in the next audit period
- Two remaining recommendations, IPART2013-14-15 and IPART2014-15-03 in relation to asset management system improvements were ongoing and were on-track to meet the recommended completion date of 31 December 2017.

Hunter Water has demonstrated progress towards addressing the previous 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.

A Compliance grades

B 2015-16 Audit Scope

B 2015-16 Audit Scope

2015-16 operational audit scope

Hunter Water Corporation

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2015-16 audit scope

This scope is based on the five year audit program for Hunter Water's 2012-2017 Operating Licence. Auditors should note any directions in the comments column of Table 1.

Previous recommendations

Table 2 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 Hunter Water as follows:

▼ the development of certified Environmental Management System (EMS) and Quality Management System (QMS) by 30 June 2017.

We request that the auditor provides a summary of Hunter Water's progress, to date, on developing, certifying and implementing the management systems. This should include if, in the auditor's view, sufficient progress was made to meet the future licence requirement. This should be provided in the cover letter to the audit report.

Key

Requirement	Meaning
Audit/Review	Audit/review clause in 2015-16
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 1 2015-16 audit scope for Hunter Water Corporation

Licence clause	Operating Licence obligation	2015-16 audit requirement	Comments
1	Licence and Licence authorisation		
1.1	Objectives of this Licence		
1.1.1	The objective of this Licence is to enable and require Hunter Water to provide the Services within its Area of Operations. Consistent with this objective, this Licence requires Hunter Water to:	NR	
	 a) meet the objectives and other requirements imposed on it in the Act and other applicable law; 		
	 b) comply with the System Quality and Performance Standards; 		
	 c) recognise the rights given to Customers and Consumers; and 		
	d) be subject to Operational Audits.		
1.2	Licence authorisation		
1.2.1	This Licence is granted to enable and require Hunter Water to provide, construct, operate, manage and maintain efficient, co-ordinated and commercially viable systems and Services for supplying water, providing sewerage Services, and disposing of Wastewater throughout the Area of Operations.	NR	
1.3	Provision of a drainage system		
1.3.1	Hunter Water must provide, operate, manage and maintain a drainage service as described in section 13(1)(b) of the Act.	NR	
1.4	Duration of Licence		
1.4.1	The term of this Licence is 5 years from the Commencement Date.	NR	
	[Note: This Licence starts on 1 July 2012, which means that it will end on 30 June 2017.]		
1.5	Licence amendment		
1.5.1	Subject to the Act and condition 1.5.2, this Licence may be amended by the Governor by notice in the NSW Government Gazette. The amendment takes effect on the date the notice is published in the NSW Government Gazette, or on such other date specified in the notice.	NR	

Licence clause	Operating Licence obligation	2015-16 audit requirement	Comments
1.5.2	Before any notice of an amendment to this Licence is published in the NSW Government Gazette, the Minister must give Hunter Water reasonable notice of the proposed amendment to enable it to comply with the amendment (if relevant) upon its commencement.	NR	
1.6	Connection of Services		
1.6.1	Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must ensure that the Services are available on request for connection to any Property situated in the Area of Operations.	SC	
1.6.2	Connection to the Services is subject to any conditions Hunter Water may lawfully impose to ensure the safe, reliable and financially viable supply of the Services to Properties in the Area of Operations in accordance with this Licence.	NR	
1.7	Non-exclusive Licence		
1.7.1	This Licence does not prohibit another person from providing any Services in the Area of Operations that are the same as, or similar to, the Services, if the person is lawfully entitled to do so.	NR	
1.8	Availability of Licence		
1.8.1	Hunter Water must make this Licence available free of charge:a) on its website for downloading by any person; andb) to the public on request.	SC	
1.9	Pricing		
1.9.1	Hunter Water must set the level of fees, charges, and other amounts payable for the Services subject to the terms of this Licence, the Act and the maximum prices and methodologies for the Services determined from time to time by IPART under the IPART Act.	NR	

Licence clause	Operating Licence obligation	2015-16 audit requirement	Comments
2	Water Quality		
2.1	Drinking Water		
2.1.1	 Hunter Water must maintain a Management System that is consistent with: a) the Australian Drinking Water Guidelines; or b) if NSW Health specifies any amendment or addition to the Australian Drinking Water Guidelines that applies to Hunter Water, the Australian Drinking Water Guidelines as amended or added to by NSW Health, 	Audit	This condition was last audited in 2014- 15 and was awarded Full Compliance in that audit. Audit will include a risk based adequacy audit of the system, and implementation of the system.
	(Drinking Water Quality Management System).		
	[Note: It is generally expected that Hunter Water will develop a system consistent with the Australian Drinking Water Guidelines, including the Drinking 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 Hunter Water's circumstances and/or Drinking Water Quality policy and practices within New South Wales.]		
2.1.2	Hunter Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the system, including to the satisfaction of NSW Health.	Audit	Audit will include a risk based adequacy audit of the system, by element, and implementation of the whole system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the ADWG will be the main focused of the audit. The scheme/ sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health. Past field verification sites are listed in Table 3. IPART will write to NSW Health regarding its satisfaction with Hunter Water's management of Drinking Water Quality prior to audit. This condition was last audited in 2014-
			This condition was last audited in 2014- 15 and was awarded Full Compliance in that audit.

Licence clause	Operating Licence obligation	2015-16 audit requirement	Comments
2.1.3	Hunter Water must notify IPART and NSW Health of any significant changes that it proposes to make to the Drinking Water Quality Management System in accordance with the Reporting Manual.	SC	Audit following notice of change. Action completed in 2014-15 operational audit. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
2.1.4	Hunter Water must obtain NSW Health's approval for any significant changes proposed to be made to the Drinking Water Quality Management System before implementing or carrying out its activities in accordance with them.	SC	IPART will write to NSW Health regarding its approval for any significant changes prior to audit.
2.2	Recycled Water		
2.2.1	 Hunter Water must maintain a Management System that is consistent with: a) the Australian Guidelines for Water Recycling; or b) if NSW Health specifies any amendment or addition to the Australian Guidelines for Water Recycling that applies to Hunter Water, the Australian Guidelines for Water Recycling as amended or added to by NSW Health, (Recycled Water Quality Management System). [Note: It is generally expected that Hunter Water will develop a system consistent with the Australian Guidelines for Water Recycling, including the Recycled 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 Hunter Water's circumstances and/ or Recycled Water Quality policy and practices within New South Wales.] 	Audit	Audit will include a risk based adequacy audit of the system, and implementation of the system. This condition was last audited in 2014- 15 and was awarded Full Compliance in that audit. We audit the utility's drinking water quality system, which is based on the AGWR framework. Elements of the framework and schemes to be audited will be determined by IPART in consultation with the auditors. Audit will be informed by consultation with NSW Health and outcomes of previous audits

Licence clause	Operating Licence obligation	2015-16 audit requirement	Comments
2.2.2	Hunter Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the system, including to the satisfaction of NSW Health.	Audit	Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the AGWR will be the main focused of the audit. The scheme/ sites to be visited for field verification will be determined by auditor in consultation with IPART.
			This decision will also take into account any advice from NSW Health.
			IPART will write to NSW Health regarding its satisfaction with Hunter Water's management of Recycled Water Quality prior to audit.
			This condition was last audited in 2014- 15 and was awarded High Compliance in that audit.
2.2.3	Hunter Water must notify IPART and NSW Health of any significant changes that it proposes to make to the Recycled Water Quality Management System in accordance with the Reporting Manual.	SC	Audit following any notice of change. IPART will write to NSW Health to determine whether audit is required. In its report on 31 March 2016 Hunter Water advised there have been no significant changes. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
2.2.4	Hunter Water must obtain NSW Health's approval for any significant changes proposed to be made to the Recycled Water Quality Management System before implementing or carrying out its activities in accordance with	SC	Audit following any notice of change.
	them.		determine whether audit is required.

Water Quantity		
Water Conservation Target		
Hunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year during the term of this Licence is equal to or less than 215 kilolitres per year for each Property used for residential purposes (Water Conservation Target).	Audit	This condition was last audited in 2013- 14 and was awarded Full Compliance in that audit.
Hunter Water must report its compliance with the Water Conservation Target to IPART in accordance with the Reporting Manual.	SC	
Economic Level of Leakage		
 By 31 January 2014, Hunter Water must: a) complete a review to determine the Economic Level of Leakage from its Drinking Water Network; and b) submit a report on this review to IPART in accordance with the Reporting Manual. 	NR	Obligation met
Hunter Water must provide to IPART, for its approval, the proposed methodology for determining the Economic Level of Leakage in accordance with the Reporting Manual.	NR	Obligation met
When determining the Economic Level of Leakage from the Drinking Water Network for the purposes of condition 3.2.1, Hunter Water must use the methodology approved by IPART under condition 3.2.2.	Audit	
Roles and responsibilities protocol		
 Hunter Water must use its best endeavours to: a) develop and agree a Roles and Responsibilities Protocol with the Metropolitan Water Directorate for the development of the Lower Hunter Water Plan; and b) maintain and comply with any Roles and Responsibilities Protocol that has been agreed and developed under condition 3.3.1(a). 	SC	A new protocol was executed in 2013- 14. IPART will write to MWD to check if there are any issues.
Assets		
Asset Management System		
 Hunter Water must maintain a Management System that is consistent with: a) the BSI PAS 55:2008 (PAS 55) Asset Management standard; or 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	Hunter Water currently has asset management system which is based on the Aquamark benchmarking tool. This condition was last audited in 2014- 15 and was awarded High Compliance in that audit. The 2014-15 audit considered the July 2017 completion realistic. IPART has agreed to Hunter Water's AMS moving to system consistent with ISO 55001 by July 2017 (date nominated by Hunter Water).
	 Water Conservation Target Hunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year during the term of this Licence is equal to or less than 215 kilolitres per year for each Property used for residential purposes (Water Conservation Target). Hunter Water must report its compliance with the Water Conservation Target to IPART in accordance with the Reporting Manual. Economic Level of Leakage By 31 January 2014, Hunter Water must: a) complete a review to determine the Economic Level of Leakage from its Drinking Water Network; and b) submit a report on this review to IPART in accordance with the Reporting Manual. Hunter Water must provide to IPART, for its approval, the proposed methodology for determining the Economic Level of Leakage in accordance with the Reporting Manual. When determining the Economic Level of Leakage from the Drinking Water Network for the purposes of condition 3.2.1, Hunter Water must use the methodology approved by IPART under condition 3.2.2. Roles and responsibilities protocol Hunter Water must use its best endeavours to: a) develop and agree a Roles and Responsibilities Protocol with the Metropolitan Water Directorate for the development of the Lower Hunter Water Plan; and b) maintain and comply with any Roles and Responsibilities Protocol that has been agreed and developed under condition 3.3.1(a). Assets Asset Management System Hunter Water must maintain a Management System that is consistent with:	Water Conservation TargetAuditHunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year during the term of this Licence is equal to or less than 215 kilolitres per year for each Property used for residential purposes (Water Conservation Target).AuditHunter Water must report its compliance with the Water Conservation Target to IPART in accordance with the Reporting Manual.SCEconomic Level of LeakageImage: SCBy 31 January 2014, Hunter Water must: a) complete a review to determine the Economic Level of Leakage from its Drinking Water Network; and b) submit a report on this review to IPART in accordance with the Reporting Manual.NRHunter Water must provide to IPART, for its approval, the proposed methodology for determining the Economic Level of Leakage in accordance with the Reporting Manual.AuditWhen determining the Economic Level of Leakage from the Drinking Water Network for the purposes of condition 3.2.1, Hunter Water must use the methodology approved by IPART under condition 3.2.2.AuditHunter Water must use its best endeavours to: a) develop and agree a Roles and Responsibilities Protocol with the Metropolitan Water Directorate for the development of the Lower Hunter Water Plan; andSCb) maintain and comply with any Roles and Responsibilities Protocol that has been agreed and developed under condition 3.3.1(a).AuditAssetsAsset Management Standard; or b) the Water Services Association of Australia's Aquamark benchmarking tool; orAudit

4.1.2	Hunter Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the system.	Audit	The auditor in consultation with the IPART will select 1 or 2 classes of asset/ facilities to check implementation of the framework. A list of assets/facilities visited in the past is included in Table 3 at the end of this scope. Note: adequacy of some elements of the system may be assessed if issue arises or is required for checking implementation. This condition was last audited in 2014- 15 and was awarded Full Compliance in that audit.
4.1.3	Hunter Water must notify IPART of any significant changes that it proposes to make to the Asset Management System in accordance with the Reporting Manual.	SC	Audit following any notice of change In its report on 31 March 2016 Hunter Water advised there have been no significant changes. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
4.2	Water pressure, water continuity and Wastewater Overflow Standards		
4.2.1	 Interpretation of standards a) For the purposes of the Water Pressure Standard and Water Continuity Standard, each separately billed or separately occupied part of a Multiple Occupancy Property is considered to be 1 Property. [Note: for example, a block of 5 townhouses or apartments is counted as 5 Properties, and a block of land on which there is a house and a granny flat is counted as 2 Properties.] b) For the purposes of the Wastewater Overflow Standard, a Multiple Occupancy Property is considered to be 1 Property. [Note: for example, a block of 5 townhouses or apartments is counted as 2 Properties.] b) For the purposes of the Wastewater Overflow Standard, a Multiple Occupancy Property is considered to be 1 Property. [Note: for example, a block of 5 townhouses or apartments is counted as 1 Property, and a block of land on which there is a house and a granny flat is counted as 1 Property.] c) In the case of any ambiguity in the interpretation or application of any of the standards set out in this condition 4.2, IPART's interpretation of the relevant standard or assessment of its application will prevail. 	NR	

4.2.2	 Water Pressure Standard a) Hunter Water must ensure that no more than 4,800 Properties experience a Water Pressure Failure in a financial year (Water Pressure Standard). b) A Property is taken to have experienced a Water Pressure Failure at each of the following times: i) when a person notifies Hunter Water that the Property has experienced a Water Pressure Failure and that Water Pressure Failure is confirmed by Hunter Water; or ii) when Hunter Water's systems identify that the Property has experienced a Water Pressure Failure. c) Despite condition 4.2.2(b), a Property will not be taken to have experienced d) a Water Pressure Failure if that Water Pressure Failure occurred only because of: i) a Planned Water Interruption or Unplanned Water Interruption; ii) water usage by authorised fire authorities in the case of a fire; or 	Audit	This condition was last audited in 2013 14 and was awarded Full Compliance in that audit.
	authorities in the case of a fire; or iii) a short term or temporary operational problem (such as a main break) which is remedied within 4 days of its occurrence.		
4.2.3	 Water Continuity Standard a) Hunter Water must ensure that in a financial year: i) no more than 10,000 Properties experience an Unplanned Water Interruption that lasts more than 5 continuous hours; and ii) no more than 5,000 Properties experience 3 or more Unplanned Water Interruptions that each lasts more than 1 hour, (Water Continuity Standard). b) For the purposes of condition 4.2.3(a), Hunter Water must use the best available data (taking account of water pressure data where that data is available) to determine: i) whether a Property has experienced an Unplanned Water Interruption. c) If a Property experiences an Unplanned Water Interruption. c) If a Property experiences an Unplanned Water Interruption that was caused by a third party, that Property is taken not to have experienced an Unplanned Water Interruption for the purposes of condition 4.2.3(a). 	Audit	This condition was last audited in 2013 14 and was awarded Full Compliance in that audit.

4.2.4	 Wastewater Overflow Standard a) Hunter Water must ensure that in a financial year: i) no more than 5,000 Properties (other than Public Properties) experience an Uncontrolled Wastewater Overflow in dry weather; and ii) no more than 45 Properties (other than Public Properties) experience 3 or more Uncontrolled Wastewater Overflows in dry weather, (Wastewater Overflow Standard). 	Audit	This condition was last audited in 2013- 14 and was awarded Full Compliance in that audit.
5	Customers and Consumers		
5 5.1	Customers and Consumers		
5.1.1	Hunter Water must publish a copy of the Customer Contract and any variations to it on Hunter Water's website for downloading free of charge, and must provide it to any Customer or Consumer free of charge upon request.	SC	
5.1.2	Hunter Water must notify IPART of any significant changes that it proposes to make to the Customer Contract in accordance with the Reporting Manual.	SC	Audit following any notice of change. In its report on 31 March 2016 Hunter Water advised there have been no significant changes. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
5.2	Providing information		
5.2.1	 Hunter Water must prepare a pamphlet that: a) briefly explains the Customer Contract; b) summarises the key rights and obligations of Customers under the Customer Contract; c) refers to the types of account relief available for Customers experiencing financial hardship; d) outlines the Customer's obligations and rights to claim a rebate; and e) contains information about how to contact Hunter Water by telephone, email, postal mail or in person. 	SC	
5.2.2	Hunter Water must update the pamphlet prepared under condition 5.2.1 when variations are made to the Customer Contract.	SC	
5.2.3	 Hunter Water must provide the pamphlet prepared under condition 5.2.1 and any updates made under condition 5.2.2 free of charge to: a) Customers at least annually with their Bills; and b) any other person on request. 	SC	
5.2.4	Hunter Water must advertise in a local newspaper at least once annually on: a) the types of account relief available for Customers experiencing financial hardship;	SC	

5.3	Consumers		
5.3.1	Hunter Water's obligations under the Customer Contract relating to:	SC	
	 a) complaint handling and complaint resolution procedures; and b) the Procedure for Payment Difficulties and 		
	Actions for Non-payment, are extended to Consumers as if Consumers were parties to the Customer Contract.		
5.4	Procedure for financial hardship, payment difficulties, water flow restriction and disconnection		
5.4.1	 Hunter Water must maintain and fully implement procedures relating to financial hardship, payment difficulties, water flow restriction and disconnection (Procedure for Payment Difficulties and Actions for Non-payment), which must include: a) a financial hardship policy that helps residential Customers experiencing 	Audit	This condition was last audited in 2012- 13 and was awarded Full Compliance in that audit.
	financial hardship better manage their current and future Bills; b) procedures relating to a payment plan for		
	residential Customers who are responsible for paying their Bills and who are, in Hunter Water's opinion, experiencing financial hardship;		
	c) conditions for disconnection of supply or water flow restriction; and		
	 d) provisions for self-identification, identification by community welfare organisations and identification by Hunter Water of residential Customers experiencing financial hardship. 		
5.4.2	Hunter Water must set out the Procedure for Payment Difficulties and Actions for Non- payment in the Customer Contract.	SC	
5.4.3	Hunter Water must provide an explanation of the Procedure for Payment Difficulties and Actions for Non-payment free of charge to: a) residential Customers, at least annually with their Bills;	Audit	This condition was last audited in 2012- 13 and was awarded Full Compliance in that audit.
	 b) residential Customers whom Hunter Water identifies as experiencing financial hardship; and 		
	c) any other person who requests it.		
5.4.4	Hunter Water must publish the Procedure for Payment Difficulties and Actions for Non- payment on its website for downloading free of charge.	SC	
5.5	Consultative Forum		
5.5.1	Hunter Water must maintain and regularly consult with its Customers and Consumers through a Consultative Forum.	SC	

5.5.2	Hunter Water may utilise the Consultative Forum to, among other things, provide it with advice on the interests of Hunter Water's Customers and Consumers, the Customer Contract and such other key issues related to Hunter Water's planning and operations as Hunter Water may determine, consistent with the Consultative Forum Charter	SC	
5.5.3	Hunter Water must:	SC	
	 a) ensure that at all times the membership of the Consultative Forum is appointed and determined by Hunter Water in accordance with the Consultative Forum Charter; and 		
	b) use its best endeavours to include a person representing each of the following interests as members of the Consultative Forum:		
	 i) business and Consumer groups; ii) organisations representing low income households; 		
	iii) people living in rural and urban fringe areas;		
	iv) residential Consumers;		
	v) environmental groups;		
	vi) local government;		
	vii) older people;		
	viii) people with disabilities;		
	ix) Aboriginal people; and		
	 x) people from non-English speaking backgrounds. 		
5.5.4	Hunter Water and members of the Consultative Forum must for the term of this Licence maintain a charter (Consultative Forum Charter) that addresses all of the following issues:	SC	
	c) the role of the Consultative Forum;		
	 d) selection criteria on how members will be drawn from the community, and information on how vacancies for membership will be advertised; 		
	 e) the procedure for appointment of members; 		
	f) the term for which members are appointed;		
	 g) information on how the Consultative Forum will operate; 		
	 h) a description of the type of matters that will be referred to the Consultative Forum and how those matters may be referred;. 		
	 i) procedures for the conduct of Consultative Forum meetings, including the appointment of a chairperson; 		
	j) procedures for communicating the outcome of the Consultative Forum's work to Hunter Water;		
	 k) procedures for tracking issues raised and ensuring appropriate follow-up of those issues; and 		
	 funding and resourcing of the Consultative Forum by Hunter Water. 		

 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) (Internal Complaints Handling Procedure). 5.6.2 Hunter Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure. Audit This condition was last audited in 2013 14 and was awarded Full Compliance in that audit. 				
 a) a copy of the Consultative Forum Charter; and b) minutes from proceedings of the Consultative Forum, available free of charge: c) on its website for downloading; and d) available at its offices for access or collection by any member of the public. 5.6 Internal Dispute Resolution Process 5.6.1 Hunter Water 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 no regarizations (ISO 10002-2004, MOD) (Internal Complaints Handling Procedure). 5.6.2 Hunter Water must ensure that the Internal Complaints handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure. 5.6.3 Hunter Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure. 5.6.3 Hunter Water must provide to Customers at least annually with their Bills information concerning the Internal Complaints Handling Procedure works. 5.7.2 External dispute resolution scheme 5.7.2 Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of dispute between Hunter Water and its Customers and its Consumers. 5.7.2 Hunter Water must Complaint or dispute referred to the Energy and Water Ombudsman NSW and how it can be accessed; a	5.5.5	Forum with information in its possession or under its control necessary to enable the Consultative Forum to discharge the tasks assigned to it, other than information or	SC	
5.6.1 Hunter Water 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) (Internal Complaints Handling Procedure). Audit This condition was last audited in 201: 14 and was awarded Full Compliance in that audit. 5.6.2 Hunter Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure. Audit This condition was last audited in 201: 14 and was awarded Full Compliance in that audit. 5.6.3 Hunter Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure. Audit This condition was last audited in 201: 14 and was awarded Full Compliance in that audit. 5.6.3 Hunter Water must provide to Customers at least annually with their Bills information concerning the Internal Complaints Handling Procedure works. Audit This condition was last audited in 201: 14 and was awarded Full Compliance in that audit. 5.7.1 Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Consumers. SC 5.7.2 Hunter Water must: a preparte pamphlet that explains the operation of the dispute resolution service provided by the Energy and Water Ombudsman NSW including any rights to have a Complaint of ispute referred to the Energy and Water Ombudsman NSW includin	5.5.6	 a) a copy of the Consultative Forum Charter; and b) minutes from proceedings of the Consultative Forum, available free of charge: c) on its website for downloading; and d) available at its offices for access or 	SC	
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) (Internal Complaints Handling Procedure).14 and was awarded Full Compliance in that audit.5.6.2Hunter Water must ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure.Audit AuditThis condition was last audited in 201: 14 and was awarded Full Compliance in that audit.5.6.3Hunter Water must provide to Customers at least annually with their Bills information concerning the Internal Complaints Handling Procedure works.AuditThis condition was last audited in 201: 14 and was awarded Full Compliance in that audit.5.7.1Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Customers and its Consumers.SC5.7.2Hunter Water must: a) prepare a pamphlet that explains the operation of the dispute resolution service provided by the Energy and Water Ombudsman NSW and how it can be accessed; and b) provide that pamphlet: i) to Customers at least once a year with their Bills; and ii) free of charge to the public on request.SC6EnvironmentInter water with diverse or could by system with bit is consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental Management System with guidance for useNR	5.6	Internal Dispute Resolution Process		
Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure.14 and was awarded Full Compliance in that audit.5.6.3Hunter Water must provide to Customers at least annually with their Bills information concerning the Internal Complaints Handling Procedure which explains how to make a Complaint and how the Internal Complaints Handling Procedure works.AuditThis condition was last audited in 201: 14 and was awarded Full Compliance in that audit.5.7External dispute resolution scheme5.7.1Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Customers and its Consumers.SCSC5.7.2Hunter Water must: a prepare a pamphlet 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 it can be accessed; and b) provide that pamphlet: i) to customers at least once a year with their Bills; and ii) free of charge to the public on request.NR6Environmental ManagementNR6.1.1Environmental Management Systems - Requirements with guidance for useNR	5.6.1	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) (Internal Complaints	Audit	
least annually with their Bills information concerning the Internal Complaints Handling Procedure which explains how to make a Complaint and how the Internal Complaints 14 and was awarded Full Compliance in that audit. 5.7 External dispute resolution scheme 5.7.1 5.7.1 Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Customers and its Consumers. SC 5.7.2 Hunter Water must: SC a) prepare a pamphlet 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 it can be accessed; and SC b) provide that pamphlet: i) to Customers at least once a year with their Bills; and ii) free of charge to the public on request. NR 6 Environmental Management NR 6.1.1 By 30 June 2017, Hunter Water 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 NR	5.6.2	Complaints Handling Procedure is fully implemented and that all relevant activities are	Audit	
5.7.1 Hunter Water must be a member of the Energy and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Customers and its Consumers. SC 5.7.2 Hunter Water must: SC a) prepare a pamphlet 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 including any rights to have a Complaint or dispute referred to the Energy and Water Ombudsman NSW and how it can be accessed; and b) provide that pamphlet: i) to Customers at least once a year with their Bills; and ii) free of charge to the public on request. 6 Environment 6.1.1 Environmental Management NR 6.1.1 By 30 June 2017, Hunter Water 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 NR	5.6.3	least annually with their Bills information concerning the Internal Complaints Handling Procedure which explains how to make a Complaint and how the Internal Complaints	Audit	
and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its Customers and its Consumers. SC 5.7.2 Hunter Water must: SC a) prepare a pamphlet 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 it can be accessed; and SC b) provide that pamphlet: i) to Customers at least once a year with their Bills; and i) free of charge to the public on request. 6 Environment 6.1.1 Environmental Management 6.1.1 By 30 June 2017, Hunter Water 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 NR	5.7	External dispute resolution scheme		
 a) prepare a pamphlet 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 it can be accessed; and b) provide that pamphlet: i) to Customers at least once a year with their Bills; and ii) free of charge to the public on request. 6 Environment 6.1 Environmental Management 6.1.1 By 30 June 2017, Hunter Water 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 	5.7.1	and Water Ombudsman NSW for the resolution of disputes between Hunter Water and its	SC	
6.1 Environmental Management 6.1.1 By 30 June 2017, Hunter Water 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 NR	5.7.2	 a) prepare a pamphlet 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 it can be accessed; and b) provide that pamphlet: i) to Customers at least once a year with their Bills; and 	SC	
6.1.1 By 30 June 2017, Hunter Water 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	6	· • • · ·		
Management System which is consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental Management Systems - Requirements with guidance for use	6.1	Environmental Management		
	6.1.1	Management System which is consistent with the Australian Standard AS/NZS ISO 14001:2004: Environmental Management Systems - Requirements with guidance for use	NR	

6.1.2	 Hunter Water must ensure that: a) by 30 June 2017, the Environmental Management System is certified by an appropriately qualified third party to be consistent with the 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 6.1.2(a), the certification is maintained during the remaining term of this Licence. 	SC	Obligation met. Certified on 22 October 2014. Check certification and external audit report.
6.1.3	Hunter Water must ensure that by 30 June 2017, the Environment Management System is fully implemented and that all relevant activities are carried out in accordance with the system.	SC	Obligation met. Certified on 22 October 2014. Check certification and external audit report.
6.1.4	 Until the Environmental Management System has been developed and certified in accordance with conditions 6.1.1 and 6.1.2, Hunter Water must: 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. 	NR	
6.1.5	Hunter Water must notify IPART of any significant changes that it proposes to make to the Environmental Management System in accordance with the Reporting Manual.	SC	Check certification and external audit report.
7	Quality management		
7.1	Quality Management System		
7.1.1	By 30 June 2017, Hunter Water must develop a Management System that is consistent with the Australian Standard AS/NZS ISO 9001:2008: Quality Management Systems – Requirements (Quality Management System).	NR	QMS certified in August 2015
7.1.2	Hunter Water must ensure that: a) by 30 June 2017, the Quality Management System is certified by an appropriately qualified third party to be consistent with	SC	Obligation met. Certified in August 2015. Check certification and external audit
	 the Australian Standard AS/NZS ISO 9001:2008: Quality Management Systems – Requirements; and b) once the Quality Management System is certified under condition 7.1.2(a), the certification is maintained during the remaining term of this Licence. 		report.
7.1.3	 9001:2008: Quality Management Systems Requirements; and b) once the Quality Management System is certified under condition 7.1.2(a), the certification is maintained during the 	SC	

8	Performance monitoring		
8.1	Operational Audits		
8.1.1	 IPART may undertake, or may appoint an Auditor to undertake, an audit on Hunter Water's compliance with: a) this Licence; b) the Reporting Manual; and c) any matters required by the Minister, (Operational Audit). 	NR	
8.1.2	Hunter Water 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.	SC	
8.1.3	Hunter Water must provide the information requested under condition 8.1.2 within a reasonable time of it being requested.	SC	
8.1.4	For the purposes of any Operational Audit or verifying a report on a Operational Audit, Hunter Water must, within a reasonable time of being required by IPART or an Auditor, permit IPART or the Auditor to:	SC	
	 a) have access to any works, premises or offices occupied by Hunter Water; 		
	b) carry out inspections, measurements and tests on, or in relation to, any such works, premises or offices;		
	 c) take on to any such premises, 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 Hunter Water that are maintained in relation to the performance of Hunter Water's obligations under this Licence; and 		
	 e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Hunter Water, including any of Hunter Water's officers and employees. 		
8.2	Reporting		
8.2.1	Hunter Water must comply with its reporting obligations set out in the Reporting Manual, which include:	Audit	This condition was last audited in 2012- 13 and was awarded Full Compliance in that audit.
	 a) reporting to IPART and NSW Health in accordance with the Reporting Manual, and 		
	 b) making reports and other information publicly available, in the manner set out in the Reporting Manual. 		
8.2.2	Hunter Water must maintain sufficient record systems that enable it to report accurately in accordance with condition 8.2.1.	Audit	This condition was last audited in 2012- 13 and was awarded Full Compliance in that audit.

8.3	Provision of Information		
8.3.1	If IPART requests that Hunter Water provide information relating to the performance of its obligations under condition 8.2, Hunter Water 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 condition 8.2.	SC	
8.3.2	Hunter Water must provide IPART with such information as is reasonably required to enable IPART to conduct any review or investigation of Hunter Water's obligations under this Licence.	SC	
8.3.3	If Hunter Water contracts out any of its activities to third parties (including a subsidiary) it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such third parties provide information and do the things specified in this condition 8 as if that third party were Hunter Water.	SC	
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.	SC	
8.3.5	If NSW Health requests that Hunter Water provide information relating to water quality, Hunter Water must provide the information requested in the manner and form specified by NSW Health. Hunter Water must provide the information requested within a reasonable time of NSW Health's request. [Note: Under section 19 of the Public Health Act 2010 (NSW), the Director General of NSW Ministry of Health may require Hunter Water to produce particip information 1	SC	Audit following any notice of change.
8.4	produce certain information.] Performance indicators		
8.4.1	 a) Hunter Water must maintain sufficient record systems to enable it to measure accurately its performance against the performance indicators specified in the Reporting Manual. b) 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. 	Audit	Audit to check calculation methods of a sample of IPART performance indicators.
9	Memorandum of Understanding		
9.1	NSW Health		
9.1.1	 Hunter Water must: a) use its best endeavours to maintain a Memorandum of Understanding with NSW Health; and b) comply with any Memorandum of Understanding maintained with NSW Health under condition 9.1.1(a). 	SC	Audit following any notice of change. There have been no changes to the MOU with NSW Health in the reporting period. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.

9.1.2	The purpose of a Memorandum of Understanding is to form the basis for cooperative relationships between the parties to the memorandum. In particular, the purpose of the Memorandum of Understanding with NSW Health is to recognise NSW Health's role in providing advice to the NSW Government in relation to Drinking Water quality standards and the supply of water which is safe to drink.	NR	
9.1.3	The Memorandum of Understanding with NSW Health must include a procedure for Hunter Water to report to NSW Health any information or events in relation to any of Hunter Water's systems or Services which may have risks for public health.	SC	Audit following any notice of change. There have been no changes to the MOU with NSW Health in the reporting period. Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
9.1.4	Condition 9.1.1 does not limit the persons with whom Hunter Water may have a Memorandum of Understanding.	NR	
10	End of term review		
10.1	End of Term Review		
10.1.1	 It is anticipated that a review of this Licence will commence in the first quarter of 2016 to investigate: 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	
	 [Note: In the event that IPART undertakes the end of term review, IPART intends to: commence the end of term review (including undertaking public consultation) in the first quarter of 2016; report to the Minister by 30 April 2017 on: the findings of the end of term review, any recommendations for conditions to be included in a new Licence, and any recommendations for amending any law that adversely impacts on this Licence; and make the report to the Minister publicly available after the end of term review.] 		
10.1.2	Hunter Water 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	NR	

Source: Hunter Water Corporation five year audit program.

Recommendation Operational issue IPART's recommendation to the Mini (licence reference where applicable)		IPART's recommendation to the Minister	er 2014-15 audit findings, and status as reported by Guidance f utility on 31 March 2016 ^a audit		
2013-14-03 2013-14-04 2013-14-06 2013-14-13	Water Quality Management Systems Conditions 2.1.1, 2.1.2, 2.2.1 & 2.2.2	 Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including: a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health b) develop a process to ensure critical limits are only altered with supervisory consent and there is a failsafe process to ensure that they are reinstated before water quality is compromised c) revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP d) develop a process to record and document corrective actions, and preventive measures to reduce risks e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate. 	Completed for Drinking Water (Clause 2.1.1 and 2.1.2), and implementation continues for Recycled Water (Clause 2.2.1 and 2.2.2) The audit found that CCPs for drinking water have been implemented across the site that was subject to audit (Grahamstown WTP) and necessary documentation has been developed to meet the requirements of the recommendation. The establishment of CCPs for recycled water is linked to the validation plan, which is currently being implemented and is due to be completed in November 2015. Once the validation program is completed and the CCPs are endorsed by NSW Heath, Hunter Water and Veolia will implement the changes, including the input of limits and alarms into SCADA.	Auditor to check for completeness.	
2013-14-05	Water Quality Management Systems Conditions 2.1.1 & 2.2.1	Within 18 months, Hunter Water should define and identify significant risks. Determine the preventive measures that manage significant risks, and implement a plan to document the preventive measures and consequent corrective measures.	This will occur following staged risk assessment updates, which are scheduled for completion by June 2016. Planned Completion – June 2016.	Auditor to check progress.	
2013-14-01	113-14-01Drinking Water QualityWithin 12 months, Hunter Water should develop a process to inform customers who receive unfiltered water from the Chichester Trunk Gravity Main about the quality and use of that water. (It was noted that the non- standard agreement for customers receiving this service does not currently provide information on the quality of the water and therefore material is required to educate and inform these customers.)		Planned completion December 2015.	Auditor to check progress.	

Table 2 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2014-15 audit findings, and status as reported by utility on 31 March 2016 ^a	Guidance for 2015-16 audit
		Agreed Planned completion December 2015.	Auditor to check progress.	
2013-14-14 2013-14-12	Recycled Water Quality Management System Condition 2.2.2	 Within 12 months, Hunter Water should review the following matters in respect to the Clarence Town Wastewater Treatment Works: The effectiveness of the CCPs. If the corrective action can be undertaken in a timely manner, and it reduces risk, then implement the CCPs as soon as possible. The risk assessment at Clarence Town Wastewater Treatment Works to take account of irrigation-water ponding at the site. 	A respect to the Clarence Town ewater Treatment Works: e effectiveness of the CCPs. If the corrective tion can be undertaken in a timely manner, and it duces risk, then implement the CCPs as soon as ssible. e risk assessment at Clarence Town Wastewater eatment Works to take account of irrigation-water	
2013-14-20	Asset Management System Condition 4.1.1	 Hunter Water should continue implementing the five improvement initiatives identified as part of its 2012 Benchmarking Program including: develop a holistic approach to asset maintenance the complete capture of all asset and related maintenance information in its Ellipse Asset/ Maintenance Management System. (It was noted that these initiatives should be fully implemented by July 2017, consistent with Hunter Water's ISO 55001 implementation program). 	Continuous improvement is occurring across the five areas identified as part of the transition to ISO 55001 certification. Asset information will be captured through Civil Mobility and Data Capture projects. Planned completion by July 2017.	Auditor to check progress.
2014-15-01	Recycled Water Quality Management System Condition 2.2.2	It is recommended that Hunter Water commence the implementation of the interim CCPs as soon as possible and finalise validation program.		
2014-15-02	Recycled Water Quality Management System Condition 2.2.2	It is recommended that Hunter Water finalise its validation program and facilitate endorsement of the outcomes by NSW Health. CCPs should then be adjusted or refined in accordance with the outcomes.	Implementation continues. Hunter Water to provide progress report in May 2016.	Auditor to check progress

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2014-15 audit findings, and status as reported by utility on 31 March 2016 ^a	Guidance for 2015-16 audit
2014-15-03	Asset Management System Condition 4.1.1	 It is recommended that Hunter Water continues to fully implement improvement initiatives in respect of: the development and implementation of a holistic approach to maintenance management the complete capture of all asset and related maintenance information in its Enterprise Resource Planning (Asset/ Maintenance Management) System criticality and condition assessment review and update of operational and maintenance procedures across the whole of the asset portfolio. 	Implementation continues. HWC to provide progress report in May 2016	Auditor to check progress

^a The March 2016 report is currently unavailable, due to a change in the 2014-15 audit program. There is no progress reporting at this time. The 2015-16 progress report will be available at the end of May 2016.

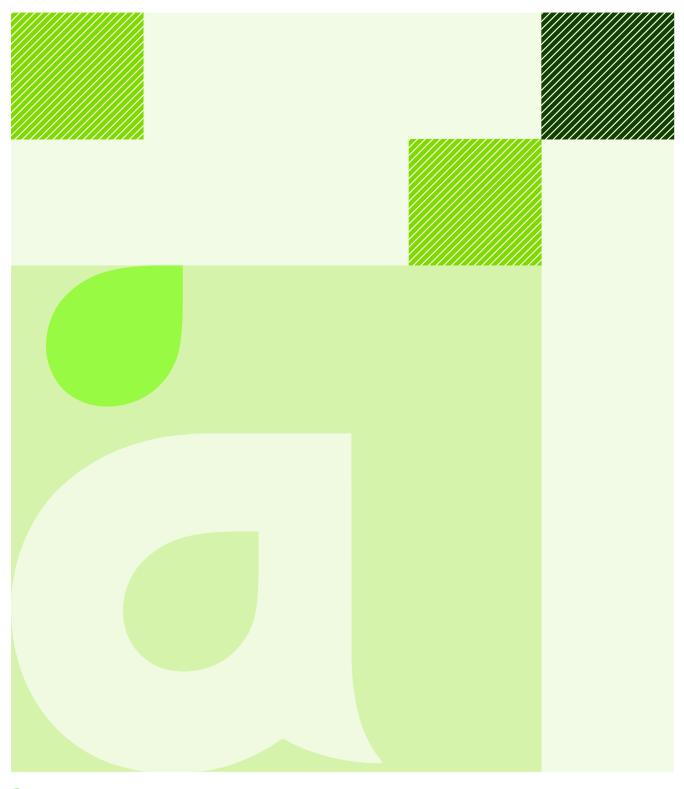
Audit year	Location	Facility			
2015-16	ТВА	ТВА			
2014-15	Edgeworth	Wastewater treatment works			
	KIWS (Kooragang Industrial Water Scheme), incl. Mayfield West	Advanced water treatment plant (recycled water)			
	Grahamstown	Spillway			
		Water treatment plant			
	Campvale	Pump station			
2013-14	Dungog	Dam			
	Clarence Town	Water Treatment Plant			
	Boags Hill	Wastewater Treatment Works			
	Chichester	Inlet			
	Seaham	Weir			
	Balickera	Water Pumping Station			
2012-13	Branxton	Recycled Water Treatment Plant			
	Grahamstown	Water Treatment Plant			
2011-12	Port Stephens	Lemon Tree Passage Water Treatment Plant			
	Grahamstown	Dam			
	Campvale	Pumping Station			
	Between Newcastle and Port Stephens	Tomago Sandbeds			
	Karuah	Sewage Treatment Plant			

Table 3 Previous field verification locations for Hunter Water Corporation

Note: Locations and facilities for the 2015-16 Hunter Water Corporation operational audit will be confirmed with the utility and successful auditor.

C Operational audit report 2015-16 – Hunter Water

C Operational audit report 2015-16 – Hunter Water



aurecon

2015/16 Operational Licence Audit of Hunter Water Corporation

Final Audit Report – Hunter Water Operational Licence Audit 2015-16 **IPART** 1 December 2016 Revision: 2.1 Reference: 253007

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2015/16 Operational Licence Audit of Hunter Water Corporation

Date 1 December 2016 Reference 253007 Revision 2.1

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Executive summary

Auditor declaration

Aurecon Australasia Pty Ltd (Aurecon) and Risk Edge[™] (the auditors) have been engaged by the Independent Pricing and Regulatory Tribunal (IPART) to undertake an audit of the operational licence for Hunter Water Corporation (Hunter Water) (the auditee) for the period of 1 July 2015 to 30 June 2016 (the audit period).

In undertaking the audit, the auditors have relied on information provided by the Hunter Water. Unless as stated otherwise in this report, the auditors have not verified the accuracy or completeness of this information. The auditors will not be liable for any incorrect conclusions made should any of this information be found to be incorrect or incomplete.

The auditors confirm that:

- The auditors have seen sufficient evidence on which to base the conclusions drawn in this report
- The findings of this report accurately reflect the professional opinion of the auditors
- The lead auditor and audit team have noted the requirements of IPART's Audit Guideline for Public Water Utilities and the Request for Quote issued by IPART when undertaking the audit, determining audit findings and preparing this report
- The findings of this report have not been influenced by Hunter Water or any of its associates.

Key audit findings

The auditors found Hunter Water to have implemented effective systems and procedures to manage its responsibilities as set out by its operational licence. Hunter Water has made substantial commitments to ensuring sufficient resources have been allocated to appropriately manage its operations. This was found to be evident in the excellent results shown by the performance monitoring programs which were examined for the audit.

Hunter Water made considerable effort with providing appropriate resources to the auditors to facilitate the audit. All Hunter Water staff and contractors interviewed for the audit were found to have at least a very good understanding of their responsibilities and the technical aspects of their roles.

The auditors would like to note the professionalism and diligence of Hunter Water staff and contractors who participated in the audit. The auditors thank these staff members for their openness, courtesy and politeness throughout the audit.

Some areas for improvement were identified by the auditors, which generally relate to administrative issues such as the definition of its functions in plans and procedures, and document control procedures not being followed. Some issues were noted with implementation of the recycled water quality management plan at the Karuah recycled water scheme (validation of critical control points (CCPs) and site monitoring in particular). For drinking water, some gaps were noted in the veracity of flow diagrams that are required under Element 2 of the Framework.

Hunter Water was found to be in the process of changing its existing Aquamark based asset management system to an ISO55001 system. Neither of these systems had been fully implemented at the time of the audit; however, Hunter Water was found to have been making good progress towards developing the new system and expects it to be implemented in 2017.



The auditors found that Hunter Water achieved full or high grades of compliance with most audit criteria. One finding of adequate was awarded. The audit did not identify any non-compliances. A summary of audit findings is provided in the following section.

Recommendations

Compliance key

Grade of co	ompliance	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 C	ompliance	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-Coi	mpliant	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.

Findings

Clause/s	ub-clause	Comment
Drinking W	ater Quality/	
2.1	2.1.1	Assessed as 'high compliance' - there are four recommendations for water quality.
2.1	2.1.2	
Recycled V	Vater Quality	,
- 2 2	2.2.1	Assessed as 'high compliance' – there are two recommendations
2.2	2.2.2	Assessed as 'adequate compliance' – there is one recommendation.
Drinking W	/ater Quantity	/
3.1	3.1.1	Assessed as 'fully compliant' – there are no recommendations.
3.2	3.2.3	Assessed as 'fully compliant' – there are no recommendations.
Asset Man	agement	
4.1	4.1.1	Assessed as 'fully compliant' – there are no recommendations.
	4.1.2	Assessed as 'high compliance' – there are three recommendations.
	4.2.2	
4.2	4.2.3	Assessed as 'fully compliant' – there are no recommendations.
	4.2.4	
Customers	and Consun	ners
5.4	5.4.1	



Claus	e/sub-clause	Comment
	5.4.3	
	5.6.1	Assessed as 'fully compliant' – there are no recommendations.
5.6	5.6.2	
	5.6.3	
Perform	nance Monitorin	g
8.2	8.2.1	Assessed as 'fully compliant' – there are no recommendations.
0.2	8.2.2	Assessed as 'high compliance' – there is one recommendation.
8.4	8.4.1	Assessed as 'fully compliant' – there are no recommendations.

Recommendations

Recomment Operating L Context	dation # and .icence	Background to Recommendation	Action/s	Timeframe
Drinking Wa	ter Quality			
2015-2016 2.1.1 EL2 R-1	Clause 2.1.1 Element 2	Flow diagrams to support the implementation of the risk assessment process have been developed but are not yet fully adequate (e.g. missing key characteristics, missing raw water consumers, missing handover points between parties, missing document history and sign off).	 Review all risk conceptual system process flow diagrams including: Step by step review of all process steps. Identification of all inputs (e.g. fluoride, filter backwash water, filter backwash return etc.). Identification of monitoring points (operational and CCP). Identification of key characteristics (e.g. filter backwash return quality and flow limits). Identification of governance handover points between parties where applicable (e.g. between Hunter Water and Veolia and between Hunter Water and Midcoast Water). Identification of raw water customers. Ensure that each conceptual flow diagram matches the SCADA diagram. Ensure that each conceptual flow diagram and SCADA diagram is signed off by someone with appropriate authority to do so. Ensure that each diagram has associated version history and review cycle information. 	By 30 June 2017.





Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe	
2015-2016 2.1.1 EL2 R-2	Clause 2.1.1 Element 2, Element 3	 Accurate risk assessment requires accurate inputs and given the missing components and other characteristics in the flow diagrams, there is potential for gaps in the risk identification and assessment process. 	 Use the revised flow diagrams to revise the risk assessments. 	By 30 June 2017 for LTP. For all other systems, as par of the scheduled review process.	
2015-2016 2.1.1 EL2 R-3	Clause 2.1.1 Element 2	 Contracting out services means that Hunter Water must keep good oversight of its contractors to assure itself of licence compliance. Veolia's last audit missed issues associated with Element 2 and did not audit Elements 5, 8 and 9 of the Framework. 	 Using an independent, Exemplar Global qualified Drinking Water Management System Lead Auditor, undertake an external audit of Veolia's DWQMP with a specific focus on Element 2, Element 5, Element 8 and Element 9. 	By 30 June 2017.	
2015-2016 2.1.2 EL6 R-1	Clause 2.1.2 Element 6	 Currency and integration of information is key to successful management of emergencies and incidents. Some discrepancies were noted in document versions and cross- referencing within the Emergency Management Plan, which have the potential to cause confusion. 	 Review and revise documentation associated with the emergency management process including: Update of Veolia's Crisis Management Plan (CMP). The CMP review cycle notes that the document "will be reviewed annually and updated (as required) by the Document Owner" however, the document was dated 31.01.2014 and there was no evidence of review in the cycle stated. Review and revise cross- referencing in the Hunter Water Emergency Management Plan. Veolia's Incident Recording and Reporting procedure should be checked for currency across all document history fields (the procedure is variously dated as 15.01.2014 and 04.01.2013 in the headers). 	By 30 June 2017.	



Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe	
Recycled W	ater Quality				
R2015- 2016 2.2.1 EL5 R-1	Clause 2.2.1 Element 5	 An internal audit of the KERE site found compliance gaps in environmental monitoring and record keeping. 	 Hunter Water should review the implementation of recommendations from its Environmental Compliance Audit – Karuah Effluent Reuse Enterprise and develop appropriate deadlines for any recommendations that have not been addressed. 	By June 2017.	
015-2016 2.2 R-1	Clause 2.1.1 and 2.2.2 Over- arching	 Compliance gaps detailed in the findings table (Table 3-3 of this report) and existing recommendations. 	 Hunter Water should ensure that a gap analysis is completed of all RWQMPs, against the Framework for Management of Recycled Water Quality and Use. Particular focus should be given to the gaps in compliance areas detailed in the findings table (Table 3-3). 	By June 2018.	
Asset Mana	gement			1	
2015-2016 4.1.2 R-1	Clause 4.1.2	Plan is overdue for review according to its control page.	 Review the Asset Standards Management Plan as this document was due for review in January 2016 Review the Asset Class Management Plan – Drive Controllers as required on page 2 of that plan 	By 30 June 2017.	
2015-2016 4.1.2 R-2	Clause 4.1.2	 A number of documents were found to be missing relevant document controls. 	 Ensure all Asset Class Management Plans meet the requirements of Hunter Water's document control system 	By 30 June 2017.	
Performance	e Monitoring				
2015-2016 8.2.2 R-1	Clause 8.2	 A number of documents sighted during the audit did not conform to Hunter Water's TRIM system. 	 Ensure all compliance related documents meet the requirements of Hunter Water's document control system. 	By 30 June 2017.	

Findings from previous audits

Recommendation		Progress	Status
2013-14-03 2013-14-04 2013-14-06 2013-14-13 Water Quality Management Systems	Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including: a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they	Drinking Water CCPs: NSW Health noted that the CCPs are still to be finalized to its satisfaction and in its letter of 27 June 2016, noted that there are still compliance issues such as fluoride limits and confirmation of responses and response times to exceedances. In	Open



Recommendat	lion	Progress	Status	
Conditions 2.1.1, 2.1.2, 2.2.1 & 2.2.2	reflect current practice, as agreed with NSW Health b) develop a process to ensure critical limits are only altered with supervisory consent and there is a failsafe process to ensure that they are reinstated before water quality is compromised c) revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP d) develop a process to record and document corrective actions, and preventive measures to reduce risks e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate.	this audit's findings, there are also issues noted with the CCP limits, complexity of the 'HACCP' tables and gaps in the flow diagrams that may mean hazards and risks could be missed. Recycled Water CCPs: NSW Health confirmed that RWQMPs have been submitted by Hunter Water but are yet to be reviewed. A standard has been developed for establishing and reviewing recycled water CCPs. The procedure is consistent with the AGWR approach and clearly sets out responsibilities for decision-making. The validation testing program has been completed and appears to be sound and includes the correct parameters e.g. UV transmissivity for validating process unit 'fitness for purpose' and LRV ₁₀ credits. A Corporate RWQMP is in place and has been updated. The diagram of the Framework is incorrect – the supporting Requirements are those from the ADWG Framework – not the AGWR Framework. Flow diagrams include CCPs but do not have version control or include evidence of ground-truthing and sign-off. This process should have been conducted before the risk assessment and CCP process was conducted.		
2013-14-05 Conditions 2.1.1 & 2.2.1	Within 18 months, Hunter Water should define and identify significant risks. Determine the preventive measures that manage significant risks, and implement a plan to document the preventive measures and consequent corrective measures.	Hunter Water uses an Enterprise Risk Management (ERM) Framework to undertake all risk assessment associated with the organization. The ERM document has not met its review cycle of 2015. The Water Quality Committee identified and defined a significant risk as a 'high extreme'. The risk assessments are being completed in a documented schedule. A risk register was provided as evidence showing preventive measures and risk classifications (inherent and controlled – updated as at 29 February 2016). However, given gaps noted in the flow diagrams, the risks should be reviewed in light of these issues as risks may have been missed. A WTP Operating Manual update program is in place and evidence	Closed	



Recommendat	ion	Progress	Status	
		supports its implementation. The completed Operating Manuals reviewed detail the preventive measures in place including for the significant risks and CCPs. The other Operating Manuals will be produced according to the update program.		
2013-14-01 Water Quality Management Systems Conditions 2.1.1 & 2.2.1	Within 12 months, Hunter Water should develop a process to inform customers who receive unfiltered water from the Chichester Trunk Gravity Main about the quality and use of that water. (It was noted that the non- standard agreement for customers receiving this service does not currently provide information on the quality of the water and therefore material is required to educate and inform these customers.)	Several pieces of evidence were provided in support of this recommendation. The Non- Standard Water Connection letter template clearly covers the non- potable nature of the supply. The Agreement for the Supply of Untreated Water (March 2016) clearly covers owner, Tenant or occupier and conditions under which the water is supplied as well as a requirement to act according to the obligations of the agreement. NSW Health was consulted during the process. Hunter Water is now considered to have a sound communication and education process in place based on the evidence provided.	Closed	
2013-14-11 Drinking Water Quality Management Systems Condition 2.1.1	Within 12 months, Hunter Water should implement a process to formally review the effectiveness of the DWQMS by the executive management team (for example, this could be done by tabling a performance report at a meeting of the executive team, which covers the requirements of the ADWG and how Hunter Water's DWQMS are meeting these elements).	Hunter Water now conducts Integrated Management System (IMS) review meetings twice yearly. Evidence was provided to show a briefing note for a meeting occurring on 20 May 2016. Evidence was sighted to show that drinking water and recycled water issues are covered at an executive level. A clear process is now in place and followed in practice.	Closed	
2013-14-14 2013-14-12 Recycled Water Quality Management System Condition 2.2.2	 Within 12 months, Hunter Water should review the following matters in respect to the Clarence Town Wastewater Treatment Works: The effectiveness of the CCPs. If the corrective action can be undertaken in a timely manner, and it reduces risk, then implement the CCPs as soon as possible. The risk assessment at Clarence Town Wastewater Treatment Works to take account of irrigation-water ponding at the site. 	Component 1 of the recommendation is still ongoing noting that Hunter Water has submitted its system-specific RWQMPs to NSW Health by end June 2016 and is awaiting comment. The Veolia risk assessment now includes ponding of irrigation water. The date of the document is 21 March 2016. Only residual risk is reported, the AGWR Framework requires both inherent (Element 2) and residual risk (Element 3) risk to be assessed. However given that the event has been included, component two of the recommendation is completed and can be closed.	Open	





Recommendat	ion	Progress	Status
2013-14-20 Asset Management System Condition 4.1.1	 Hunter Water should continue implementing the five improvement initiatives identified as part of its 2012 Benchmarking Program including: develop a holistic approach to asset maintenance the complete capture of all asset and related maintenance information in its Ellipse Asset/ Maintenance Management System. (It was noted that these initiatives should be fully implemented by July 2017, consistent with Hunter Water's ISO 55001 implementation program). 	Hunter Water continued to implement the improvement initiatives identified as part of the Aqauamark 2012 Benchmarking Program during the audit period. Of the five initiatives recommended, Hunter Water reports that is has completed the first two (people and capability, and project business case challenging). This has been achieved through an Integrated Quality Management System in August 2015 and self-determination of high compliance with internal governance processes.	Open
2014-15-01 Recycled Water Quality Management System Condition 2.2.2	It is recommended that Hunter Water commence the implementation of the interim CCPs as soon as possible and finalise validation program.	A validation report provides some evidence for implementation of the validation testing program. However, there are still areas where validation has not been completed such as the storage lagoon CCP (for helminth control) at Karuah. It is not clear how broadly the UV information can be applied across all systems which have that process step. The Karuah O&M Manual was checked but CCPs are not included as explicitly stated. A new UV system has been installed for Karuah and CCPs in SCADA are in the process of being updated and staff trained.	Open
2014-15-02 Recycled Water Quality Management System Condition 2.2.2	It is recommended that Hunter Water finalise its validation program and facilitate endorsement of the outcomes by NSW Health. CCPs should then be adjusted or refined in accordance with the outcomes.	See comments for previous recommendation.	Open
2014-15-03 Assets Condition 4.1.1	 It is recommended that Hunter Water continues to fully implement improvement initiatives in respect of: The development and implementation of a holistic approach to maintenance management The complete capture of all asset and related maintenance information in its Enterprise Resource Planning (Asset/ Maintenance Management) System 	Hunter Water has engaged two contractors to work solely on implementing its ISO55001 asset management system. These contractors have undertaken a gap analysis and developed a program for implementing the new system that requires 193 tasks to be completed. At the time of the audit, 36 of these tasks were complete, 63 were underway and 94 had not been commenced. The audit found that Hunter Water has committed substantial resources to assist with implementing its new asset	Open



|--|--|

Recommenda	ition	Progress	Status
	 Criticality and condition assessment 	management system and was on- track for its target date of July 2017.	
	Review and update of operational and maintenance procedures across the whole of the asset portfolio.		





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1 Introduction

The Independent Pricing and Regulatory Tribunal (IPART) commissioned an audit team consisting of Aurecon Australasia Pty Limited (Aurecon) and Risk Edge[™] to conduct the annual independent compliance audit of the Hunter Water Corporation (Hunter Water) Operating Licence 2012-2017 (the operating licence).

1.1 Purpose and structure of this report

IPART administers operating licences for a number of public water utilities (PWUs), including Hunter Water, and are required to undertake annual audits of the PWU's performance. The audit has assessed Hunter Water's compliance against the terms and conditions of their operating licence from the previous financial year (2015/16).

The structure of this audit report is outlined below:

- Section 1: Introduction an overview of the background and purpose of the audit
- Section 2: Audit methodology a detailed description of the audit process, methodology and scope
- Section 3: Audit findings a discussion of the key findings of this audit, this section summarises the detailed findings presented in Appendix A
- Section 4: Recommendations from previous audits an outline of how Hunter Water has addressed recommendations from previous audits and whether these recommendations remain open or closed
- Section 5: Glossary and acronyms list
- Appendix A: Detailed audit findings a detailed discussion of Hunter Water's compliance with each relevant audit requirement.

1.2 Objective

The objective of this audit was to conduct an operational audit of Hunter Water's performance against specified clauses of the Hunter Water's Operating Licence and any requirements from the Minister for Lands and Water for the period from 1 July 2015 to 30 June 2016.

1.3 Regulatory regime

Hunter Water is a state owned corporation that is wholly owned by the NSW State Government. The NSW *Hunter Water Act 1991* and the NSW State Owned Corporations Act 1989 establishes the functions, roles and responsibilities of Hunter Water. The Hunter Water Operating Licence is the overarching regulatory instrument, issued under Section 12 of the *Hunter Water Act 1991*.



2 Audit methodology

2.1.1 Audit scope

IPART determined the audit scope using a risk-based approach to identify clauses of the operating licence to be audited during the 2015/16 audit period. Through this process IPART developed a Request for Quotation (RFQ 16-152) which was provided to selected consultants through the NSW Government's eTendering system. The audit team was selected through a tendering process.

The audit scope provided by IPART is shown in Table 2-1 and Table 2-2. Hunter Water was separately required to provide a Statement of Compliance (SC) for each licence clause that was not part of the audit. Table 2-1 shows all requirements of the operating licence.

Description	Licence clause	Type of audit	IPART comments
Connection of services	1.6.1	SC	No comment
Availability of licence	1.8.1	SC	No comment
Water Quality Drinking water	2.1.1	Audit	This condition was last audited in 2014-15 and was awarded Full Compliance in that audit.
			Audit will include a risk based adequacy audit of the system, and implementation of the system.
Water Quality Drinking water	2.1.2	Audit	Audit will include a risk based adequacy audit of the system, by element, and implementation of the whole system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the Australian Drinking Water Guidelines (ADWG) will be the main focused of the audit.
			The scheme/ sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health. IPART will write to NSW Health regarding its satisfaction with Hunter Water's management of Drinking Water Quality prior to audit. This condition was last audited in 2014-15 and
			was awarded Full Compliance in that audit.
Water Quality	2.1.3	SC	Audit following notice of change.
Drinking water			Action completed in 2014-15 operational audit.
			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
Water Quality Drinking water	2.1.4	SC	IPART will write to NSW Health regarding its approval for any significant changes prior to audit.

 Table 2-1
 Operating licence audit scope





Description	Licence clause	Type of audit	IPART comments
Recycled water	2.2.1	Audit	Audit will include a risk based adequacy audit of the system, and implementation of the system. This condition was last audited in 2014-15 and
			was awarded Full Compliance in that audit. The audit team audit the utility's drinking water quality system, which is based on the Australian Guidelines for Waster Recycling (AGWR) framework.
			Elements of the framework and schemes to be audited will be determined by IPART in consultation with the auditors.
			Audit will be informed by consultation with NSW Health and outcomes of previous audits
Recycled water	2.2.2	Audit	Audit will include a risk based adequacy audit of the system, and implementation of the system. Based on this risk assessment and in consultation with IPART, the auditor will then determine what elements of the AGWR will be the main focused of the audit.
			The scheme/ sites to be visited for field verification will be determined by auditor in consultation with IPART. This decision will also take into account any advice from NSW Health.
			IPART will write to NSW Health regarding its satisfaction with Hunter Water's management of Recycled Water Quality prior to audit.
			This condition was last audited in 2014-15 and was awarded High Compliance in that audit.
Recycled water	2.2.3	SC	Audit following any notice of change. IPART will write to NSW Health to determine whether audit is required.
			In its report on 31 March 2016 Hunter Water advised there have been no significant changes.
			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
Recycled water	2.2.4	SC	Audit following any notice of change. IPART will write to NSW Health to determine whether audit is required.
Water Quantity Water Conservation Target	3.1.1	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Water Quantity Water Conservation Target	3.1.2	SC	No comment
Economic level of leakage	3.2.3	Audit	No comment
Roles and responsibilities protocol	3.3.1	SC	A new protocol was executed in 2013-14. IPART will write to (Metropolitan Water Directorate) MWD to check if there are any issues.





Description	Licence clause	Type of audit	IPART comments
Assets Asset management	4.1.1	Audit	Hunter Water currently has an asset management system which is based on the Aquamark benchmarking tool.
system			This condition was last audited in 2014-15 and was awarded High Compliance in that audit. The 2014-15 audit considered the July 2017 completion realistic.
			IPART has agreed to Hunter Water's Asset Management System (AMS) moving to system consistent with ISO 55001 by July 2017 (date nominated by Hunter Water).
			The audit should consider the progress in migration to ISO 55001.
Assets Asset management	4.1.2	Audit	The auditor in consultation with the IPART will select 1 or 2 classes of asset/ facilities to check implementation of the framework.
system			Note: adequacy of some elements of the system may be assessed if issue arises or is required for checking implementation.
			This condition was last audited in 2014-15 and was awarded Full Compliance in that audit.
Assets	4.1.3	SC	Audit following any notice of change
Asset management			In its report on 31 March 2016 Hunter Water advised there have been no significant changes.
system			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
Water pressure, water continuity and wastewater overflow standards	4.2.2	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Water pressure, water continuity and wastewater overflow standards	4.2.3	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Water pressure, water continuity and wastewater overflow standards	4.2.4	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Customers and consumers Customer contact	5.1.1	SC	No comment
Customers and	5.1.2	SC	Audit following any notice of change.
consumers Customer contact			In its report on 31 March 2016 Hunter Water advised there have been no significant changes.
			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
Providing information	5.2.1	SC	No comment
Providing information	5.2.2	SC	No comment





Description	Licence clause	Type of audit	IPART comments
Providing information	5.2.3	SC	No comment
Providing information	5.2.4	SC	No comment
Customers	5.3	SC	No comment
Procedure for financial hardship, payment difficulties, water flow restriction and disconnection	5.4.1	Audit	This condition was last audited in 2012-13 and was awarded Full Compliance in that audit.
Procedure for financial hardship, payment difficulties, water flow restriction and disconnection	5.4.2	SC	No comment
Procedure for financial hardship, payment difficulties, water flow restriction and disconnection	5.4.3	Audit	This condition was last audited in 2012-13 and was awarded Full Compliance in that audit.
Procedure for financial hardship, payment difficulties, water flow restriction and disconnection	5.4.4	SC	No comment
Consultative form	5.5.1	SC	No comment
Consultative form	5.5.2	SC	No comment
Consultative form	5.5.3	SC	No comment
Consultative form	5.5.4	SC	No comment
Consultative form	5.5.5	SC	No comment
Consultative form	5.5.6	SC	No comment
Internal dispute resolution process	5.6.1	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Internal dispute resolution process	5.6.2	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
Internal dispute resolution process	5.6.3	Audit	This condition was last audited in 2013-14 and was awarded Full Compliance in that audit.
External dispute resolution scheme	5.7.1	SC	No comment
External dispute resolution scheme	5.7.2	SC	No comment
Environment Environmental Management	6.1.2	SC	Obligation met. Certified on 22 October 2014. Check certification and external audit report.





Description	Licence clause	Type of audit	IPART comments
Environment Environmental Management	6.1.3	SC	Obligation met. Certified on 22 October 2014. Check certification and external audit report.
Environment Environmental Management	6.1.5	SC	Check certification and external audit report.
Quality management Quality management system	7.1.2	SC	Obligation met. Certified in August 2015. Check certification and external audit report.
Quality management Quality management system	7.1.3	SC	Obligation met. Certified in August 2015. Check certification and external audit report.
Quality management Quality management system	7.1.4	SC	Obligation met. Certified in August 2015. Check certification and external audit report.
Performance monitoring Operational audits	8.1.2	SC	No comment
Performance monitoring Operational audits	8.1.3	SC	No comment
Performance monitoring Operational audits	8.1.4	SC	No comment
Reporting	8.2.1	Audit	This condition was last audited in 2012-13 and was awarded Full Compliance in that audit.
Reporting	8.2.2	Audit	This condition was last audited in 2012-13 and was awarded Full Compliance in that audit.
Provision of information	8.3.1	SC	No comment
Provision of information	8.3.2	SC	No comment
Provision of information	8.3.3	SC	No comment
Provision of information	8.3.4	SC	No comment
Provision of information	8.3.5	SC	Audit following any notice of change. There were no reported changes to the Hunter Water Reporting Manual during the audit period.
Performance indicators	8.4.1	Audit	Audit to check calculation methods of a sample of IPART performance indicators.





Description	Licence clause	Type of audit	IPART comments
Memorandum of	9.1.1	SC	Audit following any notice of change.
understanding NSW Health			There have been no changes to the Memorandum of Understanding (MOU) with NSW Health in the reporting period.
			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.
Memorandum of	9.1.3	SC	Audit following any notice of change.
understanding NSW Health			There have been no changes to the MOU with NSW Health in the reporting period.
			Hunter Water to provide verbal update if any significant changes occur before end of 2015-16 audit period.

 Table 2-2
 Previous audit recommendations

Recommendation / Operational Issue (Licence Reference Where Applicable)	Guidance for 2015/16 Audit
2013-14-03	Auditor to check
2013-14-04	for
2013-14-06	completeness.
2013-14-13	
Water Quality Management Systems	
Conditions 2.1.1, 2.1.2, 2.2.1 & 2.2.2	
Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including:	
a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health	
b) develop a process to ensure critical limits are only altered with supervisory consent and there is a failsafe process to ensure that they are reinstated before water quality is compromised	
c) revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP	
d) develop a process to record and document corrective actions, and preventive measures to reduce risks	
e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate.	
2013-14-05	Auditor to check
Water Quality Management Systems	progress.
Conditions 2.1.1 & 2.2.1	
Within 18 months, Hunter Water should define and identify significant risks. Determine the preventive measures that manage significant risks, and implement a plan to document the preventive measures and consequent corrective measures.	
2013-14-01	Auditor to check
Water Quality Management Systems	for
Conditions 2.1.1 & 2.2.1	completeness.
Within 12 months, Hunter Water should develop a process to inform customers who receive unfiltered water from the Chichester Trunk Gravity Main about the quality and use of that water. (It was noted that the non-standard agreement for customers receiving this service does not currently provide information on the quality of the water and therefore material is required to educate and inform these customers.)	



Recommendation / Operational Issue (Licence Reference Where Applicable)	Guidance for 2015/16 Audit
2013-14-11	Auditor to check
Drinking Water Quality Management Systems	for
Condition 2.1.1	completeness.
Within 12 months, Hunter Water should implement a process to formally review the effectiveness of the DWQMS by the executive management team (for example, this could be done by tabling a performance report at a meeting of the executive team, which covers the requirements of the ADWG and how Hunter Water's DWQMS are meeting these elements).	
2013-14-14	Auditor to check
2013-14-12	for
Recycled Water Quality Management System	completeness.
Condition 2.2.2	
Within 12 months, Hunter Water should review the following matters in respect to the Clarence Town Wastewater Treatment Works:	
The effectiveness of the CCPs. If the corrective action can be undertaken in a timely manner, and it reduces risk, then implement the CCPs as soon as possible.	
The risk assessment at Clarence Town Wastewater Treatment Works to take account of irrigation-water ponding at the site.	
2013-14-20	Auditor to check
Asset Management System	progress.
Condition 4.1.1	
Hunter Water should continue implementing the five improvement initiatives identified as part of its 2012 Benchmarking Program including:	
Develop a holistic approach to asset maintenance	
The complete capture of all asset and related maintenance information in its Ellipse Asset/ Maintenance Management System.	
(It was noted that these initiatives should be fully implemented by July 2017, consistent with Hunter Water's ISO 55001 implementation program).	
2014-15-01	Auditor to check
Recycled Water Quality Management System	for
Condition 2.2.2	completeness.
It is recommended that Hunter Water commence the implementation of the interim CCPs as soon as possible and finalise validation program.	
2014-15-02	Auditor to check
Recycled Water Quality Management System	for
Condition 2.2.2	completeness.
It is recommended that Hunter Water finalise its validation program and facilitate endorsement of the outcomes by NSW Health. CCPs should then be adjusted or refined in accordance with the outcomes.	
2014-15-03Assets	Auditor to check
Condition 4.1.1	for
It is recommended that Hunter Water continues to fully implement improvement initiatives in respect of:	completeness.
 The development and implementation of a holistic approach to maintenance management 	
 The complete capture of all asset and related maintenance information in its Enterprise Resource Planning (Asset/ Maintenance Management) System 	
 Criticality and condition assessment 	





Recommendation / Operational Issue (Licence Reference Where Applicable)	Guidance for 2015/16 Audit
Review and update of operational and maintenance procedures across the whole of the asset portfolio.	

2.1.2 Audit timing

The audit covered the period 1 July 2015 to 30 June 2016. The on-site component of the audit was undertaken between 26 and 28 September 2016. The off-site component of the audit was completed between 1 September and 21 October 2016.

The timing of the on-site component of the audit was as follows:

- 26 September 2016: Hunter Water Office Opening meeting and staff interviews
- 27 September 2016: Site inspections:
 - Lemon Tree Passage Water Treatment Plant (LTP WTP) and Tomago Sandbeds Borefield
 - Karuah Wastewater Treatment Works (WWTW) and Karuah Effluent Reuse Enterprise (KERE)
 - Boulder Bay WWTW.
- 28 September 2016: Hunter Water Office Staff interviews and closing meeting.

2.1.3 Audit standard

IPART Audit Guideline Public Water Utilities May 2016 (Audit Guideline) formed the standard for the Operational Audit. The audit was also generally undertaken in accordance with the principals of ISO 19011:2011 Guidelines for Auditing Management Systems.

2.1.4 Audit steps

The Audit Guideline identities outlines the steps involved in the audit process. These steps promote consistency across auditors and over time. These nine steps are shown in Table 2-3 below.

No.	Step	Responsibility	Description
1	Audit scoping	IPART	The scope of the audit is determined by IPART and demonstrates to both the auditor and the utility which clauses in the licence will be audited. It determines the scope of the auditor's contract, and shows the utility which parts of their business will be covered in the audit.
			To determine the scope of an audit, IPART uses a risk-based approach and considers issues identified by the public during their consultation process. All licence obligations are also subject to a statement of compliance from the public utility.
2	Appointment of the auditor	IPART	IPART has a panel of accredited auditors that is regularly updated. IPART invite quotes from auditors on their panel and select auditors based on criteria including relevant team experience, technical and audit expertise, resource availability and cost.
			IPART requests quotes from at least three auditors on their panel for each audit of a public water utility. This gives IPART a good understanding of the market rate, and ensures they are able to appoint quality auditors.
			Where possible, IPART do not intend to use the same auditor for a utility's operational audit more than three times in a 5-year period. Larger audit firms may be able to rotate auditors to satisfy this requirement.

Table 2-3 Audit steps





No.	Step	Responsibility	Description
			After engaging the auditors, IPART sets the initial schedule for audit milestones. To ensure the appropriate utility staff members are available for the audit, IPART will consult the utility and auditor about the initial schedule of the milestones.
			This schedule can be adjusted to make sure IPART get the best outcome from the audit.
			Following this, IPART will hold a briefing meeting with the appointed auditor. The meeting will cover the expectations of IPART, locations for field verification site visits and any concerns raised by stakeholders.
3	Audit preparation	Auditor/Utility/ IPART	The auditor and utility will exchange information to ensure the audit interview is as efficient and effective as possible. In addition, the Auditor and IPART will consult with other government agencies and the public. Activities undertaken in this step include the preparation of the audit questionnaire, stakeholder consultation, scheduling of interviews and the field verification site visit(s).
			Contact details of all relevant staff will also be provided by IPART to each party.
			Audit preparation also involves the auditor to prepare an audit questionnaire, undertake stakeholder consultation and scheduling of interviews and field verification site visits.
4	Audit interview	Auditor/Utility (IPART observer)	The interview covers the meetings at the utility's offices and facilities. Both IPART staff and auditors should be present at all interviews. Utilities are responsible for ensuring the most appropriate staff members attend the relevant interviews.
			There will be an opening meeting to establish the protocols for the audit and ensure that all necessary arrangements are in place and agreed. The meeting will cover the audit approach and the timelines for undertaking the audit. This meeting is usually the first interview session on the first day.
			Utilities may wish to start each interview on a specific part of the licence with a brief presentation outlining how the business operates in this area. This will help set the scene for the auditor and also help the utility ensure the right staff members are present and are prepared. The utility should discuss this approach with the auditor before the interviews, to see if it is suitable for the audit team.
			Through the interviews and field verification site visits, auditors must obtain sufficient evidence to be able to provide an audit opinion in accordance with an adopted audit standard. It is the responsibility of the auditor to determine the level of sufficient evidence required.
			Auditors will conduct the interviews by using the audit methods outlined in the Audit Guideline. Lead auditors must use their professional judgement to determine the mix of audit methods needed to get sufficient evidence to support an opinion on each item within the scope.
			IPART require auditors to maintain an accurate record of documents sighted.
			Auditors do not need to submit this record with the final audit report; however, records of audits must be maintained for a reasonable period (ie, seven years), securely and confidentially, given the sensitivity of the material.
5	Field verification site visits	Auditor/Utility (IPART observer)	The purpose of a field verification site visit is for the auditor to verify how effectively the requirements of the operating licence are met in practice.



No.	Step	Responsibility	Description
			The field verification site visit is part of the audit. As such, it is appropriate for the auditor to include questions about implementation of management systems, plans and procedures at the sites in the questionnaire.
			It is also an opportunity for the utility to demonstrate its compliance with the operating licence in the course of its everyday operations. This may include identifying how management systems, plans and procedures are implemented under actual working conditions. As part of this process, any gaps in implementation will be noted. The field verification site visit must be linked back to one or more sections of the Operating Licence that is being audited. Site visit facilities will be selected by the auditor in consultation with the utility and IPART, having regard for relevance to the audit scope, asset classes of previous site visits, and practical and safety aspects (such as travel or a high risk site) as advised by the utility.
			Before the field verification site visit, a short session should be scheduled during the interviews to introduce and familiarise the participants with the site(s), and explain how the site visit will demonstrate compliance with the operating licence.
			In doing so the utility should cite documentary evidence already provided for the relevant part of the operating licence audit. This session should provide the necessary context for the auditor, so system schematics, maps, technical specifications, design drawings, guidance to the auditor regarding personal protective equipment (PPE) required or other necessary information should be presented in the session, prior to the site visit.
			During a field verification site visit, the auditor will review aspects of the utility's operations and consider compliance with the operating licence using the audit methods. The auditor is expected to ask a utility's operational staff about the operation of the system and application of management systems, plans or procedures while on site. Utilities are responsible for ensuring the appropriate operational staff members are available during a site visit and access to an agreed site is secured. This includes sites that are managed by contractors or other third parties.
			During a field verification site visit, the auditor may identify issues that pose a significant risk to public health or the environment but are outside the scope of the audit. If this occurs, the auditor will notify the utility and IPART at the time of the observation.
6	Wrap up and close out sessions	Auditor/Utility (IPART observer)	The final session of the audit interview process should involve the following:
	363310113		A final wrap up. This item is to cover any outstanding matters. For example, to discuss any concerns from the site verification visits, to answer any questions taken on notice or complete any interviews that ran over time or where staff were not available when required. It is anticipated that this extra step allocated to the audit interviews will save time and improve the outcomes of the audit reporting step. This wrap up may not be required if both the utility and the auditors are satisfied there are no outstanding issues to be covered.
			A close out meeting. It is recommended that auditors, senior management from the utility and IPART staff are present. The auditor will flag any clauses where full compliance may not be awarded. Ways of achieving compliance should be discussed and form part of the auditor's recommendations. The auditor should also summarise any outstanding information required or identify any other actions for the utility or IPART to complete prior to finalising the audit reports.



No.	Step	Responsibility	Description
			The two items can be held as one session. However, it is important that suitable personnel are present for the close out meeting.
7	Audit assessment and reporting	Auditor/Utility/ IPART	After the audit interview and field verification site visits, the auditor will continue to assess the evidence provided at the interview. Throughout this step, there may be further communication between the auditor and utility. IPART should be copied in on all correspondence for document control purposes. Should any meeting or teleconferences take place, IPART should be invited to participate, and if IPART is unable to attend the auditor is responsible for advising IPART of the meeting outcomes. All additional evidence supplied should be uploaded to the IPART issued data transfer site used for the audit.
			The auditor is to assess the compliance that a utility has achieved during the audit period. The auditor must prepare a report that addresses all of the elements identified in the audit scope.
			When preparing the audit report, the auditor should use language that is appropriate for a public document. Language should be objective and factual, and should not be overly complex or unnecessarily emotive or alarming, and should not include names or other personal details (emails, etc.) of utility or IPART staff members. The report should not contain any specific material that could pose security issues for the utility. However, this should be balanced with the need to provide enough detail to support the awarding of an audit grade.
			The auditor is to write up the assessment in the first draft audit report. This report must be complete $-$ i.e. no sections should be left for completion in the second draft. Should further evidence be provided after the first draft, details in the report may change. Where full compliance was not awarded, the auditor should identify what is needed for full compliance to be achieved. If further evidence has been requested but not supplied, the auditor should make an assessment based on the information/evidence already provided.
			Both the utility and IPART will comment on the first draft audit report, including providing further evidence and clarification if needed using the issues register process.
8	Report to the Minister	IPART	IPART must report to the relevant Minister on the utility's compliance throughout the year. IPART will use the auditor's findings in their report and include the auditor's report as an appendix. If IPART are aware of other non-compliances throughout the year, either through their regulatory relationship, the statement of compliance, out of scope audit findings or other methods, these will also be reported to the Minister in the report.
			Upon reviewing the audit findings, audit evidence and any other relevant performance information, audit grades reported to the Minister in their report may differ from those reported by the auditor. If IPART decides to depart from audit grades of the auditor, they will write to the utility as soon as possible to explain the reason for the difference.
			If relevant, IPART will make recommendations to the Minister that the utility improves its operational systems, programs and/or procedures as a result of the compliance grades awarded. Where possible, IPART's recommendations will be outcomes focused to allow the utility to determine the most efficient way to achieve compliance. IPART recommendations may also differ from those made by the auditor to balance service standards with their understanding of customers' willingness and ability to pay. This means IPART recommendations may not reflect the specific recommendations or opportunities for improvement made by the

aurecon



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No.	Step	Responsibility	Description
			auditor. Where IPART recommendations differ from those of the auditor, IPART will inform the utility prior to finalising the audit report.
			IPART may identify opportunities for improvement in their report as well as recommendations. IPART do not require the utility to report back on opportunities for improvement.
			Utilities will receive a copy of IPART's Report to the Minister in parallel with its submission to the Minister.
			IPART's report to the Minister and appendices (including the auditor's report) will be posted on their website after they have been sent to the relevant Minister (for all public water utilities) and tabled in parliament (for Sydney Water and Water NSW only).
9	Report on audit recommenda tions	Utility	Utilities are to report to IPART on the status of recommendations identified in IPART's report to the Minister by 31 March in the following year. In some cases, IPART may require a different reporting date for specific recommendations if there is a higher or lower risk posed.
			The report must include a:
			 Progress report on implementation of recommendations from IPART's report to the Minister, and
			 Status update on any outstanding audit recommendations or accepted improvement opportunities from previous years.

2.1.5 Audit team

The audit team was led by Steve Crick from Aurecon and supported by a number of team members who are identified in Table 2-4 below.

Team member	Organisation	Certifications	Role
Steve Crick	Aurecon	 Certified RABQSA Lead Environmental Auditor No. 12453 NSW IPART qualified auditor and area specialist (regulatory and compliance; and, environment) 	 Project Manager Lead Auditor – Water Quantity Lead Auditor – Performance Monitoring Lead Auditor – Memorandum of Understanding
Annette Davison	Risk Edge	 NSW IPART qualified lead auditor and area specialist (water quality, sewage management, environment, regulatory and compliance) NSW IPART qualified auditor – retail supply Certified competency ISO 22000:2005 Lead Auditor (AU-TL) with RABQSA (DWQMS) Lead Auditor Drinking Water QMS scheme (#12454) Approved benchmarking auditor and moderator for the Aquality WSAA 	 Lead Auditor – Water Quality Lead Auditor – Recycled Water Quality Auditor – Customers and Consumers

Table 2-4 Audit team



Team Organisation member		Certifications	Role	
		drinking water framework implementation assessment system.		
Kim Francis Aurecon		 B Engineering Master of Business Administration (MBA) 	Lead Auditor – Assets	
Dr Annalisa Contos	Atom Consulting	 Exemplar Global qualified Drinking Water and Recycled Water lead auditor and skill examiner (#113465) 	Peer reviewer	
		 NSW IPART qualified lead auditor and area specialist (water quality, sewage management, infrastructure performance, environment, regulatory and compliance) 		
Natalie Elvers	Aurecon	 GradCert EnvMgt B Sc (Marine Sc & Mgt) 	 Audit support 	

2.1.6 Audit site interviews and inspections

The on-site component of the audit was undertaken by the lead auditors (Steve Crick, Annette Davison and Kim Francis) and audit support personnel (Natalie Elvers) between 26 and 28 September 2016.

2.1.6.1 Opening meeting

An opening meeting was held at Hunter Water administration facilities, commencing at 9.00am on Monday 26 September 2016. The attendees of the opening meeting are listed in Table 2-5.

Organisation	Title	
Aurecon	Lead Auditor	
Aurecon	Principal Auditor	
Aurecon	Audit Support	
Risk Edge	Principal Auditor	
IPART	Principal Analyst	
IPART	Principal Analyst	
Hunter Water	Managing Director	
Hunter Water	Chief Operating Officer	
Hunter Water	Chief Information Technology Officer	
Hunter Water	Executive Manager Corporate and Legal	
Hunter Water	Acting Chief Customer Service Officer	
Hunter Water	Manager Regulatory Policy	
Hunter Water	Graduate Economist	

The purpose of the opening meeting was to introduce the audit team, discuss the scope of the audit and the audit process. The methods to be used by the team to conduct the audit were explained. It was stated that the audit team would be interviewing personnel, evaluating operational licence



reporting, examining records and conducting a site inspection in order to address specific compliance requirements.

2.1.6.2 Audit interviews

Audit interviews were conducted by the audit team during the on-site component of the audit. Table 2-6 identifies staff who were interviewed for the audit.

Table 2-6Audit interviews

Organisation	Title		
Drinking Water Quality			
Hunter Water	Team Leader Water Resource Planning		
	Engineer - Water Resource Planning		
	Engineer - Water Treatment Operations		
	Manager Water Network Operations		
	Water Network Planning Team Leader		
	Quality Manager		
Veolia	Water Process Manager		
	Water Treatment Manager		
	Manager Systems Reporting Risk and Compliance		
Drinking Water Quantity			
Hunter Water	Water Network Planning Team Leader		
	Manager Technical Services		
	Senior Civil Asset Engineer		
Recycled Water Quality			
Hunter Water	Team Leader Recycled Water Compliance		
	Business Compliance Coordinator		
	Quality Manager		
Veolia	Biosolids, Residuals and Reuse Officer		
	Manager Systems Reporting Risk and Compliance		
	Cadet Engineer, Technical Team		
Asset management			
Hunter Water	Manager Asset Management		
	Principal Electrical Engineer		
	Asset Management Contractor		
	Treatment Operations Contract Manager		
	Senior Civil Asset Engineer		
	Manager System Operations		
	Water Network Planning Team Leader		
	Manager Water Network Operations		
Veolia	Asset Manager		
Performance Reporting	·		
Hunter Water	Manager Water Network Operations		





Organisation	Title		
	Treatment Operations Engineer		
	Engineer – Water Treatment Operations		
	Group Manager Environment, Risk & Quality		
	Manager Regulatory Policy		
	Manager Environment and Sustainability		
	Environmental Planner Operational Projects		
	Manager Water Network Operations		
	Network Engineer		
	Energy Manager		
Retail Supply			
Hunter Water	Manager Billing and Collections		
	Manager Customer Care and Complaints		
	General Counsel		
	Property Officer		
Systems review			
Hunter Water	Manager Asset Management		
	Manager Water Network Operations		
	Asset Information Technical Officer		
	Engineer – Water Treatment Operations		
	Network Engineer		
	Manager Water Network Operations		

2.1.7 Data collection and verification

Publically available documents, as well as documents provided by Hunter Water, were reviewed by the audit team prior to the on-site component of the audit. A number of documents were also provided to the audit team during the on-site component of the audit. At the end of the on-site component of the audit, the auditors provided Hunter Water with a list of outstanding information to be provided in order to complete the audit. Hunter Water finalised its response to this information request on 7 October 2016. The offsite component of the audit was completed on 21 October 2016. A list of all documents viewed by the audit team is provided in Appendix A.

The auditors used detailed checklists to examine the compliance of Hunter Water's performance during the audit period against its operating licence. These checklists, including a detailed assessment of compliance against each condition, are provided as Appendix A.

All responses provided to audit questions during the audit were verified where possible. For example, statements made by on-site staff were verified by reviewing relevant documentation and/or visual observations made during the site inspection.

2.1.8 Site inspections

The audit site inspections were conducted on 27 September 2016 at the following three sites:

- LTP WTP and Tomago Sandbeds Borefield
- Karuah WWTW and KERE





Boulder Bay WWTW.

Table 2-7 provides a summary of the focus areas of the site inspection. Team members made general observations where they attended a site that was not a focus area. Table 2-8 details the participants in the site inspection. The findings of the site inspection by the audit team are provided in Appendix A.

Table 2-7 Site inspection visit locations and auditor focus areas

Team	Focus	Sites and Key Auditor Focus			
member		LTP WTP	Boulder Bay WWTW	Tomago Sandbeds	Karuah WWTW and Recycled Water
Steve Crick	Performance indicators, water quantity	Focus area	Focus area	Focus area	Focus area
Kim Francis	Asset management	Focus area	Focus area	Focus area	Focus area
Natalie Elvers	Audit Support	Observed	Observed	Observed	Observed
Annette Davison	Drinking Water Quality	Focus area	Observed	Focus area	Observed
	Recycled Water Quality	Observed	Observed	Observed	Focus area

Table 2-8 Site inspection participants

Organisation	Position
Hunter Water	Manager Asset Management
	Team Leader Water Resource Planning
	Engineer - Water Treatment Operations
	Manager Water Network Operations
	Water Network Planning Team Leader
	Team Leader Recycled Water Compliance
	Business Compliance Coordinator
	Treatment Operations Engineer
	Field Supervisor - Mechanical
KERE	Contractor
Veolia	Water Process Manager
	Water Treatment Manager
	Manager Systems Reporting Risk and Compliance
	Biosolids, Residuals and Reuse Officer
	Cadet Engineer, Technical Team
	Wastewater Treatment Supervisor Northern
	Wastewater Treatment Operator



2.1.9 Closing meeting

A closing meeting was held at Hunter Water's Office, commencing at 4.00pm on 28 September 2016. During the closing meeting, a brief overview of key audit findings was given followed by a discussion of outstanding items. The attendees of the closing meeting are outlined in Table 2-9.

Table 2-9 Closing meeting attendees

Organisation	Title
Hunter Water	Chief Financial Officer
	Chief Operating Officer
	Manager Regulatory Policy
	Graduate Economist
IPART	Principal Analyst
	Principal Analyst
Aurecon	Project Manager & Lead Auditor (Water quantity, environment, memorandum of understanding, NWI indicators)
	Lead Auditor (Assets)
	Audit support
Risk Edge™	Lead Auditor (Water quality, customers and consumers and performance monitoring)

Hunter Water provided the auditors with documents relating to information requested by the auditors that was not sighted during the on-site component of the audit via emails between 30 September 2016 and 7 October 2016. A list of all documents sighted during the audit is provided in Appendix A.

2.1.10 Reporting

Following the offsite review of documents provided following the site component of the audit, the detailed compliance checklist was completed (refer to Appendix A).

This report was prepared to provide an overview of any compliance issues identified through the audit and other observations made by the auditors regarding operating licence performance issues. This report has been prepared on an exception basis, highlighting any areas where action or improvements are required or recommended.

A draft version of this report was provided to IPART and Hunter Water on 23 October 2016.

2.1.11 Audit grades

Audit compliance grades as per the IPART Audit Guidelines are identified in Table 2-10 below.

Grade 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.

Table 2-10 Audit compliance grades







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





3 Summary of audit findings

3.1 Section 2 – Drinking water quality

Clause 2.1 Drinking Water

Clause 2.1.1 - High Compliance

Clause 2.1.2 – High Compliance

The team was required to audit Clause 2.1.1 and 2.1.2 of the operational licence. Both these clauses required Hunter Water to maintain and implement a management system that met the ADWG or any other requirement by NSW Health. NSW Health had no other requirements.

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

As appropriate for this clause, the auditors used the Framework for Management of Drinking Water Quality in the Australian Drinking Water Guidelines to test adequacy and implementation of systems and processes.

To support the grading for Clause 2.1, the compliance grades and key issues for each element, are provided in Table 3-1. The auditors reached the conclusion that given the findings, the drinking water sub-clauses 2.1.1 and 2.1.2 were overall in 'High compliance' with the licence obligations for the audit date scope.

The adequacy and implementation focus for drinking water systems is provided in Appendix Table A2.

Element and Compliance	Key Findings	
Element 1: Commitment to Drinking Water Quality Management (Full)	Commitment to drinking water quality is in place across Hunter Water and Veolia. Policies are in place and are visible from head office to site locations. Legal and formal responsibilities are understood, communicated and responsibilities are written into position descriptions. Key internal and external stakeholders that may be affected during incidents or emergencies are included in Hunter Water's Emergency Management Plan (EMP). There is an opportunity to have a stakeholder register outside of the EMP to optimise currency. This Element is considered in full compliance.	
Element 2: Assessment of the Drinking Water Supply System (Adequate)	Hunter Water covers the requirement for a 'team' through the Water Quality Committee and relevant personnel attendance at the risk assessment workshops. Midcoast Water is now a member of the Water Quality Committee but is not yet included in the Committee's Terms of Reference. System assessment and data analyses are undertaken with trend analysis and outcomes forming part of the risk assessment process. Flow diagrams have been developed for each system, however, key steps, key characteristics and inputs are sometimes missing and do not match the in ground systems, the diagrams are often missing review cycle information or document history and have not been signed off as accurate by an authorised person. The risk methodology is clearly stated and follows Hunter Water's Corporate ERM approach. Risk assessments are completed and also programmed for review. Because of the discrepancies in the flow diagrams, it is not always clear if key risks have been identified and assessed including Midcoast Water handover point risks or risks from consuming water as if it were potable (CTGM customers). This Element is considered in adequate compliance.	

Table 3-1 Element by element audit grade summary for Clause 2.1





Element 3:	Preventive measures are outlined in the risk registers and follow-up actions and priorities from the risk assessment are captured in the Drinking Water Quality Improvement Plan. CCP tables for each plant were provided as evidence and link back to identified risks and operational monitoring. The risk register includes clear links to relevant section of the O&M Manual for each plant.	
Preventive Measures for Drinking Water Quality Management (High)	CCP tables are in existence and, while complex, appear to be understood in practice. While it is not usual to include contractual targets in CCP tables, this is not against the requirements of the Framework. There are some areas for improvement in terms of strengthening the evidence base for choice of critical limits – especially where the limits have been 'context validated' and deviate from the ADWG – and ensuring that operational implementation of CCPs is facilitated, rather than complicated. This Element is considered in high compliance.	
Element 4: Operational Procedures and Process Control (Full)	CCP tables are in existence and covered above. O&M Manuals are referred to in the risk register and implementation was confirmed with both Hunter Water and Veolia depending on system component. Documents could be retrieved when requested and were available on site. A WTP Operating Manual update program is in place and evidence supports its implementation. The completed Operating Manuals reviewed detail the preventive measures in place including for the significant risks and CCPs. Hunter Water has procedures in place for catchment monitoring. A Drinking Water Quality Monitoring Plan is in place. Veolia reports monthly to Hunter Water as part of its operations' contract. Work instructions could benefit from inclusion of the Drinking Water Quality Policy as a key reference document. Asset reliability is covered in the risk register and asset maintenance and work orders were reviewed in Ellipse. Information requested was retrievable and accurate.	
	Equipment calibration was reviewed and in place for LTP WTP. Reservoirs are scheduled for inspections and evidence was provided to support this. Incidents and emergency corrective actions are managed through the corporate emergency responses and further detail is covered under Element 6. CCPs have associated response plans. Hunter Water has Approved Products and Manufacturers' Registers and a requirement for AS 4020 is specified. An opportunity exists for Veolia to review its Safety Data Sheets (SDSs) and ensure that each chemical used in drinking water production is suitable for that use. This Element is considered in full compliance.	
Element 5: Verification of Drinking Water Quality (Full)	A Water Quality Monitoring Plan is in place and includes ADWG appropriate parameters and frequencies. Monitoring for the North Karuah handover point compliance does not appear to be in the Water Quality Monitoring Plan however, inclusion of Midcoast Water or the WQC mitigates this risk in the interim. Sampling schedules are in place for the plants including responsibilities for the samples e.g. Hunter Water vs Veolia. Appropriate analytical agencies are used by Hunter Water e.g. ALS and AWQC, depending on the parameter. A Network Operations report for June 2016 was provided as evidence of data analysis and Veolia provides monthly reports which contain analyses. Consumer requests and management were reviewed under the requirements for Section 5 of the Operating Licence and found to be sound and implemented well in practice. A Veolia complaints' handling procedure was provided as evidence but it is not clear how that document links with Hunter Water. Training implementation was confirmed for both Hunter Water and Veolia. Short term evaluation of results is conducted through multiple avenues including daily review of monitoring results, operator field checks, water quality database and plant logs. Cumulative water quality complaints in the distribution system and water quality compliance results are reported monthly to Hunter Water's Board. A quarterly report is provided to NSW Health for both drinking water and recycled water exceptions. An opportunity exists to formalise frequencies for review cycles for data within the WQC Term of Reference. This Element is considered in full compliance although an opportunity exists to ensure that the contractor (Veolia) has a re-audit of Element 5 of its activities (noting that the external auditor did not check this Element as part of the contractual audit).	
Element 6: Management of Incidents and Emergencies (High)	Key internal and external stakeholders that may be affected during incidents or emergencies are included in Hunter Water's Emergency Management Plan (EMP) with links included to the Emergency Response Communications Plan (ERCP). The EMP is comprehensive and covers appropriate areas including for both drinking water and recycled water. The EMP has a discrepancy in cross referencing which directs the user to the wrong table. The stakeholder list may be better served outside of the EMP to facilitate maintenance of currency (e.g. on a 6 monthly review cycle).	



	The ERCP is out of scope, and as it is dated August 2016 and Version 1, cannot be counted as continuing from the last audit period. The EMP covers expected areas for emergency and incident Hunter Water has several communication channels with NSW Health. Midcoast Water is included as a stakeholder that might need to be notified but there is no contact information for that stakeholder. Stakeholder information relating to Veolia and ALS was also evident. An opportunity exists to review the Veolia's Incident Recording and Reporting procedure to	
	ensure that the header dates are correct between section breaks in the document. Veolia also has its own Crisis Management Plan in place. The CMP review cycle notes that the document "will be reviewed annually and updated (as required) by the Document Owner" however, the document was dated 31.01.2014 and there was no evidence of review in the cycle stated. Scenario training is undertaken on a two-yearly basis. Corrective actions are in place. Incident debriefs are undertaken in practice and followed up to improve processes. This Element is considered in high compliance.	
Element 7: Employee Awareness and Training (Full)	All Hunter Water staff are required to, and are undertaking or have undertaken, drinking water quality awareness training. Veolia and ALS are also required to have appropriate training and Veolia's operators must have appropriate qualifications under the contractual obligations. Training material on drinking water quality is ADWG and Framework appropriate but could benefit from accurate referencing of source material. Hunter Water staff also undergo quality management system induction. Drinking water quality responsibilities are clearly included in position descriptions and training matrices across all parties. Hunter Water's laboratory services require NATA accreditation, which in turn requires trained staff. Evidence was provided to demonstrate implementation of training and Hunter Water confirmed that ALS staff members undergo competency audits from Hunter Water. This Element is considered in full compliance.	
Element 8: Community Involvement and Awareness (Full)	Hunter Water uses a range of methods for communication including its website, social media, rangers (for the catchment) and a Community Consultative Forum (CCF). The CCF meets thrice yearly, meeting minutes were provided to confirm implementation. Evidence provided for Recommendation 2013-14-01 supports communication with the raw water users with CTGM connections. Evidence provided for Section 5 of the licence also support communication. Hunter Water has also undertaken wider education through a schools program in conjunction with the Local Land Services (Hunter) and an increase in catchmer signage. The auditor report of Veolia's DWQMS/P noted that Element 8 was not considere as Veolia's responsibility. However, while we do not agree with this position, this Element is given full compliance based on Hunter Water's activities with an improvement opportunity noted for the Veolia DWQMP.	
Element 9:	Hunter Water undertakes a range of activities, which support the adequacy and implementation of this Element including a 4 year R&D program which includes Water Quality and Public Health as priority areas for the R&D program. Hunter Water is also working closely with other partners to improve understanding of water quality issues including Newcastle University and Water Research Australia. R&D programs are in place from catchment to tap. Hunter Water has a Design Validation Guideline document in place as part of the Asset	
Research and Development (Full)	Creation Framework. Approved products and suppliers are also part of Hunter Water's approach to ensuring that the correct fixtures, fittings and services are used (see Element 4).	
	The auditor report of Veolia's DWQMS/P noted that Element 9 was not considered as Veolia's responsibility. However, while we do not agree with this position, this Element is given full compliance based on Hunter Water's activities with an improvement opportunity noted for the Veolia DWQMP. Improvement actions are also noted for improving clarity in recording the evidence base for choice of critical limits, but this is dealt with under Element 3 to avoid double counting.	



Element 10: Documentation and Reporting (Full)	Documentation, records management and reporting are considered sound for both Hunter Water, Veolia and ALS. Some small discrepancies were noted with document history and accuracy of referencing in documents. However, for the most part, documents were correct, able to be found when requested and staff training in records management was evident from use of the HPRM/TRIM system at the site visits and interviews. Water quality reports are provided to the Board and regulators and were checked under Element 5. Evidence to show how Hunter Water reports to the community was checked under Element 8. A Compliance Calendar is a good innovation that is used to track reporting requirements (see Element 1). Veolia formally reports on operational matters on a monthly basis. Hunter Water produces an Annual Report as part of its licence obligations. This Element is considered in full compliance.	
Element 11: Evaluation and Audit (Full)	Water quality data collation and analysis is undertaken and used to feed into the risk assessment process. The Water Quality Committee reviews water quality data on a monthly basis although an opportunity exists to formalize the data review cycle in the Terms of Reference for the committee. Formal procedures are in place for internal audit. Veolia has undertaken an external audit of its drinking water management system in the audit period as required in the contract with Hunter Water. ALS has undergone internal audit. Hunter Water has an audit schedule in place including requirements for drinking and recycled water. The schedule covers both the ADWG and AGWR by element and component, the ALS and Veolia contracts (by both ADWG and AGWR). This Element is considered in full compliance	
Element 12: Review and Continual Improvement (Full)	Hunter Water has a number of approaches to demonstrate compliance with the senior executive management review and action on findings, of its drinking water management system. Examples include the management system review report and standing agenda items on Water Quality Committee and water planning monthly reports. Hunter Water has a Drinking Water Quality Improvement Plan in place, which is implemented in practice. This Element is considered in full compliance.	

3.1.1 Recommendations

The recommendations identified for Clause 2.1 are shown in Table 3-2.

While there are issues noted for Element 3 in terms of critical limit clarity, these are already covered by the existing recommendation and have not been addressed here to avoid double counting.

The adequacy and implementation focus for drinking water systems is provided in Appendix Table A1.

Recommendation # and Operating Licence Context	Background to Recommendation	Action/s	Timeframe
2015- 2016 2.1.1 2.1.1 EL2 R-1	Flow diagrams to support the implementation of the risk assessment process have been developed but are not yet fully adequate (e.g. missing key characteristics, missing key inputs, missing raw water consumers, missing handover points between parties, missing document history and sign off).	 Review all conceptual system process flow diagrams including: Step by step review of all process steps. Identification of all inputs (e.g. fluoride, filter backwash water, filter backwash return etc.). Identification of monitoring points (operational and CCP). Identification of key characteristics (e.g. filter backwash return quality and flow limits). Identification of governance handover points between parties where applicable (e.g. between Hunter Water and Veolia and between Hunter Water and Midcoast Water). Identification of raw water customers. 	By 30 June 2017.



	nmendation Operating	Background to Recommendation	Action/s	Timeframe
	e Context			
			 Ensure that each conceptual flow diagram matches the SCADA diagram. 	
			Ensure that each conceptual flow diagram and SCADA diagram is signed off by someone with appropriate authority to do so.	
			 Ensure that each diagram has associated version history and review cycle information. 	
2015- 2016 2.1.1 EL2 R-2	Clause 2.1.1 Element 2, Element 3	Accurate risk assessment requires accurate inputs and given the missing components and other characteristics in the flow diagrams, there is potential for gaps in the risk identification and assessment process.	 Use the revised flow diagrams to revise the risk assessments. 	By 30 June 2017 for LTP. For all other systems, as part of the scheduled review process.
2015- 2016 2.1.1 EL2 R-3	Clause 2.1.1 Element 2	Contracting out services means that Hunter Water must keep good oversight of its contractors to assure itself of licence compliance. Veolia's last audit missed issues associated with Element 2 and did not audit Elements 5, 8 and 9 of the Framework.	 Using an independent, Exemplar Global qualified Drinking Water Management System Lead Auditor, undertake an external audit of Veolia's DWQMP with a specific focus on Element 2, Element 5, Element 8 and Element 9. 	By 30 June 2017.
2015- 2016 2.1.2 EL6 R-1	Clause 2.1.2 Element 6	Currency and integration of information is key to successful management of emergencies and incidents. Some discrepancies were noted in document versions and cross- referencing within the Emergency Management Plan, which have the potential to cause confusion.	 Review and revise documentation associated with the emergency management process including: Update of Veolia's Crisis Management Plan (CMP). The CMP review cycle notes that the document "will be reviewed annually and updated (as required) by the Document Owner" however, the document was dated 31.01.2014 and there was no evidence of review in the cycle stated. Review and revise cross-referencing in the Hunter Water Emergency Management Plan. Veolia's Incident Recording and Reporting procedure should be checked for currency across all document history fields (the procedure is variously dated as 15.01.2014 and 04.01.2013 in the headers). 	By 30 June 2017.



3.1.2 **Opportunities for improvement**

The opportunities for improvement¹ identified for Clause 2.1 are as follows:

- OFI DWQ E1/E6-1: Consider whether the stakeholder list and contact details in the Emergency Management Plan would be better served within a separate document outside of the Plan, with a more frequent review cycle to facilitate currency.
- OFI DWQ E1-1: Review the 'MidCoast Water Agreement to Provide Water and Sewerage Services' to check alignment with current Australian Drinking Water Guidelines (the 1996 version is currently stated).
- OFI DWQ E2-1: Ensure that Midcoast Water is added to the Water Quality Committee Terms of Reference.
- OFI DWQ E2-2: At LTP, consider labelling the flow meter at the handover point between Hunter Water and Veolia, as a Hunter Water asset, to improve governance visibility and understanding.
- OFI DWQ E3-1: Consider labelling all CCPs where they occur (such as the labelling undertaken for the EPL monitoring points) on-site e.g. filter beds, chlorine disinfection or CCP instrumentation etc. We have seen this approach taken at other sites we have audited and it improves operator understanding and visibility.
- OFI DWQ E3-2: Consider the value of having the CCP table for that CCP only, in place at its physical location, for example like having the SDSs in place where those chemicals are used.
- OFI DWQ E4-1: Undertake a review of all SDSs to ensure that chemicals are confirmed as appropriate for use in drinking water treatment.
- OFI DWQ E4-2: Ensure that operator initials are always added to the 'Done' column on calibration checklists to provide a record of who conducted the task.
- OFI DWQ E4-3: To facilitate further embedding of water quality protection, ensure that the Water Quality Policy is referenced in the work instructions as a key instrument guiding water guality protection at Hunter Water.
- OFI DWQ E5-1: The Terms of Reference for the Water Quality Committee do not state frequencies of review cycles for data. Consider adding data review cycles to the Terms of Reference.
- OFI DWQ E5-2: Review and formalize the approach around water guality monitoring (including the sharing of information) for the North Karuah handover point between Hunter Water and Midcoast Water.
- OFI DWQ E5-3: Version 2 of the ADWG not the current Version (3.2, 2016 update) is referenced in the System-wide Water Quality Monitoring Plan². Changes to the ADWG monitoring section have been undertaken including more focus on types of monitoring such as validation. It was confirmed at interview that NSW Health had signed off on Version 2 of the ADWG for the 2014-2017 monitoring plan period. However, because the plan is subject to rolling review, the plan should be reviewed for consistency with the current version of ADWG to ensure that any changes or guidance on monitoring types is covered in the plan.
- OFI DWQ E6-1: Ensure that Midcoast Water and contact details are included as a stakeholder in the Emergency Management Plan.
- OFI DWQ E6-2: Ensure that the Trigger Guide (Section 5, p15) in the Emergency Management Plan is reviewed as it currently refers the reader to Section 7 however, Section 6 appears to be the more appropriate Section.

² 2.1.2 HW2006-2906 2 6.006 Plan - Water Quality Monitoring Plan June 2016.doc, second page, Document History.





¹ The numbering for the OFIs is as follows:

DWQ – Framework for Management of Drinking Water Quality; EX – Element Number (e.g. E2); EX-Y – OFI number of that Element (e.g. OFI DWQ E2-2 means that it is the second OFI for that Element within the Framework for Management of Drinking Water Quality).

3.2 Section 2 – Recycled water quality

3.2.1 Summary of findings

Clause 2.2 Recycled Water

Clause 2.2.1 - High Compliance

Clause 2.2.2 - Adequate Compliance

The team was required to audit Clause 2.2.1 and 2.2.2. These clauses required Hunter Water to maintain and implement a management system that met the AGWR or any other requirement by NSW Health and report on any significant changes to the Recycled Water Quality Management System. NSW Health had no other requirements.

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

As appropriate for this clause, the auditors used the Framework for Management of Recycled Water Quality in the AGWR to test adequacy and implementation of systems and processes.

To support the grading for Clause 2.2, the compliance grades and key issues for each element, are provided in Table 3-3. The auditors confirmed with Hunter Water that no significant changes to its RWQMS had occurred during the audit date scope. The auditors reached the conclusion that given the findings, the recycled water sub-clauses 2.2.1 and 2.2.2 were in 'high' and 'adequate compliance' respectively, with the licence obligations for the audit date scope.

 Table 3-3
 Element by element audit grade summary for Clause 2.2

Element	Key Findings
Element 1: Commitment to Responsible Use and Management of Recycled Water Quality (Full)	Hunter Water has a corporate RWQMS (Corporate RWQMP) in place as well as individual system specific. Details of the overarching internal Hunter Water stakeholders' relevant roles and responsibilities and external stakeholders are listed in the Corporate RWQMP. Scheme specific stakeholders are listed in the individual RWQMPs. Stakeholders listed and involved are appropriate. Roles and responsibilities are clearly listed and appropriate. Some gaps were noted in the regulatory and formal requirements and an opportunity for improvement has been captured to address this.
	Agencies are identified in the Corporate and scheme-specific RWQMPs as in how they are engaged. Although NSW Health representation was not included at the KERE risk assessment, NSW Health is reviewing the draft RWQMPs. Recycled water customers and contractors are engaged through formal contracts and roles and responsibilities are outlined. Hunter Water and Veolia policies are in place and visible. This Element is considered to be fully compliant, but should be reviewed under the existing recommendation to finalise the RWQMPs.
Element 2: Assessment of the Recycled Water System (Adequate)	Sources of water and process trains for each scheme are identified in the scheme-specific RWQMPs. The scheme-specific description is sufficient to allow potential source water contaminants to be understood and clearly outlines information on end uses, exposure pathways, process train and potential recycled water misuses.
	A risk assessment briefing paper shows how the system information was collated and used to help guide the risk assessment process including definition of potential and actual log reduction values based on treatment and non-treatment barriers. The briefing paper shows the personnel involved.
	Flow diagrams are generally compliant. Gaps noted include that the diagrams did not have document history, verification or sign-off. Often system components were confused on the diagram, in the RWQMP document and in the risk register e.g. maturation pond vs effluent storage lagoon.
	Recycled water and process quality information is detailed in the scheme-specific risk assessment briefing paper and is generally adequate.
	Risk methodology was based on the corporate approach (see Element 2, Drinking Water section for more information).



Element	Key Findings
	The methodology is generally in line with Framework requirements however, the assessment was not undertaken on a component by component basis and the time allocated was two hours, normally risk workshops for a whole scheme take a full day, usually including a site verification of the flow diagram. Risks summarized in the RWQMP were out of date at the time the RWQMP was submitted to NSW Health for review and for the audit date scope. Risk registers should be reviewed, as soon as convenient, where significant system change has occurred. Given that the residence time in the effluent storage lagoon has not yet been validated and that it is acknowledged that short circuiting could occur, the residual risk score for helminths should still be 'High' (not 'Medium') to flag the importance of this event. Veolia's Karuah RWQMP was confirmed to integrate with Hunter Water's RWQMP. This Element is considered in adequate compliance.
Element 3: Preventive Measures for Recycled Water Management (Adequate)	A scheme specific risk register is in place and details significant hazards, preventive measures, residual risks and their controls from source to end user for all systems. However, because a component by component analysis was not undertaken, some gaps exist e.g. the significant risks miss the importance of the helminth issue (as noted above), 'whole of system' risks – 'lack of trained operators or failure of operating staff resulting in system errors', 'materials and chemicals' risks are not covered and UV lamp stocks and/or cleaning procedures (manual vs automatic sleeve cleaners) are missing from the register as a control for the UV failure. A Recycled Water Improvement Plan is in place with columns for the WWTW, the scheme, action, responsibility, date evidence etc. There are many actions that were overdue for completion within the audit date scope. CCP tables are included in the individual RWQMP however for the Karuah RWQMP there are discrepancies. Given that the UV system was installed within the audit date scope, the risk assessment and CCP should have been reviewed and the RWQMP revised before completion and submission of the RWQMP to NSW Health. The lagoon storage CCP should also not yet be considered a CCP for helminths until validation of residence time (or other) is undertaken.
Element 4: Operational Procedures and Process Control (High)	recommendation has not been included for this audit. For the individual schemes, Hunter Water covers operational procedures and process control within the CCP tables. Not all CCPs are currently finalized. Of particular importance is the need to validate CCP3 at Karuah for helminth control, especially as the scheme is live and there is a risk that water may not be fit for purpose. SCADA is in place to facilitate operational control and system specific records were reviewed to support this Element. Operational procedures could be easily located from both the Hunter Water and Veolia side. Good communication linkages occur between Hunter Water and Veolia including a monthly operational report. Equipment capability and maintenance was partially covered within the risk register. Operation and maintenance procedures and systems were reviewed as part of the asset audit components. It was also demonstrated that O&M is undertaken in practice including procurement and implementation of a new UV system. Veolia used a formalized maintenance management system. Approved materials and chemicals procedures are managed through the Corporate RWQMP (see more detail under Element 4 of the drinking water section). Veolia manages chemicals at all the WWTW. A Pollution Incident Reduction Management Plan (PIRMP) in place. Incident management procedures (corrective actions) are in place but there are some compliance gaps (covered under Element 6). This Element is considered in high compliance with CCP and incident management information to be reviewed as part of the existing recommendation.
Element 5: Verification of Recycled Water Quality and Environmental Performance (High)	A Recycled Water Quality Monitoring Plan in place and comprehensive. Effluent quality is monitored as part of the Environment Protection Licence requirements. Hunter Water has a contract in place with ALS for sampling and analysis (see the drinking water section). Veolia has sampling calendars in place. Routine site specific verification monitoring is covered in the RWQMP. Site specific monitoring needs to be specified in the RWQMPs – and an internal audit report found gaps in site monitoring at KERE. A recommendation has been added to capture this compliance issue.





Element	Key Findings
	Hunter Water has a variety of channels for communication with recycled water customers. Hunter Water's overarching customer request and management system is discussed in detail under the Retail Supply section of this document. A communication standard has been developed between Hunter Water and Veolia for reporting of recycled water issues including triggers for communication and communication governance in general. Corrective responses are covered at the site specific level in the CCP tables (see Elements 3 and 4 above). Monitoring is also undertaken as part of the auditing process and this is covered further under Element 11. Some issues were noted with document control however, document control issues are covered under Element 10. This Element is considered in high compliance because although site specific monitoring is not itemised in the scheme-specific RWQMP, creating non-compliance with the environmental aspects of the framework, site monitoring is in fact audited in practice.
Element 6: Management of Incidents and Emergencies (High)	A Hunter Water/Veolia communication standard has been developed for reporting of recycled water issues including triggers for communication and communication governance in general – the document was in audit date scope. A specific incident response procedure for recycled water issues exists, currency for the audit date scope was assumed based on the review history table although the front cover stated 'Date of Next Review' was '2015' and the version history stated that the last update (Version 2.2) had occurred on 21/11/14. Incident notification requirements are covered in the Karuah RWQMP at Table 6-1. A footnote to that table states: <i>"This table is correct at the time of writing. The live, current table is given as Appendix 2 of the Recycled Water Quality Incident Response Protocol as described in the Corporate RWQMP."</i> We have assumed that the Recycled Water Quality Incident Response Protocol is that provided with TRIM identifier HW2008-1592/8/2. If this is the case, it is not possible to verify that the document was current for the audit date scope. Communication trains between Hunter Water, Veolia and the KERE contractor are not specified. Training on recycled water issues is covered under Element 7. This Element is considered in high compliance based on minor gaps noted at the corporate and scheme-specific level. Recommendations for this Element are linked to overall review and finalization of the RWQMPs. The existing recommendations (2013-14-03, 2013-14-04, 2013-14-06, 2013-14-13 (Part (d))) cover CCPs, which also include aspects of emergency
Element 7: Operator, Contractor and End User Awareness and Training (Full)	management and therefore, further recommendations are not required for this element. Hunter Water uses a number of channels to ensure that recycled water training of both personnel, end users and contractors occurs. Examples include inductions (Environmental Protection Licence and reuse training), site audits which are used to inform end users of obligations, meetings with end users/contractors. The Karuah RWQMP notes that no site specific training has been developed for the Karuah scheme however, the induction and subsequent follow up site meetings with Veolia, coupled with the site audits, satisfy the training and awareness requirements. At the site visit, the KERE contractor was able to confirm understanding that the irrigation water was recycled water and to wear appropriate PPE and use proper hygiene when working with and after working with the irrigation equipment. Veolia has contractual requirements to ensure that its operators are appropriately trained. Evidence was provided to confirm that recycled water specific training is included, including for CCPs. Training material is comprehensive and appropriate. However, training for the new Karuah CCPs has not yet occurred as this was awaiting the SCADA CCP upgrade. This Element is considered fully compliant.
Element 8: Community Involvement and Awareness (Full)	No specific evidence was provided for Element 8. Evidence for this section was taken from that provided in other components of the audit. Corporate-level communication initiatives are covered in the Corporate RWQMP. Other evidence to support this Element was reviewed further under the Retail Supply component of this audit. Hunter Water also has an active social media presence. There are no specific communication initiatives for the Karuah scheme although awareness is covered under inductions, site audits and ongoing site meetings. The site is clearly marked with recycled water signage at the entrance gate and communication and awareness is also covered in Veolia's Karuah RWQMP. This Element is considered in full compliance given the overarching corporate and Veolia approaches.





Element	Key Findings
Element 9: Research and Development (High)	Procedures are in place to support procurement and validation of processes (see Element 3 of the drinking water section). A validation monitoring program is in place. Evidence was supplied to support implementation of the procurement process e.g. validation certificates for UV disinfection units. Compliance gaps exist in relation to the validation of CCPs (see Element 3 above and information under the existing recommendations). This Element is considered in high compliance based on implementation.
Element 10: Documentation and Reporting (High)	Hunter Water and Veolia have organization-wide approaches in place for document and records' control, this approach is used in practice. Integrum is used to track approvals and revision requirements however, the implementation in practice was not always clear on the document histories reviewed. Some discrepancies were noted in Hunter Water documents, which suggests that the review process needs improvement. Documents and records are managed through TRIM (HP Records Manager). Laboratory records are managed by ALS through LabWare software and data are provided to Hunter Water for input into LabData in which data can be stored and analysed. Staff members are trained in HPRM use and records management. A Recycled Water TRIM folder was reviewed at the audit interview and we confirmed that staff could easily locate and retrieve information on request, demonstrating sound TRIM competency in practice.
	Rules for document review and reporting are covered in the Recycled Water Reporting and Review Requirements Standard (including for internal and external requirements). However, this standard does not appear to be referenced in the Corporate RWQMP. Hunter Water is required to report internally and externally and also receives monthly operational reports from Veolia. An Annual Compliance and Performance Report is produced for IPART. While Hunter Water has processes in place, these do not appear to be as well implemented for recycled water management as they are for drinking water management and customer service management. This Element is therefore considered in high compliance. There are no recommendations against this Element as review of the RWQMPs is currently captured by an existing recommendation (2013-14-04, 2013-14-06, 2013-14-13 (Part (d))).
Element 11: Evaluation and Audit (Full)	Water quality data were reviewed, analysed and included in the risk workshop briefing papers (see Element 2). Ongoing long-term data analysis is specified in the Corporate RWQMP although there are some review cycle discrepancies. Hunter Water notes that ongoing monitoring and data analysis <i>will be</i> [our emphasis] conducted as part of the annual review of the recycled water quality monitoring plans although document history information suggests a biannual review. Hunter Water is required to report on recycled water quality results as part of its licence obligations and evidence to support reporting was confirmed for both IPART and NSW Health (see Element 10). Hunter Water has a comprehensive audit schedule in place including requirements for drinking and recycled water. The schedule covers both the ADWG and AGWR by element and component, the ALS and Veolia contracts (by both ADWG and AGWR). Hunter Water undergoes annual external audits as part of its Operating Licence obligations. A biannual management system review is undertaken with the EMT, outcomes of audits are discussed at these meetings. Site audits are also undertaken. This Element is considered in full compliance.
Element 12: Review and Continuous Improvement (High)	Review and continuous improvement is covered at a Corporate level in the Corporate RWQMP. The EMT discusses performance of the management system at a bi-annual meeting (includes findings from audit reports). Quarterly meetings are held with NSW Health (see also Element 12 of the drinking water section). Hunter Water and Veolia also have a joint Improvement and Innovation Committee at which system improvements are discussed. A Recycled Water Improvement Plan (RWIP) is in place. Many actions were overdue for completion within the audit date scope including some that are relevant to critical control point validation e.g. helminth control in the effluent storage dam at Karuah (Hunter Water provided an update that this action is ongoing). This Element is considered in high compliance based on lack of close-out of items in the RWIP.



3.2.2 Recommendations

The compliance gaps noted for Clause 2.2 will be addressed through the completion of recommendations 2013-14-03, 04, 06, 12, 2014-15-01 and 2014-15-02.

The following additional recommendations identified for Clause 2.2 are shown in Table 3-4.

Table 3-4 Recommendations for Clause 2.2.1 and 2.2.2

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2015-2016 2.2.1 EL5 R-1	Clause 2.2.1 Element 5	An internal audit of the KERE site found compliance gaps in environmental monitoring and record keeping.	 Hunter Water should review the implementation of recommendations from its Environmental Compliance Audit – Karuah Effluent Reuse Enterprise and develop appropriate deadlines for any recommendations that have not been addressed. 	By 30 June 2017.
015-2016 2.2 R-1	Clause 2.1.1 and 2.1.2 Overarching	Compliance gaps detailed in the findings table above (Table 3-3) and existing recommendations.	 Hunter Water should ensure that a gap analysis is completed of all RWQMPs, against the Framework for Management of Recycled Water Quality and Use. Particular focus should be given to the gaps in compliance areas detailed in the findings table (Table 3-3). 	By 30 June 2018.

3.2.3 Opportunities for improvement

The opportunities for improvement³ identified for Clause 2.2 are as follows (but noting that a full review of all RWQMPs against the compliance requirements of the Framework for Management of Recycled Water Quality and Use, is required):

- OFI RWQ E1-1: Review and address the missing information in the Corporate RWQMP and the scheme-specific RWQMPs e.g. the Competition and Consumer Act 2010 (Cth) is missing from the Corporate RWQMP (recycled water, when sold, is captured under Australian Consumer Law).
- OFI RWQ E1-2: Given the findings (omissions and perhaps erroneous inclusions), the overarching compliance requirements for recycled water may sit better in a separate document outside of the Corporate RWQMP to facilitate maintenance of adequacy and currency. Hunter Water should give consideration to this approach as it matches what is in place for drinking water.
- OFI RWQ E3/E9-1: If the validation of the effluent storage dam is likely to take time, consider validating helminth levels in the silage bales after storage on site. It is likely that the thermal and biological processes occurring within the bale will facilitate reduction of helminths in the final silage product. If sound, the process could be used as evidence of 'context-specific validation', possibly circumventing the need for validation of the storage dam although this approach would have to be reviewed with DPI for its acceptability.
- OFI RWQ E6-1: To avoid confusion, for incident notification limits, it may be preferable to just refer to the Recycled Water Quality Incident Response Protocol (including the TRIM number) in the

RWQ – Framework for Management of Recycled Water Quality and Use; EX – Element Number (e.g. E2); EX-Y – OFI number of that Element (e.g. OFI DWQ E2-2 means that it is the second OFI for that Element within the Framework for Management of Recycled Water Quality and Use).





³ The numbering for the OFIs is as follows:

specific RWQMPs rather than produce a second table that contains inconsistencies e.g. in the naming of agencies.

- OFI RWQ E6-2: The Karuah RWQMP should cover notifications between Hunter Water, Veolia and the KERE contractor specifically including what has been agreed in the contracts between all parties (noting that the contract was between Hunter Water and KERE contractor as the time of the audit date scope).
- OFI RWQ E10-1: Ensure that the management system review procedure is reviewed for document history information (the version information on the footer of the document does not match that in the version control table e.g. Version 3 authorised on 13/07/2015 (footer) vs Version 4 authorised 1-6-2016 (table)).

3.3 Section 3 – Drinking Water Quantity

3.3.1 Summary of findings

The team was required to audit Clause 3.1.1 and 3.2.3. Clause 3.1.1 requires Hunter Water to achieve a water conservation target of a 5 year rolling average of equal to or less than 215 kilolitres per year for each property supplied for residential purposes. Clause 3.2.3 requires Hunter Water to develop a methodology for assessing the economic level of leakage from its drinking water network to the satisfaction of IPART.

Detailed assessment in respect of this clause is presented in Appendix A. A summary of the auditor's findings is provided in Table 3-5.

Clause	Key Findings
	Hunter Water reports on its Water Conservation Target through its annual compliance and performance report. The result recorded for 2015-16 of 171 Kilolitres (KL) per property is the lowest recorded in the last 10 years and represents a 2 KL per year reduction since 2014-15.
3.1.1	Residential water consumption is calculated by Hunter Water's customer service group, through its metering and billing systems which were found to be effectively implemented through the residential supply component of the audit.
5.1.1	Hunter Water uses an Integrated Supply-Demand Planning (iSDP) model to predict residential water use and determine priority areas for water conservation projects. This model breaks down water consumption in individual customer categories (e.g. residential, industrial, commercial and unaccounted for water). The iSDP model was developed in 2012 and it was stated in audit interviews that the model is reviewed when annual water consumption data is calculated or if required for other reasons, such as for regulatory price and water demand reviews.
	Clause 3.2.1 of the operating licence requires Hunter Water to determine the economic level of leakage from its drinking water network and submit a report on this to IPART (by 31 January 2014). Clause 3.2.2 requires Hunter Water to gain approval from IPART for the methodology it uses for determining the economic level of leakage for reporting purposes. Clause 3.2.3 requires Hunter Water to use this method when preparing the report required under Clause 3.2.1.
3.2.3	The audit found that Hunter Water had received approval for its report assessing economic level of leakage and the methodology it used. In a letter of approval for this, IPART noted some areas for improvement in the methodology. Hunter Water responded to each of these issues in a letter to IPART, in which it committed to incorporating these improvements.

 Table 3-5
 Summary of findings for Clauses 3.1 and 3.2

The auditors reached the conclusion that given the findings, Hunter Water was fully compliant with clause 3.1.1 and demonstrated high compliance with Clause 3.2.3.





3.3.2 Recommendations

The audit did not identify any recommendations for the Drinking Water Quantity component of the audit.

3.3.3 Opportunities for improvement

The following opportunities for improvement were determined during the audit:

 OFI 3.1.1 1-2 - It is recommended that Hunter Water review the document titled RP168 – RT Report Water Consumption by Premise Code Conceptual Solution to ensure the revision history and status of the document are correctly referenced throughout.

3.4 Section 4 – Assets

3.4.1 Summary of findings

The team was required to audit Clause 4.1.1, 4.1.2, 4.1.3, 4.2.2, 4.2.3 and 4.2.4.

Clauses 4.1.1 to 4.1.3 requires Hunter Water to maintain an asset management system consistent with relevant asset management standards. Clauses 4.2.2 to 4.2.4 requires Hunter Water to ensure that water pressure, water continuity and water overflow standards are met.

Detailed assessment in respect of this clause is presented in Appendix A. A summary of the auditor's findings is provided in Table 3-6.

Table 3-6	Summary of findings for Clauses 4.1 and 4.2
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Clause		Key Findings
4.1.1		Hunter Water was found to have an established and effective asset management system that Hunter Water claims that this system is consistent with the Water Service Association of Australia's (WSAA's) Aquamark Benchmarking Tool. Based on the information available for the audit, the auditors did not find any evidence to suggest this was not correct.
		Hunter Water participated in the WSAA's 2012 Aquamark Benchmarking Program. The Aquamark Benchmarking Program is based on a four-yearly review and performance improvement program. The 2016 program has been revised to align with ISO 55001. Hunter Water is participating in the 2016 Aquamark program, although this is not considered relevant to the audit period.
		The 2012 Aquamark assessment was undertaken internally by Hunter Water and identified five areas for improvement. The audit found that Hunter Water had completed actions to address two of these (people and capability, and challenging business cases). Considerable effort had been taken to address the remaining improvement areas (Maintenance management, (critical asset and O&M procedures). Hunter Water is in the process of adapting its asset management system to be consistent with ISO 55001. Hunter Water has committed to implementing the ISO 55001 based system by July 2017.
		During audit interviews, it was reported that of the 193 identified tasks required to transition the system to ISO 55001, 36 had been completed. This suggests that substantial effort will be needed to transition Hunter Water's asset management system to be consistent with ISO 55001 by July 2017. Hunter Water has engaged two contractors on a full-time basis to ensure this timeframe is met.
Clause	4.1.2	Hunter Water was found to be devoting considerable effort to populate their asset management systems with all relevant asset information, including nameplate data. A maintenance optimisation program is also being implemented for Hunter Water maintained network assets. Hunter Water have completed a similar exercise with Veolia managed treatment works. Other asset management systems such as identifying replace/ replacement and decision-making appear well understood and embedded in the organisation.





Clause	Key Findings
	The decision by Hunter Water to change its system to align with ISO 55001 has resulted in a change in focus from maintaining its Aquamark system to developing the additional processes and procedures required under ISO 55001, which has more strident compliance requirements. This change of focus appears to have resulted in a number of existing asset management documents, including key documents such as the Asset Standards
	Management Plan, being overdue for review and being inconsistent with Hunter Water's document control requirements. Overall compliance with this clause was therefore determined to be high.
4.1.3	Hunter Water reported that there were no changes to the Asset Management System in 2015-16. The audit did not identify any evidence to contradict this. Therefore there was no requirement for Hunter Water to comply with this clause.
4.2.2	Hunter Water met the water pressure standard specified under this clause during the audit period with a total of 1,312 properties experiencing low pressure failures, which is substantially lower than the target of 4,800. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.
4.2.3	Hunter Water met the water continuity standard specified under this clause during the audit period with 3,901 properties experiencing unplanned outages of over five hours and 1,488 properties experiencing three or more unplanned outages, which is substantially lower than the target of 10,000 and 5,000 respectively. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.
4.2.4	Hunter Water met the wastewater overflow standard specified under this clause during the audit period with 2,951 properties and 14 properties experiencing one or three or more uncontrolled sewage overflows respectively, which is substantially lower than the target of 5,000 and 45 respectively. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.

The auditors reached the conclusion that given the findings, Hunter Water was fully compliant with clauses 4.2.2, 4.2.3 and 4.2.4. Clause 4.1.3 was not triggered during the audit period, however, clause 4.1.1 was found to be fully compliant and clause 4.1.2 was found to be of high compliance for the reasons outlined in Table 3-6.

3.4.2 Recommendations

Table 3-7 provides recommendations for Clause 4.1.

Table 3-7 Recommendations for Clause 4.1

Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2015-2016 4.1.2 R-1	Clause 4.1.2	 Plan is overdue for review according to its control page. 	 Review the Asset Standards Management Plan as this document was due for review in January 2016 Review the Asset Class Management Plan – Drive Controllers as required on page 2 of that plan 	By 30 June 2017.





Recommendation # and Operating Licence Context		Background to Recommendation	Action/s	Timeframe
2015-2016 4.1.2 R-2	Clause 4.1.2	 A number of documents were found to be missing relevant document controls. 	 Ensure all Asset Class Management Plans meet the requirements of Hunter Water's document control system 	By 30 June 2017.

3.4.3 Opportunities for improvement

The following recommendations were determined during the audit:

 OFI 4.1.2 1-1 - Consider amalgamating existing systems into an integrated management system to reduce the number of systems in use across the organisation.

3.5 Section 5 – Customers and consumers

3.5.1 Summary of findings

Table 3-8 provides an overview of the audit findings for Section 5 of the operating licence.

 Table 3-8
 Summary of findings for Clauses 5.1, 5.4 and 5.6

Clause	Key Findings
5.1.2	The team was required to review Clause 5.1.2 with Hunter Water. This clause required Hunter Water to notify IPART of any significant changes that it proposes to make to the Customer Contract in accordance with the Reporting Manual. Hunter Water was able to confirm that it had not undertaken any changes to its Customer Contract therefore, there was no requirement to audit this clause.
5.4.1 and 5.4.3	The team was required to audit Clause 5.4.1 and 5.4.3. Both these clauses require Hunter Water to have in place a procedure detailing financial hardship, payment difficulties, water flow restriction and disconnection, to show how Hunter Water communicates with its residential customers and to clearly show how it implements its procedure including actions for non-payment. The clauses also require Hunter Water to have a method in place for the provision of information on this subject, free of charge. Hunter Water has processes and records in place to support the full compliance of this clause. In particular, Hunter Water has a Code of Practice on Debt and Disconnection and various communication modes including a 'Making Waves' customer newsletter and its website on which its Debt Recovery and Hardship Policy is published. The policy covers payment plans under conditions of hardship through Hunter Water's Account Assistance Program and for emergency payment assistance through the Payment Assistance Scheme. The policy includes all the information required by the licence clause i.e. states that customers are responsible for paying their bills, sets out the payment terms, covers disconnection conditions and water flow restriction conditions (5.4.1 (c)) and largely covers self-identification and identification by community welfare organisations with support from other components on the Hunter Water website (5.4.1 (d)). Records for payment plans were provided and random samples for two individuals checked at interview. Records could easily be found and the payment history reviewed. In addition to its procedures and documentation, Hunter Water also holds a half-day annual forum with key stakeholders including its partner welfare agencies. The results are used to optimise business process and improve financial hardship customer outcomes. This licence clause is considered fully compliant for the audit date scope. Detailed assessment in respect of this clause is presented in Appendix A.



5.6.1, 5.6.2 and 5.6.3	The team was required to audit Clause 5.6.1, 5.6.2 and 5.6.3. These clauses require Hunter Water to have appropriate procedures and processes in place to deal with customer requests, that the processes and procedures meet the requirements of ISO 10002-2006, that Hunter Water's Internal Complaints Handling Procedure is fully implemented and that it must supply information at least annually, with customer bills, information on the Internal Complaints Handling Procedure. Hunter Water has processes and procedures in place, which satisfy the requirement of this licence component. Hunter Water reviews and assesses trends in customer complaints and these are reported annually to IPART. This item fulfils the requirement to analyse and evaluate complaints. The overall procedures, databases, systems and processes in place at Hunter Water fulfil the requirement to have a customer-focused environment that is open to resolving complaints. The recognition and obligation to address the needs and expectations of customers is covered in the Customer Complaints Handling Procedure and the accompanying checklist and database. Annually, Hunter Water includes a brochure with its bills outlining the complaint handling procedure. Contact information is provided on the flyer. Inventory evidence was provided to show that the flyer had been requested from the bill print contractor and that the contractor had received the information in question for distribution with Hunter Water bills. This licence clause is therefore considered fully compliant for the audit date scope. Detailed assessment in respect of this clause is presented in Appendix A.
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3.5.2 Recommendations

No recommendations were identified for this licence clause.

3.5.3 Opportunities for improvement

Opportunities for improvement were only identified for Clause 5.6 and as follows:

- OFI 5.6.1-1: Ensure that the Customer Complaint Handling Procedure are reviewed for correctness of referencing of standards and other legal and formal inclusions in the document as appropriate.
- OFI 5.6.1-2: Hunter Water should consider undertaking a review of the ISO 10002-2006 Checklist Complaint Procedures to ensure that the checklist matches 10002-2014 on which the Hunter Water guidelines is based.
- OFI 5.6.1-3: Hunter Water should review its complaint handling procedures to ensure that complaints arising from social media are considered.
- OFI 5.6.1-4: Review the definition of 'complaint' as stated in IPART 2014-2015 Compliance Report (C5.6.1 - Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF, Section 5.4, p39) to ensure accuracy of definition vs stated reference (the current definition matches the 2006 standard and 2013-2014 National Performance Framework (p40) but not the 2014 standard as stated).
- OFI 5.6.2-1: Ensure that the Case Learner Resource (C5.6.2 Guideline Case (Hunter Water) -HW2008-235 3.088.DOC.) is reviewed (version provided was from 2011).

3.6 Section 8 – Performance monitoring

3.6.1 Summary of findings

The team was required to audit Clause 8.2.1, 8.2.2 and 8.4.1.

Clause 8.2.1 requires Hunter Water to comply with its reporting manual, including requirements to report to IPART and NSW Health, and provision of reports on its website so they can be accessed by the public. Clause 8.2.2 requires Hunter Water to maintain a sufficient record system that enables it to report accurately in accordance with Clause 8.2.1.





Clause 8.4.1 requires Hunter Water to accurately measure its performance against certain performance indicators specified in the reporting manual. For this audit, the environmental indicators were selected.

Detailed assessment in respect of this clause is presented in Appendix A. A summary of the auditor's findings is provided in Table 3-9.

Table 3-9 Summary of findings for Clauses 8.2 and 8.4

С	lause	Key Findings
Clause 8.2.1		Hunter Water demonstrated that it met all relevant requirements of its reporting manual. Hunter Water maintains a corporate reporting register and corporate compliance calendar to ensure its corporate reporting requirements are met. During audit interviews, Hunter Water staff reported that they were investigating the implementation of an integrated management system to provide an automated system for tracking reporting requirements (and other responsibilities such as quality and risk assessment processes). Hunter Water's current aim is to implement this system in June 2017. A review of Hunter Water's website found that all required reports were publicly available, and that the appropriate version of each report was provided.
Clause 8.2.2 Hunter Water was adhered to. A nur document identifi		Hunter Water was found to have implemented a comprehensive records management system (TRIM), which most documents reviewed for the audit adhered to. A number of documents were identified that did not display a unique document identifier and therefore did not adhere to Hunter Water's procedural requirements for the TRIM system.
Clause 8.4.1		Hunter Water demonstrated that it has an effectively implemented environmental management system, which is reflected by the continuation or improvement of good performance against the environmental indicators specified by IPART. Hunter Water's reporting against these environmental indicators was found to be based on accurate recording systems. It was found that the indicator relating to waste recycling aggregated data from multiple waste streams and that due to inherent differences in the materials feeding these streams, the overall level of recycling reporting was very heavily skewed towards inert bulk wastes.

3.6.2 Recommendations

Table 3-10 provides recommendations for Clause 8.2.

Table 3-10 Recommendations for Clause 8.2

Recommendation # and Operating Licence Context				Timeframe	
2015-2016 8.2.2 R-1	Clause 8.2	 A number of documents were identified that were not consistent with Hunter Water's document control procedures. 	 Ensure all compliance related documents are consistent with Hunter Water's Procedure for Managing Document Control. 	By 30 June 2017.	

3.6.3 Opportunities for improvement

Opportunities for improvement were identified for Clause 8.4 as follows:

 OFI 8.4 1-1 - IPART should consider revising Environmental Indicator 7 to provide better clarity between different waste streams. This could be achieved by requiring reporting of recycling of key waste streams that effectively display Hunter Water's efforts with recycling.





3.7 Section 9 – Memorandum of understanding

3.7.1 Summary of findings

Hunter Water stated that there was no change to the Memorandum of Understanding with NSW Health in 2015/16, therefore clauses 9.1.1, 9.1.2 and 9.1.3 are not auditable.





4 Recommendations from previous audits

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

4.1 Recommendation 2013-14-03 / 2013-14-04 / 2013-14-06 / 2013-14-13 (Water Quality Management Systems – Condition 2.1/2.2)

Table 4-1 provides a review of previous audit recommendations 2013-14-03 to 2013-14-13.

Table 4-1 Previous audit recommendations 2013-14-03 to 2013-14-13

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-03 2013-14-04 2013-14-06 2013-14-13 Water Quality Management Systems Conditions 2.1.1, 2.1.2, 2.2.1 & 2.2.2 Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including: a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health b) develop a process to ensure critical limits are only altered with supervisory consent and there is a failsafe	Completed for Drinking Water (Clause 2.1.1 and 2.1.2), and implementation continues for Recycled Water (Clause 2.2.1 and 2.2.2) The audit found that CCPs for drinking water have been implemented across the site that was subject to audit (Grahamstown WTP) and necessary documentation has been developed to meet the requirements of the recommendation. The establishment of CCPs for recycled water is linked to the validation plan, which is currently being implemented	Auditor to check for completeness.	 Drinking Water CCPs: Documentation to support implementation of CCPs (including CCP tables and procedures⁴) was reviewed. Hunter Water liaised with NSW Health in terms of this recommendation and meeting minutes and letters were provided to demonstrate consideration and communication⁵. We checked the progress of this recommendation with NSW Health. NSW Health noted that the CCPs are still to be finalized to its satisfaction and in its letter of 27 June 2016, noted that there are still compliance issues such as fluoride limits and confirmation of responses and response times to exceedances⁶. In this audit's findings, there are also issues noted with the CCP limits, complexity of the 'HACCP' tables and gaps in the flow diagrams that may mean hazards and risks could be missed. These issues are further discussed under Element 2 of the Framework (Appendix A). To support closure of the drinking water CCP recommendation, Hunter Water should develop a clear table of validation for the critical limits stating the exact piece of evidence (e.g.

⁴ E.g. 2.1.3 HW2006-2906 7 5.013 Procedure - Establishing and Reviewing Critical Control Points.docx, for further evidence see Clause 2.1.1 to 2.1.3 including liaison with NSW Health for approval and endorsement.

⁵ 2.1 2013-14-01 HW2006-1448 49 1.013 Minutes - Hunter Water NSW Health Liaison Committee Meeting - September 2015.docx; 2.1 2013-14-01 HW2006-1448 49 3.006 Minutes - Hunter Water NSW Health Liaison Committee Meeting-March 2016.docx and footnote above.

⁶ "NSW Health notes that the HACCP tables list the online fluoride critical limit as >=1.5mg/L for 5 minutes which is inconsistent with Hunter Water's critical limit and the Code of Practice. Hunter Water is required to notify NSW Health if the fluoride concentration exceeds 1.5mg/L. Hunter Water should ensure that the critical limits agreed with NSW Health are replicated in Veolia's operations and documentation."





Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
process to ensure that they are reinstated before water quality is compromised c) revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP d) develop a process to record and document corrective actions, and preventive measures to reduce risks e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate.	and is due to be completed in November 2015. Once the validation program is completed and the CCPs are endorsed by NSW Health, Hunter Water and Veolia will implement the changes, including the input of limits and alarms into SCADA.		 instrument, version, location of specific information) which supports the choice of value – especially where the value deviates from the ADWG and is 'context validated'. Recycled Water CCPs: We checked the progress of the recycled water component with NSW Health⁷. NSW Health confirmed that RWQMPs have been submitted by Hunter Water but are yet to be reviewed. A standard has been developed for establishing and reviewing recycled water CCPs.⁸ The procedure is consistent with the AGWR approach and clearly sets out responsibilities for decision-making. The validation testing program⁹ has been completed and appears to be sound and includes the correct parameters e.g. UV transmissivity for validating process unit 'fitness for purpose' and LRV₁₀ credits. However, in this audit, we have noted areas for compliance improvement relating to CCPs, validation (of lagoon storage times in particular) and the adequacy of the scheme specific RWQMPs in general (see notes for Element 3 in Appendix A in particular). A Corporate RWQMP is in place and has been updated.¹⁰ The diagram of the Framework is incorrect – the supporting Requirements are those from the ADWG Framework (p7, Figure 1-1). Flow diagrams include CCPs but do not have version control or include evidence of ground-truthing and sign-off.¹¹ This process was conducted. Veolia has included CCPs in its Karuah RWQMP and on SCADA.

Drinking Water: In its questionnaire response, Hunter Water noted¹² that this action was completed for drinking water in 2014-15. However, NSW Health has responded that for the information it received, there were still queries around critical limits (for fluoride in particular). While we acknowledge that Hunter Water has made excellent progress, in this audit we have also found some areas for drinking water CCPs which require clarification - for validation of critical limits in particular. This

⁸ 2013-14-03,04,06,13 Establishment and Review of Recycled Water CCPs.DOCX, V1, 7/9/2015.





⁷ Teleconference with NSW Health (Hunter New England Region), 22 September 2016.

⁹ 2013-14-03,04,06,13 WWTW Recycled Water Existing Schemes Validation Program.DOCX.

¹⁰ 2014-15-02 Corporate Recycled Water Quality Management Plan.docx.

¹¹ AGWR states that flow diagrams should "be verified by field audits and checked by those with specific knowledge of the system" AGWR 2006, Section 2.2.2 Recycled water system analysis, p27. ¹² IPART's Report to the Minister, Hunter Water Corporation Operational Audit 2014-15, Water – Compliance Report, March 2016 (page 21).

recommendation is therefore considered open until the validation has been clarified and NSW Health's satisfaction confirmed.

Recycled Water: During this audit, we found that validation of CCP 3 at Karuah (the effluent storage lagoon) is still to be finalised and NSW Health's satisfaction on the submitted RWQMPs is yet to be provided. Therefore, the recycled water component of the recommendation is considered open.

4.2 2013-14-05 (Water Quality Management Systems -**Condition 2.1/2.2)**

Table 4-2 provides a review of previous audit recommendation 2013-14-05.

Table 4-2 Previous audit recommendations 2013-14-05

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-05 Water Quality Management Systems Conditions 2.1.1 & 2.2.1 Within 18 months, Hunter Water should define and identify significant risks. Determine the preventive measures that manage significant risks, and implement a plan to document the preventive measures and consequent corrective measures.	This will occur following staged risk assessment updates, which are scheduled for completion by June 2016. Planned Completion – June 2016.	Auditor to check progress.	Hunter Water uses an Enterprise Risk Management (ERM) Framework ¹³ to undertake all risk assessment associated with the organization. Version 3 was provided as evidence. The ERM document has not met its review cycle of 2015 (last date of review 28/2/2013 ¹⁴). However, it is acknowledged that a review of the ERM document commenced but was deferred due to development of key risk components (risk appetite and limits) and a change of the Managing Director. Hunter Water notes that review of the ERM document has recommenced and concurs with the deferred timeline in order to develop a more complete and relevant document. The Water Quality Committee identified and defined a significant risk as a 'high extreme'. ¹⁵ The risk assessments are being completed in a documented schedule ¹⁶ . The evidence provided supports an implemented, ongoing process and Hunter Water is progressing ¹⁷ through the risk assessments. A risk register was provided as evidence showing preventive measures and risk classifications (inherent and controlled – updated as at 29 February 2016) ¹⁸ . However, given gaps noted in the flow diagrams, the risks should be reviewed in light of these issues as risks may have been missed. A WTP Operating Manual update program is in place and evidence

¹³ 2.1 2013-14-05 HW2008-704 17.004 Procedure - CURRENT - Enterprise Risk Management Framework - Ver 3.0.pdf.

¹⁸ 2.1 2013-14-05 HW2015-1303 6 5.002 Data - Strategic Risk Register - Non compliance with agreed water quality standards.xlsx.





¹⁴ p3. ¹⁵ 2.1 2013-14-05 HW2006-1417 27 5.006 Minutes - May 2016 Water Quality Committee Meeting.docx "5/05/2016 – The Committee agreed that a significant risk is a 'high extreme'." p3. ¹⁶ 2.1 EL2 C2.3 HW2006-2906 8 33.014 Register - Drinking Water Quality Risk Assessment Calendar - CURRENT.pdf; 2.1 2013-14-05 HW2006-

^{2906 8 33.014} Register - Drinking Water Quality Risk Assessment Calendar - CURRENT.pdf. ¹⁷ See Clause 2.1.1 to 2.1.3, Framework evidence for Element 2.



Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
			supports its implementation. ¹⁹ The completed Operating Manuals ²⁰ reviewed detail the preventive measures in place including for the significant risks and CCPs. The other Operating Manuals will be produced according to the update program.

This recommendation is now considered **closed** but replaced in part by 2015-2016 DWQ R-2.

2013-14-01 (Water Quality Management Systems -4.3 Condition 2.1 / 2.2)

Table 4-3 provides a review of previous audit recommendation 2013-14-01.

Table 4-3 Previous audit recommendations 2013-14-01

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-01 Water Quality Management Systems Conditions 2.1.1 & 2.2.1 Within 12 months, Hunter Water should develop a process to inform customers who receive unfiltered water from the Chichester Trunk Gravity Main about the quality and use of that water. (It was noted that the non- standard agreement for customers receiving this service does not currently provide information on the quality of the water and therefore material is required to educate and inform these customers.)	Planned completion December 2015.	Auditor to check progress.	Several pieces of evidence were provided in support of this recommendation. ²¹ The Non-Standard Water Connection letter template clearly covers the non-potable nature of the supply. The Agreement for the Supply of Untreated Water (March 2016) clearly covers owner, Tenant or occupier and conditions under which the water is supplied as well as a requirement to act according to the obligations of the agreement. NSW Health was consulted during the process. Hunter Water is now considered to have a sound communication and education process in place based on the evidence provided.

¹⁹ 2.1 2013-14-05 HW2015-1159 1.018 Plan - Water Treatment Plant Operating Manual Update Program.xlsx. ²⁰ 2.1 2013-14-05 HW2014-1563 3 1.001 Procedure - Plant Operating Manual - Grahamstown WTP.PDF; 2.1 2013-14-05 HW2014-1563 3 1.002 Procedure - Plant Operating Manual - Dungog WTP and Chichester Dam.PDF. ²¹ 2.1 2013-14-01 HW2006-1448 49 1.013 Minutes - Hunter Water NSW Health Liaison Committee Meeting - September 2015.docx; 2.1 2013-14-

⁰¹ HW2006-1448 49 3.006 Minutes - Hunter Water NSW Health Liaison Committee Meeting-March 2016.docx; 2.1 2013-14-01 HW2013-1014 11 8.001 Letter - CTGM Unfiltered Non Standard Agreement - Letter One.docx; 2.1 2013-14-01 HW2013-1014 13 71.004 Agreement - NEILSON 853030000.docx.





This recommendation is now considered **closed**.

2013-14-11 (Drinking Water Quality Management Systems -4.4 **Condition 2.1)**

Table 4-4 provides a review of previous audit recommendation 2013-14-11.

Table 4-4	Previous	audit	recommer	ndations	2013-14-11
	11011043	uuun	10001111101	laations	2010 14 11

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-11 Drinking Water Quality Management Systems Condition 2.1.1 Within 12 months, Hunter Water should implement a process to formally review the effectiveness of the DWQMS by the executive management team (for example, this could be done by tabling a performance report at a meeting of the executive team, which covers the requirements of the ADWG and how Hunter Water's DWQMS are meeting these elements).	Agreed Planned completion December 2015.	Auditor to check progress.	Hunter Water now conducts Integrated Management System (IMS) review meetings twice yearly. Evidence was provided to show a briefing note for a meeting occurring on 20 May 2016. ²² Evidence was sighted to show that drinking water and recycled water issues are covered at an executive level. ²³ A clear process is now in place and followed in practice.

This recommendation is now considered **closed**.

2013-14-12 / 2013-14-14 (Recycled Water Quality 4.5 Management Systems – Condition 2.2)

Table 4-5 provides a review of previous audit recommendation 2013-14-12 and 2013-14-14.

Table 4-5 Previous audit recommendations 2013-14-12 and 2013-14-14

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-14 2013-14-12	Hunter Water and Veolia, in consultation with	Auditor to check progress.	Component 1 of the recommendation is still ongoing noting that Hunter Water has submitted its system-specific

²² 2.1 2013-14-11 HW2013-1447 2.014 Report - Management System Review Meeting May 2016 (pre-reading for EMT).docx.
 ²³ TRIM HW2013-1447/2.017 IMS Review Meeting Minutes 20 May 2016, Meeting Agenda TRIM HW2013-1447/22.016, EMT Pre-meeting Report Management Systems Review May 2016.





Quality Managementcurrently working towards2016SystemThe V	
Within 12 months, Hunter Water should review the followingand associated limits to be included in the recycledThe of 2016 included	MPs to NSW Health by end June and is awaiting comment. Veolia risk assessment now des ponding of irrigation water. ²⁴ date of the document is 21 March . Given that the event has been ded, the component two of the nmendation is completed and can osed.

Component 1 of the recommendation remains open.

Component 2 of the recommendation is considered **closed**.

2013-14-20 (Asset Management System Condition 4.1.1) 4.6

Table 4-6 provides a review of previous audit recommendation 2013-14-20.

Table 4-6 Previous audit recommendations 2013-14-20

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2013-14-20	Continuous	Auditor to check	Hunter Water continued to implement
Asset Management System	improvement is occurring across the five areas identified as part of the transition to ISO 55001 certification. Asset information will be	et	the improvement initiatives identified as part of the Aqauamark 2012 Benchmarking Program during the audit
Condition 4.1.1			
Hunter Water should continue implementing the five improvement			period. Of the five initiatives recommended, Hunter Water reports ²⁵ that is has completed the first two (people and capability, and project business case challenging). This has

²⁴ 2013-14-14 and 12 Risk assessment for Clarence Town RW scheme.pdf, 21/03/2016, p2 of 4, FM-HW-3-8345-2.
 ²⁵ Compliance and Performance Report 2015-16 page 40





Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
	by utility on 31		 been achieved through an Integrated Quality Management System in August 2015 and self-determination of high compliance with internal governance processes²⁶. During the audit period, Hunter Water undertook at number of actions to progress towards fully implementing the remaining initiatives. These included: <i>Maintenance management</i> implementation of recommendations from preventative maintenance and critical spares reviews updating the Asset Class Management Program to include infrastructure not previously included commissioning of a productivity review of network management services by an independent consultant commencing an Asset Information Improvement Program <i>Critical asset operations and resilience</i> Assessment of asset risk provides for key infrastructure Implementing initiatives from the Statutory Asset Program, such as a review of codes of practice for the Dam Safety Management System, Chemical Management <i>Operations and maintenance</i> <i>procedures</i> Review and update of operational and maintained procedures, this has occurred through the establishment of the contract with Veolia for operation and maintenance of the treatment plants. Hunter Water nominates the following activities as being programmed for 2016-17 to address the Aquamark improvement initiatives²⁷: Continued transition of the asset

²⁶ Compliance and Performance Report 2014-15 page 33 ²⁷ Compliance and Performance Report 2015-16 page 44





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Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
			 Implementation and realisation of maintenance productivity improvements Continued review and update of the asset criticality standards Further implementation of the operational and engineering charge for critical assets.

This recommendation is therefore considered open.

2014-15-01 (Recycled Water Quality Management System – 4.7 **Condition 2.2)**

Table 4-7 provides a review of previous audit recommendation 2014-15-01

Table 4-7 provides a re	eview of previous aud	dit recommendation 2	2014-15-01.
Table 4-7 Previous aud	lit recommendations 207	14-15-01	
Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2014-15-01 Recycled Water Quality Management System Condition 2.2.2 It is recommended that Hunter Water commence the implementation of the interim CCPs as soon as possible and finalise validation program.	Implementation continues. Hunter Water to provide progress report in May 2016	Auditor to check progress.	 A validation report²⁸ provides some evidence for implementation of the validation testing program. However, there are still areas where validation has not been completed such as the storage lagoon CCP (for helminth control) at Karuah. The UV validation information provided to support the validation report shows that the UV unit exceeds the contractual design requirements: Design requirement: Minimum dose rate of 20 mJ/cm² at end of lamp life, 40% UVT and ADWF of 7.3 ML/day^{29,30}. Validated information: DUV-24A500-M unit at 324 m³/h and 60% UVT will provides UV dose not less than RED 48.05 mJ/cm². ³¹ A validated UV disinfection unit has now been installed at Karuah. The Karuah O&M Manual was checked but CCPs are not included as explicitly stated. Following the installation of a UV





system, CCPs in SCADA are in the

 ²⁸ 2013-14-03,04,06,13 WWTW Recycled Water Existing Schemes Validation Program.DOCX.
 ²⁹ 1 ML/day = 41.66666667 m³/hour therefore 7.3 ML/day = 304.17 m³/h.
 ³⁰ 2014-15-01 Report - Validation attachment item 7.2.PDF, Contract CG169111 - Design & Construction of Cessnock WWTW Tertiary Treatment Plant, p95. ³¹ 2014-15-01 Report - Validation attachment item 7.1.PDF,

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Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
			process of being updated and staff trained.
			Given that the RWQMPs have been submitted to NSW Health and comment is awaiting and that areas of non- compliance with the Framework for Management of Recycled Water Quality and Use (including CCPs) have been noted in this audit, the recommendation should be checked for completion in 2016-2017 and an interim report provided by Hunter Water to IPART by March 2017.

This recommendation is therefore considered **open**.

4.8 2014-15-02 (Recycled Water Quality Management System – Condition 2.2)

Table 4-8 provides a review of previous audit recommendation 2014-15-02.

Table 4-8	Previous	audit recommen	dations	2014-15-02
	11041043		aanons	2014-13-02

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
2014-15-02 Recycled Water Quality Management System Condition 2.2.2	Implementation continues. Hunter Water to provide progress report in May 2016.	Auditor to check progress.	See comments for previous recommendation. Note that NSW Health does not 'endorse'. NSW Health expresses 'satisfaction' with an outcome.
It is recommended that Hunter Water finalise its validation program and facilitate endorsement of the outcomes by NSW Health. CCPs should then be adjusted or refined in accordance with the outcomes.			

This recommendation is therefore considered **open**.





4.9 2014-15-03 (Assets – Condition 4.1)

Table 4-9 provides a review of previous audit recommendation 2014-15-03.

Table 4-9 Previous audit recommendations 2014-15-03

Recommendation / Operational Issue (Licence Reference Where Applicable)	2014-15 audit findings, and status as reported by utility on 31 March 2016	Guidance for 2015/16 Audit	Finding
 2014-15-03 Assets Condition 4.1.1 It is recommended that Hunter Water continues to fully implement improvement initiatives in respect of: The development and implementation of a holistic approach to maintenance management The complete capture of all asset and related maintenance information in its Enterprise Resource Planning (Asset/ Maintenance Management) System Criticality and condition assessment Review and update of operational and maintenance procedures across the whole of the asset portfolio. 	Implementation continues.	IPART has agreed to Hunter Water's Asset Management System moving to a system consistent with ISO 55001 by July 2017 (date nominated by Hunter Water). The audit should consider the progress in migration to ISO 55001.	Hunter Water has engaged two contractors to work solely on implementing its ISO 55001 asset management system. These contractors have undertaken a gap analysis and developed a program for implementing the new system that requires 193 tasks to be completed. At the time of the audit, 36 of these tasks were complete, 63 were underway and 94 had not been commenced. The audit found that Hunter Water has committed substantial resources to assist with implementing its new asset management system and was on-track for its target date of July 2017.

This recommendation is therefore considered **open**.





5 Glossary

Acronym	Description	
ADWF	Average Dry Weather Flow	
ADWG	Australian Drinking Water Guidelines (NHMRC/NRMMC (National Health and Medical Research Council/Natural Resource Management Ministerial Council) (2016) Australian Drinking Water Guidelines National Water Quality Management Strategy. Version 3.2. ISBN Online: 1864965118.	
AGWR	Australian Guidelines for Water Recycling (Australian Guidelines For Water Recycling: Managing Health and Environmental Risks (Phase1). Natural Resource Management Ministerial Council Environment Protection And Heritage Council Australian Health Ministers Conference. Web Copy: ISBN 1 921173 06 8)	
ALS	ALS Environmental Pty Ltd	
AMS	Asset Management System	
AMCV	Asset Management Customer Value Project	
AS	Australian Standard	
Aurecon	Aurecon Australasia Pty Limited	
AWQC	Australian Water Quality Centre	
BMS	Business Management System	
CCF	Community Consultative Forum	
CCP	Critical Control Points	
CIS	Customer Information System	
CMP	Crisis Management Plan	
СТ	CT (concentration (C) and time (T)) values are related to the disinfectant dosage for the drinking water. A CT value is the product of the concentration of a disinfectant (e.g. free chlorine) and the contact time with the water being disinfected. It is typically expressed in units of mg.min/L.	
CTGM	Chichester Trunk Gravity Main	
DWQMP	Drinking Water Quality Management Plan	
DWQMS	Drinking Water Quality Management System	
EMP	Emergency Management Plan	
EMT	Executive Management Team	
EPL	Environment Protection Licence	
ERCP	Emergency Response Communications Plan	
ERM	Enterprise Risk Management	
KERE	Karuah Effluent Reuse Enterprise	
GAMA	Global Asset Management and Analysis	
GIS	Geographical Information System	
HACCP	Hazard Analysis and Critical Control Point	
HPRM	HP Records Manager	
Hunter Water	Hunter Water Corporation	





Acronym	Description
IMS	Integrated Management System
IPART	Independent Pricing and Regulatory Tribunal
KL	Kilolitres
LRV	Log Reduction Values
LTP	Lemon Tree Passage
ML	Megalitres
MOU	Memorandum of Understanding
MWD	Metropolitan Water Directorate
NWI	National Water Initiative
OCM	Operator Centred Maintenance
OFI	Opportunities for Improvement
O&M	Operation and Maintenance
PAS	Payment Assistance Scheme
PDs	Position Descriptions
PIRMP	Pollution Incident Response Management Plan
POEO	Protection of the Environment Operations Act 1997 (NSW)
PPE	Personal Protective Equipment
PWU	Public Water Utilities
R&D Program	Research and Development Program
RABQSA	<i>Former</i> Registrar Accreditation Board by Australia-based Quality Society of Australasia, now Exemplar Global Incorporated
RCM	Reliability Centred Maintenance
RED	Reduction Equivalent Dose – a term used to describe a UV dose i.e. that all water passing through the UV system will receive at least the prescribed dose required to provide the prescribed log_{10} reduction of pathogens.
RFQ	Request for Quotation
RWIP	Recycled Water Improvement Plan
RWQMP	Recycled Water Quality Management Plan
RWQMS	Recycled Water Quality Management System
SAMP	Strategic Asset Management Plan
SC	Statement of Compliance
SCADA	Supervisory Control and Data Acquisition
SDSs	Safety Data Sheets
TOR	Terms of Reference
TRIM	Total Records and Information Management
US EPA	United State Environmental Protection Agency
UV	Ultra-violet
UVT	Ultraviolet transmissivity – a measure of penetration of UV radiation.
WQC	Water Quality Committee







Acronym	Description	
WWPS	Waste Water Pumping Station	
WWTW	Wastewater Treatment Works	





Appendices



Appendix A Detailed operational audit findings





Site visit notes

Site	Notes
Tomago Sandbeds	En route to this site, the audit team sighted several 'drinking water catchment' notification signs for Nelson Bay and for the Tomago Sandbeds. These signs provided Hunter Water's hotline and the statement 'report pollution threats'.
	At Tomago Sandbeds, met with Mechanical Supervisor. Viewed Station 17 which is where water for LTP WTP is sourced. All electricals for the bores are underground. Some vandalism of the site has occurred mostly causing damage to the metal sheds enclosing the electrical equipment and telemetry for each bore. Since new style sheds have been put in place, vandalism frequency has decreased but still includes gun shots to the sheds. Not all sheds have been upgraded to the more secure type. No incidence of chemical vandalism or nuisance has been noted. Four people have been charged with vandalism offences. A team of six Hunter Water rangers undertake surveillance of the site and across Hunter Water's catchments. The Pump Station Attendant also observes the site.
	Bores are generally 20 m in depth. Bores are routinely maintained through the Ellipse system – a procedure is in place for this. Specialist contractors are used for bore works. Maintenance triggers are based on production capacity – generally a target of 7 L/s is aimed for. Hunter Water has responsibility for the management of the bores and associated pipeline. The Mechanical Supervisor showed us a hand drawn diagram of the site which showed Station 17 and the bores and valves viewed. Dekho was demonstrated 28 September 2016. Bore #22 (within Station 17) was requested for viewing. The bore could be found. The boundary to LTP WTP was also requested and found and checked against the facility schedules in the contract ³² .
	The pump associated with Station 17 was found to have a minor leak resulting in a damp area of ground near the pump and no run-off. All leaked water appeared to infiltrate the soil or evaporate. The Mechanical Supervisor stated that a maintenance request would be entered into Ellipse to correct this and during a subsequent inspection of the Ellipse system at Hunter Water's office, this maintenance request was found.
	The raw water source visit concluded with the flow meter within the LTP WTP boundary which is Hunter Water/Veolia boundary.
LTP WTP	Site inspection commenced at the handover point between Veolia and Hunter Water. The site visit was used to verify the flow diagram – each process unit and flow path were checked. MSDSs for several treatment chemicals were checked. Chlorine gas is provided by Ixom and the MSDS clearly stated that the gas could be used for water treatment. The MSDS for Polydadmac was viewed and the appropriateness for use in water treatment could not be verified on the sheet. We note that the MSDS nomenclature will change to SDS and that the Globally Harmonised System of Classification and Labelling of Chemicals becomes mandatory on the 1/1/2017 (http://www.safeworkaustralia.gov.au/sites/swa/whs-information/hazardous- chemicals/faqs/pages/faqs). Chemical rooms were sighted (lime, chlorine, fluoride) and found to be well kept and clean (to the extent that the lime dosing equipment can be kept clean). Lime and polydadmac dosing lines were confirmed as being post the aerator as noted on the flow diagram. Some other components of the process flow train were incomplete and or incorrect. Examples include:
	Chlorine contact tank is missing from both the flow diagram and the SCADA flow diagram.
	The backwash water tank is missing.
	The potable water input for backwashing the Stage 2 filters is missing from both the flow diagram and the SCADA diagram.
	The partial bypass from the raw water line to post the aeration basin is missing.
	There is no clear indication of governance boundaries between Hunter Water and Veolia responsibility/operations.

³² CS0341 - Treatment Operations Contract - Schedules 1 and 2 Facility Boundaries.pdf.



Site	Notes
Site	'On Tap' document records system was viewed. The DWQMP and the HACCP Limit Table for LTP were asked for retrieval. Both documents could be quickly found and retrieved from the system. The 2015 version of the HACCP Limit table was retrieved which did not match the August 2016 version provided as evidence. However, it was noted that it can take some time for the document to be uploaded to the site as new versions have to be reviewed and authorized for upload.
	HACCP Limit Tables were confirmed as being in place and visible at the site visit. The HACCP Response Procedure was also sighted and visible. Monitors were checked and found to match target limits. Chlorine disinfection, C.t was not calculated in SCADA but was calculated in the WQ Database on on-line continuous monitoring data obtained every minute from SCADA and the free residual chlorine was checked as being 1.69 mg/L at the CWT inlet and 1.23 mg/L at the outlet.
	Calibration instrument calibration checklist implementation ³³ was confirmed at site in particular for the CCP instruments (12/10/2015 – 18/10/2015).
	Although Veolia documents have the date but not the review cycle on them, it was confirmed at interview that the review cycle is a default of 4 years but could be earlier depending on the document.
Karuah WWTW and KERE (Karuah Effluent Reuse Enterprise)	A prior review of the flow diagram for the site ³⁴ was conducted before visiting the reuse site. The flow diagram was verified. The only missing element (apart from noting the catchment needs to be added to the diagram as well as the governance handover points) was a septic receival area. This area is designed for receipt of septic waste from sites such as caravan parks but it is currently not in use because the Karuah WWTW is not manned. For completeness, the septic receival area should be included on the diagram even if it is not currently in use (and marked as such on the diagram). We note that in the Karuah RWQMP ³⁵ , at the time of the risk assessment, a risk was identified that the system at that time was not validated. The Biosolids and Residuals Officer noted that the UV disinfection system has been upgraded to a Wedeco system (it is understood that the upgrade occurred November 2015). The Wedeco system is validated and generally achieves 70% UVT. Lamps are cleaned with a pre-programmed mechanical wiper system. Lamps are replaced on age / hours of use. Veolia maintains shared spares (for the UV systems it has in place) to manage lamp replacement. If UV disinfection limits are not met, the water can now be stopped from entering the effluent storage dam. A risk noted in the Karuah RWQMP is that hydraulic residence time in the 'maturation pond' is in place is not yet validated for helminth control ³⁶ . There is no maturation pond on the flow diagram nor was one pointed out during the site visit. The effluent storage dam is the only process step on site and on the flow diagram that meets a 'residence time' criterion for helminth control.
	Once effluent has been UV disinfected, it is pumped to an effluent storage pond on the KERE site. The contractor uses the water for irrigation. A 'Do not drink' sign was visible on the gate at the road entrance to the KERE site. Hunter Water noted that the effluent storage dam remains to be validated for residence time (minimum requirement is 25 days for helminth control). An interview was conducted with the KERE contractor. The contractor confirmed that he had undergone induction training when Veolia took over the operations contract however, he was unable to state whether he had undergone specific recycled water use training. The contractor was able to confirm that he understood that recycled water was in use and that hygiene and PPE was essential.
	The governance arrangements between the end user, Veolia and Hunter Water are now different to those stated in the RWQMP. The flow diagram (Figure 2-1 ³⁷) states that it shows the scheme management boundaries but it does not show the management responsibility of the parties i.e. Hunter Water has overall responsibility but hands over scheme operations responsibility to Veolia, Veolia operates the WWTW and the reuse process flow under its contract with Hunter Water, the KERE contractor operates and maintains the irrigation pivot under an operations contract with Veolia – the

³³ FM-HWT-20-7890-1, 21.06.2015.



³⁴ TRIM: HW2006- 1442/54.015, last updated 3/11/2015.

³⁵ 2.2 E5 C5.6 Plan - Karuah WWTW Recycled Water Quality Management Plan – DRAFT.DOCX, June 2016, Section 2.4.2, p23.

³⁶ 2.2 E5 C5.6 Plan - Karuah WWTW Recycled Water Quality Management Plan – DRAFT.DOCX, June 2016, Section 2.4.2, p24.

³⁷ 2.2 E5 C5.6 Plan - Karuah WWTW Recycled Water Quality Management Plan – DRAFT.DOCX, June 2016, Section 2.2.4, p17.

Site Notes latter being confirmed at the site visit. SCADA records were checked for UVT during the audit date scope. Induction and recycled water training records were checked for the KERE contractors. An internal audit report found issues with lack of environmental monitoring and records as noted below. Boulder Bay Boulder Bay WWTW was built in 1994 to services communities in the Nelson Bay and Anna Bay areas. It consists of an aerated sewage treatment WWTW plant, providing secondary treatment and discharging to the Pacific Ocean via an ocean outfall. A flow diagram of the site was provided to the audit team prior to the site visit and was found to correctly map the functions of the site ³⁸. Staff interviewed at the site included the Wastewater Treatment Supervisor Northern (Veolia) and Wastewater Treatment Operator (Veolia). These staff were found to have a very good knowledge of the site's operations, their responsibilities and Veolia's overall responsibilities for the site. It was noted that the sewage inflow was particularly odorous as chemical dosing that typically occurs in the upstream network was offline due to pumping station works. It was also stated by site staff that the site was receiving high dry-weather inflows due to the large number of holiday makers visiting the plant's catchment area (the site inspection occurred during school holidays). During school holiday periods, the inflows to the plant were known to double when compared to non-holiday inflows. Site staff stated that the screens and grit removal systems established at the inflow to the site were not designed for the volume of sewage that the plant receives during holiday period, although the rest of the plant had the required capacity to manage these inflows. It was stated that the site receives occasional odour complaints from nearby residents, with the closest residents being located a few hundred metres to the west. These complaints have not been ongoing or escalated to higher levels in the organization. The audit team observed the site to be well organized.

Adequacy and implementation focus for the DWQMS and RWQMS audit.

FRAMEWORK FOR MANAGEMENT OF RECYCLED WATER QUALITY AND USE	FRAMEWORK FOR MANAGEMENT OF DRINKING WATER QUALITY	ADEQUACY	IMPLEMENTATION
1 COMMITMENT TO RESPONSIBLE USE AND MANAGEMENT OF RECYCLED WATER QUALITY	1 COMMITMENT TO DRINKING WATER QUALITY MANAGEMENT		
1.1 Responsible use of recycled water	1.1 Drinking water quality policy		Y
1.4 Recycled water policy			Y
1.2 Regulatory and formal Requirements	1.2 Regulatory and formal requirements		Y
1.3 Partnerships and engagement of stakeholders (including the public)	1.3 Engaging stakeholders		Y
2 ASSESSMENT OF THE RECYCLED WATER SYSTEM	2 ASSESSMENT OF THE WATER SUPPLY SYSTEM		
2.1 Intended uses and source of recycled water 2.2 Recycled water system analysis	2.1 Water supply system analysis	Y	Y
2.3 Assessment of water quality data	2.2 Assessment of water quality data	Y	Y
2.4 Hazard identification and risk assessment	2.3 Hazard identification and risk assessment	Y	Y
3 PREVENTIVE MEASURES FOR RECYCLED WATER MANAGEMENT	3 PREVENTIVE MEASURES FOR DRINKING WATER QUALITY MANAGEMENT		
3.1 Preventive measures and multiple barriers	3.1 Preventive measures and multiple barriers	Y	Y
3.2 Critical Control Points	3.2 Critical control points	Y	Y
4 OPERATIONAL PROCEDURES AND PROCESS CONTROL	4 OPERATIONAL PROCEDURES AND PROCESS CONTROL		
4.1 Operational procedures	4.1 Operational Procedures	Y	Y

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FRAMEWORK FOR MANAGEMENT OF RECYCLED WATER QUALITY AND USE	FRAMEWORK FOR MANAGEMENT OF DRINKING WATER QUALITY	ADEQUACY	IMPLEMENTATION
4.2 Operational monitoring	4.2 Operational monitoring	Y	Y
4.3 Operational corrections	4.3 Corrective action	Y	Y
4.4 Equipment capability and maintenance	4.4 Equipment capability and maintenance	Y ³⁹	Y
4.5 Materials and chemicals	4.5 Materials and chemicals	Y	Y
5 VERIFICATION OF RECYCLED WATER QUALITY AND ENVIRONMENTAL PERFORMANCE	5 VERIFICATION OF DRINKING WATER QUALITY		
5.1 Recycled water quality monitoring 5.2 Application site and receiving environment monitoring	5.1 Drinking water quality monitoring	Y	Y
5.4 Satisfaction of users of recycled water	5.2 Consumer satisfaction	Y	Y
5.5 Short-term evaluation of results	5.3 Short term evaluation of results	Y	Y
5.3 Documentation and reliability 5.6 Corrective responses	5.4 Corrective action	Y	Y
6 MANAGEMENT OF INCIDENTS AND EMERGENCIES	6 MANAGEMENT OF INCIDENTS AND EMERGENCIES		
6.1 Communication	6.1 Communication	Y	Y
6.2 Incident and emergency response protocols	6.2 Incident and emergency response protocols	Y	Y
7 OPERATOR, CONTRACTOR AND END USER AWARENESS AND TRAINING	7 EMPLOYEE AWARENESS AND TRAINING		
7.1 Operator, contractor and end user awareness and involvement	7.1 Employee awareness and involvement	Y	Y
7.2 Operator, contractor and end user training	7.2 Employee training	Y	Y
8 COMMUNITY INVOLVEMENT AND AWARENESS	8 COMMUNITY INVOLVEMENT AND AWARENESS		
8.1 Consultation with users of recycled water and the community	8.1 Community consultation		Y
8.2 Communication and education	8.2 Communication		Y
9 VALIDATION, RESEARCH AND DEVELOPMENT	9 RESEARCH AND DEVELOPMENT		
9.1 Validation of processes	9.2 Validation of processes		Y ⁴⁰
9.2 Design of equipment	9.3 Design of equipment		Y
9.3 Investigative studies and research monitoring	9.1 Investigative studies and research monitoring		Y
10 DOCUMENTATION AND REPORTING	10 DOCUMENTATION AND REPORTING		
10.1 Management of documentation and records	10.1 Management of documentation and records		Y ⁴¹
10.2 Reporting	10.2 Reporting		Y
11 EVALUATION AND AUDIT	11 EVALUATION AND AUDIT		
11.1 Long-term evaluation of results	11.1 Long term evaluation of results		Y
11.2 Audit of recycled water quality management	11.2 Audit of drinking water quality management		Y
12 REVIEW AND CONTINUOUS IMPROVEMENT	12 REVIEW AND CONTINUAL IMPROVEMENT		
12.1 Review by senior managers	12.1 Review by senior executive		Y
12.2 Recycled water quality management improvement plan	12.2 Drinking water quality management improvement plan		Y

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 ³⁹ Adequacy will also be covered in the Infrastructure/Asset Performance component of the audit.
 ⁴⁰ Attention will also be paid to *adequacy* of UV disinfection systems if included in the systems reviewed. The validation recommendations from the previous audits will also be fully checked.
 ⁴¹ Through interrogation of documents viewed as evidence for all other elements only.

Appendix A1 – Drinking Water Quality

Table A1.1: Drinking Water (Clause 2.1)

Sub-clause	Requirement		Compliance grade	
(2) Water Quality	Clause 2.1.1:			
(2.1) Drinking Water	Hunter Water must maintain a Management Syst	tem that is consistent with:		
(Clauses 2.1.1, 2.1.2, 2.1.3)	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 Hunter Water, the Australian Drinking Water Guidelines as amended or added to by NSW Health.			
	(Drinking Water Quality Management System).		HIGH	COMPLIANCE
	[Licence Note:			
	Water Guidelines, including the Drinking Water C considers it appropriate, the application of those	velop a system consistent with the Australian Drinking Quality Framework. However, where NSW Health Guidelines may be amended or added to, to take Drinking Water Quality policy and practices within New		
	Clause 2.1.2			
	Hunter Water must ensure that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the system, including to the satisfaction of NSW Health.		HIGH	COMPLIANCE
	Clause 2.1.3			
	Hunter Water must notify IPART and NSW Health of any significant changes that it proposes to make to the Drinking Water Quality Management System in accordance with the Reporting Manual.		NO REQUIREMENT	
Risk		Target for full compliance		
Waterborne outbreaks from mis-management of drinking water quality still occur in the developed world and therefore, the risk posed to public health from non- compliance with this clause could be significant.				

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Evidence sighted

- Interviews with water quality team members (26 September 2016):
 - Team Leader Water Resource Planning
 - Engineer Water Resource Planning
 - Engineer Water Treatment Operations
 - Manager Water Network Operations
 - Water Network Planning Team Leader
 - Quality Manager
 - Water Process Manager (Veolia)
 - Water Treatment Manager (Veolia)
 - Manager Systems Reporting Risk and Compliance (Veolia)
- Site visit (27 September 2016)
- 2.1.1 HW2013-421 2.003 Report Integrated Management System v2.docx
- 2.1.1 HW2014-778 15 2.001 Plan Drinking Water Quality Management System Veolia.pdf
- 2.1.1 HW2015-1449 1 5.070 Presentation Screenshot DWQMS Intranet Page.docx
- 2.1.2 copy HW2014-778 15 2.004 Register Anna Bay WTP HACCP Limit Table.pdf
- 2.1.2 copy HW2014-778 15 2.007 Register Gresford WTP HACCP Limit Table.pdf
- 2.1.2 copy HW2014-778 15 2.008 Register Lemon Tree Passage WTP HACCP Limit.pdf
- 2.1.2 copy HW2014-778 15 2.009 Register Nelson Bay WTP HACCP Limit Table.pdf
- 2.1.2 HW2006-1417 27 8.015 Minutes July 2016 Water Quality Committee Meeting.docx
- 2.1.2 HW2006-1417 27 9.001 Agenda August 2016 Water Quality Committee Meeting.docx
- 2.1.2 HW2006-2906 2 6.006 Plan Water Quality Monitoring Plan June 2016.doc
- 2.1.2 HW2006-2906 8 33.014 Register Drinking Water Quality Risk Assessment Calendar CURRENT.xlsx
- 2.1.2 HW2006-2968 41 44.001 Policy Drinking Water Policy PDF April 2015 CURRENT.pdf
- 2.1.2 HW2006-2906102.005 2014-17 Drinking Water Quality Improvement Plan Extract.pdf
- 2.1.2 HW2014-778 15 2.005 Register Dungog WTP HACCP Limit Table.pdf
- 2.1.2 HW2014-778 15 2.006 Register Grahamstown WTP HACCP Limit Table.pdf
- 2.1.2 HW2015-1303 10.003 Register Network Chlorinators HACCP Limit Table.pdf
- 2.1.3 HW2006-2906 7 5.013 Procedure Establishing and Reviewing Critical Control Points.docx



- 2.1.3 HW2006-2906 7 5.019 Letter REQUEST FOR NSW HEALTH APPROVAL OF PROPOSED CRITICAL CONTROL POINT DETAILS Submitted to Health 15 09 2015.pdf
- 2.1.3 HW2014-778 15 2.002 Plan Veolia HACCP Response 17.09.2015.pdf
- 2.1.3 HW2014-778 15 2.004 Register Anna Bay WTP HACCP Limit Table.pdf
- 2.1.3 HW2014-778 15 2.005 Register Dungog WTP HACCP Limit Table.pdf
- 2.1.3 HW2014-778 15 2.006 Register Grahamstown WTP HACCP Limit Table.pdf
- 2.1.3 HW2014-778 15 2.007 Register Gresford WTP HACCP Limit Table.pdf
- 2.1.3 HW2014-778 15 2.008 Register Lemon Tree Passage WTP HACCP Limit.pdf
- 2.1.3 HW2014-778 15 2.009 Register Nelson Bay WTP HACCP Limit Table.pdf
- 2.1.3 HW2015-1303 10.003 Register Network Chlorinators HACCP Limit Table.pdf
- 2.1.3 HW2015-1343 4.003 Letter REQUEST FOR NSW HEALTH ENDORSMENT OF CCP CRITICAL LIMITS 7 6 2016.pdf
- 2.1.3 HW2015-1343 4.008 Letter 270616 NSW Health response to request for endorsement of CCP critical limits.pdf

Element 1:

- 2.1 EL1 c1.1 HW2006-2968 41 44.001 Policy Drinking Water Policy PDF April 2015 CURRENT.pdf
- 2.1 EL1 c1.1 HW2015-1303 10.008 Email Email All Staff Mandatory WQ training 2014-15.pdf
- 2.1 EL1 C1.1 HW2015-1449 1 5.011 Presentation DWQ_Management Training_FINAL.PPTX
- 2.1 EL1 C1.1 HW2015-1449 1 5.023 Presentation Edmore Material Drinking Water Quality Awareness Employees August 2014.docx
- 2.1 EL1 C1.1 HW2015-1449 1 5.062 Register Veolia responsibility matrix.pdf
- 2.1 EL1 C1.1 HW2015-130310.009 Presentation Quality Induction Training_Employees.PPTX
- 2.1 EL1 C1.2 HW2012-441 23 1.029 Procedure Managing Legal and Other Requirements CURRENT.docx
- 2.1 EL1 C1.2 HW2012-778 48.001 Data Compliance Calendar June 2016.xlsx
- 2.1 EL1 C1.2 HW2013-421 9.007 Register Summary of Corporate Reporting Requirements.xlsx
- 2.1 EL1 C1.2 HW2015-1449 1 5.008 File note Manager Treatment Operations.doc
- 2.1 EL1 C1.2 HW2015-1449 1 5.014 File note Water Quality Engineer Treatment Operations System Ops.doc
- 2.1 EL1 C1.2 HW2015-1449 1 5.045 File note PD Manager Water Network Opera.doc
- 2.1 EL1 C1.2 HW2015-1449 1 5.046 File note Position Description Water Quality Engineer Treatment Operations Jul 2015.doc
- 2.1 EL1 C1.2 HW2015-1449 1 5.062 Register Veolia responsibility matrix.pdf
- 2.1 EL1 C1.2 HW2015-1449 1 5.067 File note PD Team Leader Water Resource Planning.doc
- 2.1 EL1 C1.3 HW2006-2906 4 6.010 Register Contact Details NSW Health current September 2015.doc
- 2.1 EL1 C1.3 HW2007-2177 23 26.038 Agreement MidCoast Water Agreement to Provide Water and Sewerage Services 17 09 2002.PDF
- 2.1 EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx
- 2.1 EL1 C1.3 HW2011-662 14 5.002 Emergency Response Communications Plan.docx
- 2.1 EL1 C1.3 HW2015-1449 1 5.013 Data Veolia Staff Contact Details Aug 2016.xlsx
- 2.1 EL1 C1.3 HW2015-1449 1 5.015 File note Lab Staff Contact Details Aug 2016.docx



Element 2:

- 2.1 EL2 C2.1 HW2006-1417 15 16.001 Statement Water Quality Committee Terms of Reference March 2014.DOC
- 2.1 EL2 C2.1 HW2006-1417 27 8.015 Minutes July 2016 Water Quality Committee Meeting.docx
- 2.1 EL2 C2.1 HW2014-778 15 3.006 Report HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL.pdf
- 2.1 EL2 C2.1 HW2015-705 1.001 Plan Anna Bay WTP Flow Diagram.pdf
- 2.1 EL2 C2.1 HW2015-705 1.002 Plan Dungog WTP Flow Diagram.PDF
- 2.1 EL2 C2.1 HW2015-705 1.003 Plan Grahamstown WTP Flow Diagram.PDF
- 2.1 EL2 C2.1 HW2015-705 1.004 Plan Gresford WTP Flow Diagram.pdf
- 2.1 EL2 C2.1 HW2015-705 1.005 Plan Lemon Tree Passage WTP Flow Diagram.pdf
- 2.1 EL2 C2.1 HW2015-705 1.006 Plan Nelson Bay WTP Flow Diagram.pdf
- 2.1 EL2 C2.1 HW2015-1343 1 11.013 Report Tomago and Gresford catchment risks report V2.pdf
- 2.1 EL2 C2.1 S09-13 16 1.004 File note Hunter Water Supply Zones Simplified System Schematic 2015.pdf
- 2.1 EL2 C2.2 HW2014-778 15 3.006 Report HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL.pdf
- 2.1 EL2 C2.2 HW2015-1343 1 11.013 Report Tomago and Gresford catchment risks report V2.pdf
- 2.1 EL2 C2.3 HW2006-2906 8 33.014 Register Drinking Water Quality Risk Assessment Calendar CURRENT.pdf
- 2.1 EL2 C2.3 HW2006-2906102.005 Register Drinking Water Quality Improvement Plan Extract.pdf
- 2.1 EL2 C2.3 HW2008-704 17.004 Procedure CURRENT Enterprise Risk Management Framework Ver 3.0.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.004 Register Anna Bay WTP HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.005 Register Dungog WTP HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.006 Register Grahamstown WTP HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.007 Register Gresford WTP HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.008 Register Lemon Tree Passage WTP HACCP Limit.pdf
- 2.1 EL2 C2.3 HW2014-778 15 2.009 Register Nelson Bay WTP HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2014-778 15 3.006 Report HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL.pdf
- 2.1 EL2 C2.3 HW2014-778 15 3.010 Report VEO_HWO_HACCPreport_LTP_FINAL.pdf
- 2.1 EL2 C2.3 HW2014-778 15 3.011 Register VEO_HWO_HACCP_ RR_LTPWTPv1.pdf
- 2.1 EL2 C2.3 HW2015-1303 10.003 Register Network Chlorinators HACCP Limit Table.pdf
- 2.1 EL2 C2.3 HW2015-1343 1 11.013 Report Tomago and Gresford catchment risks report V2.pdf

Element 3:

- 2.1 EL3 C3.1 HW2006-1448 49 1.002 File note Rain Event-Based Protozoa Monitoring Plan Grahamstown, Dungog Raw Waters, Campvale Canal old version.docx
- 2.1 EL3 C3.1 HW2006-2906 8 33.014 Register Drinking Water Quality Risk Assessment Calendar CURRENT.xlsx
- 2.1 EL3 C3.1 HW2007-2177 23 26.038 Agreement MidCoast Water Agreement to Provide Water and Sewerage Services 17 09 2002.PDF
- 2.1 EL3 C3.1 HW2010-1110 30 4.010 Report Disinfection Optimisation Strategy Report Final.pdf
- 2.1 EL3 C3.1 HW2014-778 15 3.010 Report VEO_HWO_HACCPreport_LTP_FINAL.pdf
- 2.1 EL3 C3.1 HW2014-778 15 3.011 Register VEO_HWO_HACCP_ RR_LTPWTPv1.pdf
- 2.1 EL3 C3.1 HW2015-1343 1 11.013 Report Tomago and Gresford catchment risks report V2.pdf
- 2.1 EL3 C3.2 HW2014-778 15 2.002 Plan Veolia HACCP Response 17.09.2015.pdf
- 2.1 EL3 C3.2 HW2014-778 15 2.004 Register Anna Bay WTP HACCP Limit Table.pdf



– 2.1 EL3 C3.2 HW2014-778 15 2.005 Register - Dungog WTP HACCP Limit Table.pdf - 2.1 EL3 C3.2 HW2014-778 15 2.006 Register - Grahamstown WTP HACCP Limit Table.pdf – 2.1 EL3 C3.2 HW2014-778 15 2.007 Register - Gresford WTP HACCP Limit Table.pdf – 2.1 EL3 C3.2 HW2014-778 15 2.008 Register - Lemon Tree Passage WTP HACCP Limit.pdf – 2.1 EL3 C3.2 HW2014-778 15 2.009 Register - Nelson Bay WTP HACCP Limit Table.pdf – 2.1 EL3 C3.2 HW2015-1303 10.003 Register - Network Chlorinators - HACCP Limit Table.pdf - 2.1 EL3 C3.2 HW2015-1343 4.008 Letter - 270616 - NSW Health response to request for endorsement of CCP critical limits(2).pdf Element 4: - 2.1 EL4 C4.1 HW2006-2906 2 6.006 Plan - Drinking Water Quality Monitoring Plan June 2016.doc - 2.1 EL4 C4.1 HW2007-2747 12 4.003 Schedule - Catchment Surveillance Program.xlsx - 2.1 EL4 C4.1 HW2007-2747 12 9.001 Map - Catchment map Tomago Sandbeds Labelled.pdf - 2.1 EL4 C4.1 HW2013-421 6.096 Work Instruction - 001 - Working on Potable Water Mains and Fittings.docx - 2.1 EL4 C4.1 HW2013-421 6.129 Work Instruction - 026 - Catchment General Surveillance.docx - 2.1 EL4 C4.1 HW2014-778 15 2.004 Register - Anna Bay WTP HACCP Limit Table.pdf - 2.1 EL4 C4.1 HW2014-778 15 2.005 Register - Dungog WTP HACCP Limit Table.pdf - 2.1 EL4 C4.1 HW2014-778 15 2.006 Register - Grahamstown WTP HACCP Limit Table.pdf – 2.1 EL4 C4.1 HW2014-778 15 2.007 Register - Gresford WTP HACCP Limit Table.pdf – 2.1 EL4 C4.1 HW2014-778 15 2.008 Register - Lemon Tree Passage WTP HACCP Limit.pdf - 2.1 EL4 C4.1 HW2014-778 15 2.009 Register - Nelson Bay WTP HACCP Limit Table.pdf - 2.1 EL4 C4.1 HW2014-1563 3 1.002 Procedure - Plant Operating Manual - Dungog WTP and Chichester Dam.pdf - 2.1 EL4 C4.1 HW2015-1303 10.003 Register - Network Chlorinators - HACCP Limit Table.pdf – 2.1 EL4 C4.1 HW2015-1449 1 5.003 Email - CatchmentBrochure april14.pdf - 2.1 EL4 C4.1 HW2015-1449 1 5.024 Presentation - Screenshot Asset Operation Intranet Page.JPG – 2.1 EL4 C4.1 HW2015-1449 1 5.025 Presentation - Screenshot DWQMS Intranet Page.JPG - 2.1 EL4 C4.1 HW2015-1449 1 5.026 Presentation - Screenshot Lab Contract Intranet Page.JPG – 2.1 EL4 C4.1 HW2015-1449 1 5.027 Presentation - Screenshot Treatment Operations Contract Intranet Page.JPG - 2.1 EL4 C4.1 HW2015-1449 1 5.063 Report - MN-HWT-20-7813 LTP Operations Manual.pdf - 2.1 EL4 C4.2 HW2006-2906 2 6.006 Plan - Drinking Water Quality Monitoring Plan June 2016.doc - 2.1 EL4 C4.2 HW2014-778 15 2.004 Register - Anna Bay WTP HACCP Limit Table.pdf - 2.1 EL4 C4.2 HW2014-778 15 2.005 Register - Dungog WTP HACCP Limit Table.pdf - 2.1 EL4 C4.2 HW2014-778 15 2.006 Register - Grahamstown WTP HACCP Limit Table.pdf – 2.1 EL4 C4.2 HW2014-778 15 2.007 Register - Gresford WTP HACCP Limit Table.pdf - 2.1 EL4 C4.2 HW2014-778 15 2.008 Register - Lemon Tree Passage WTP HACCP Limit.pdf – 2.1 EL4 C4.2 HW2014-778 15 2.009 Register - Nelson Bay WTP HACCP Limit Table.pdf - 2.1 EL4 C4.2 HW2015-1449 1 5.006 Report - MCR CS0341 May 2016 Monthly Contract Report.pdf - 2.1 EL4 C4.2 HW2015-1449 1 5.037 Schedule - REG-HWT-20-7176 Lab Schedule WTPs.xlsx - 2.1 EL4 C4.2 HW2015-1449 1 5.072 Procedure - Reservoir Inspection Program - Task Instructions.docx - 2.1 EL4 C4.2 HW2015-1449 1 5.073 Register - Reservoir Inspection Program - Adamstown Heights 3 Res - Maintenance Tasks.xlsx - 2.1 EL4 C4.2 HW2015-1449 1 5.074 Register - Reservoir Inspection Program - Adamstown Heights 3 Res - Work Order History 15-16.xlsx – 2.1 EL4 C4.3 HW2007-900271.009 Corporate Emergency Management Plan.docx



- 2.1 EL4 C4.3 HW2010-1986 8.023 Procedure - Water Quality Exception Reporting - Current Version.docx

- 2.1 EL4 C4.3 HW2011-662 14 5.002 Emergency Response Communications Plan.docx
- 2.1 EL4 C4.3 HW2013-421 22.001 Standard Incident Management CURRENT.DOCX
- 2.1 EL4 C4.3 HW2014-778 15 2.002 Plan Veolia HACCP Response 17.09.2015.pdf
- 2.1 EL4 C4.3 HW2014-1579 2.002 Data Lemon Tree Passage WTP.xlsb
- 2.1 EL4 C4.3 HW2015-1449 1 5.006 Report MCR CS0341 May 2016 Monthly Contract Report.pdf
- 2.1 EL4 C4.3 HW2015-1449 1 5.007 Data SCADA Report.xls
- 2.1 EL4 C4.3 HW2015-1449 1 5.047 Presentation Screenshot Asset Operation WQ Management and Exceptions Intranet Page.JPG
- 2.1 EL4 C4.4 HW2014-1579 2.002 Data Lemon Tree Passage WTP.xlsb
- 2.1 EL4 C4.4 HW2015-1449 1 5.009 Report MN-HW-24-7872-3 WT Lab Methods Manual.docx
- 2.1 EL4 C4.4 HW2015-1449 1 5.029 Form South Wallsend Chlorinator Maintenance Sheet Example.pdf
- 2.1 EL4 C4.4 HW2015-1449 1 5.030 Form South Wallsend Chlorinator Maintenance Sheet Example.pdf
- 2.1 EL4 C4.5 Agreement Contract for Supply and Delivery of Bulk Chemicals CS0525 IXOM.PDF
- 2.1 EL4 C4.5 HW2012-1337 14 2.001 Procedure Hypochlorite Tablet Validation.DOCX
- 2.1 EL4 C4.5 HW2015-1449 1 5.043 Procedure WI-HW-20-7842 Procurement procedures for ordering and receiving liquid polymer.docx
- 2.1 EL4 C4.5 HW2015-1449 1 5.044 Procedure WI-HW-20-7841 Procurement procedures for ordering and receiving hydrated lime.docx
- 2.1 EL4 C4.5 HW2015-1449 1 5.061 Presentation Screenshot Approved Produces and Manufacturers Internet Page.JPG

Element 5:

- 2.1 EL5 C5.1 HW2006-2906 2 6.006 Plan Drinking Water Quality Monitoring Plan June 2016.doc
- 2.1 EL5 C5.1 HW2015-1449 1 5.037 Schedule REG-HWT-20-7176 Lab Schedule WTPs.xlsx
- 2.1 EL5 C5.2 HW2006-1417 27 8.009 Report Network Operations Report June 2016.DOCX
- 2.1 EL5 C5.2 HW2008-235 6.016 Guideline Water Quality Air White.doc
- 2.1 EL5 C5.2 HW2008-235 6.017 Guideline Water Quality Chlorine.doc
- 2.1 EL5 C5.2 HW2008-235 7.001 Guideline Service Fault Map.pdf
- 2.1 EL5 C5.2 HW2008-235 13.061 Form Competency Assessment Record Customer Service Diana Necovski.pdf
- 2.1 EL5 C5.2 HW2013-1079.023 Customer Complaints Handling Guidelines.doc
- 2.1 EL5 C5.2 HW2015-1449 1 5.006 Report MCR CS0341 May 2016 Monthly Contract Report.pdf
- 2.1 EL5 C5.2 HW2015-1449 1 5.036 Procedure PR-ANZ-1-413 Handling of Complaints Procedure.docx
- 2.1 EL5 C5.3 HW2006-1417 15 16.001 Statement Water Quality Committee Terms of Reference March 2014.DOC
- 2.1 EL5 C5.3 HW2006-1417 27 8.009 Report Network Operations Report June 2016.docx
- 2.1 EL5 C5.3 HW2006-3430 36.058 Report On-line Water Quality Performance at WTPs June 2016.xlsm
- 2.1 EL5 C5.3 HW2014-1579 2.002 Data Lemon Tree Passage WTP.xlsb
- 2.1 EL5 C5.3 HW2015-1449 1 5.007 Data SCADA Report.xls
- 2.1 EL5 C5.3 S09-3 7 8 2.005 File note Hotspots Program Update August 2016.docx
- 2.1 EL5 C5.4 HW2006-1448 41 7.009 Report Quarterly to NSW Health Drinking Water and Recycled Water Quality Exceptions April to June 2016.msg
- 2.1 EL5 C5.4 HW2008-235 6.016 Guideline Water Quality Air White.doc
- 2.1 EL5 C5.4 HW2008-235 6.017 Guideline Water Quality Chlorine.doc
- 2.1 EL5 C5.4 HW2008-235 7.001 Guideline Service Fault Map.pdf
- 2.1 EL5 C5.4 HW2013-1079.023 Customer Complaints Handling Guidelines.doc
- 2.1 EL5 C5.4 HW2015-1449 1 5.006 Report MCR CS0341 May 2016 Monthly Contract Report.pdf



- 2.1 EL5 C5.4 HW2015-1449 1 5.038 Procedure - PR-ANZ-9-465 Incident Reporting Recording and Investigation Procedure.docx

- 2.1 EL5 C5.4 HW2015-1449 1 5.039 Procedure PL-ANZ-9-382 Crisis Management Plan.docx
- 2.1 EL5 C5.4 HW2015-1449 1 5.041 Procedure MN-HW-9-7101 Incident and Emergency Management Manual.docx

Element 6:

- 2.1 EL6 C6 HW2006-1448417.009 Email Report Quarterly to NSW Health Drinking Water and Recycled Water Quality Exceptions April to June 2016.msg
- 2.1 EL6 C6.1 HW2007-900 27 1.009 Corporate Emergency Management Plan.docx
- 2.1 EL6 C6.1 HW2011-662 14 5.002 Emergency Response Communications Plan.docx
- 2.1 EL6 C6.1 HW2015-1449 1 5.038 Procedure PR-ANZ-9-465 Incident Reporting Recording and Investigation Procedure.docx
- 2.1 EL6 C6.1 HW2015-1449 1 5.039 Procedure PL-ANZ-9-382 Crisis Management Plan.docx
- 2.1 EL6 C6.1 HW2015-1449 1 5.041 Procedure MN-HW-9-7101 Incident and Emergency Management Manual.docx
- 2.1 EL6 C6.2 HW2006-1448 48 4.008 Email to NSW Health Jan 2016 Follow-up re Elevated chlorine at Grahamstown WTP 10 December.msg
- 2.1 EL6 C6.2 HW2006-1448491.012 Report Hunter Water NSW Health Debrief April 2015 Super Storm.DOCX
- 2.1 EL6 C6.2 HW2007-2747 10 16.001 File note PRC Paper Water Quality Impacts of East Coast Low Storm Event April 2015(2).docx
- 2.1 EL6 C6.2 HW2007-900271.009 Corporate Emergency Management Plan.docx
- 2.1 EL6 C6.2 HW2011-662 14 5.002 Emergency Response Communications Plan.docx
- 2.1 EL6 C6.2 HW2015-1449 1 5.038 Procedure PR-ANZ-9-465 Incident Reporting Recording and Investigation Procedure.docx
- 2.1 EL6 C6.2 HW2015-1449 1 5.039 Procedure PL-ANZ-9-382 Crisis Management Plan.docx
- 2.1 EL6 C6.2 HW2015-1449 1 5.041 Procedure MN-HW-9-7101 Incident and Emergency Management Manual.docx
- 2.1 EL6 C6.2 Report Debrief After Action Report AAR Hunter Water response to April 2015 Super Storm (East Coast Low ECL) Tigertail.PDF
- 2.1 EL6 C6.2 Report EMT Paper April 2015 Super Storm (East Coast Low ECL) CDCT 20150716.DOCX

Element 7:

- 2.1 EL7 C7.1 Edmore Material Drinking Water Quality Awareness Employees August 2014 201415.docx
- 2.1 EL7 C7.1 HW2015-1449 1 5.011 Presentation DWQ_Management Training_FINAL.pptx
- 2.1 EL7 C7.1 HW2015-1449 1 5.017 Data Edmore Water Quality Report_August 2016.xlsx
- 2.1 EL7 C7.1 Presentation Quality Induction Training_Employees 201415.pptx
- 2.1 EL7 C7.2 HW2008-235 13.061 Form Competency Assessment Record Customer Service Example record.pdf
- 2.1 EL7 C7.2 HW2008-1592 60 2.019 Email 2.2.1-TECHNICAL Training Registers Aug 2015-201415.xlsx
- 2.1 EL7 C7.2 HW2015-1449 1 5.005 Email FW Proposed Schedule for Cert III Water Operations Training next week.msg
- 2.1 EL7 C7.2 HW2015-1449 1 5.008 File note Manager Treatment Operations.doc
- 2.1 EL7 C7.2 HW2015-1449 1 5.011 Presentation DWQ_Management Training_FINAL.pptx
- 2.1 EL7 C7.2 HW2015-1449 1 5.014 File note Water Quality Engineer Treatment Operations System Ops.doc
- 2.1 EL7 C7.2 HW2015-1449 1 5.016 Report Lab Staff Training Record Example.pdf
- 2.1 EL7 C7.2 HW2015-1449 1 5.018 Data System Ops_Competency Requirements.xls
- 2.1 EL7 C7.2 HW2015-1449 1 5.019 Report Completed Competency Observations Example.pdf
- 2.1 EL7 C7.2 HW2015-1449 1 5.020 Report System Controller Competency Assessment Form- Example.pdf
- 2.1 EL7 C7.2 HW2015-1449 1 5.022 Letter Example_Letter of Competency.pdf
- 2.1 EL7 C7.2 HW2015-1449 1 5.045 File note PD Manager Water Network Operations.doc
- 2.1 EL7 C7.2 HW2015-1449 1 5.046 File note Position Description Water Quality Engineer Treatment Operations Jul 2015.doc
- 2.1 EL7 C7.2 HW2015-1449 1 5.066 Procedure FM-HWT-3-7223 LTP Induction.docx



- 2.1 EL7 C7.2 HW2015-1449 1 5.068 Data Training Matrix Hunter Water Operator Aug 2016.docx
- 2.1 EL7 C7.2 HW2015-1449 1 5.069 Data Water Operator Training Register Aug 2016.xlsx

Element 8:

- 2.1 EL8 C8.1 HW2015-1449 1 5.048 Minutes Community Consultative Forum Minutes May16.pdf
- 2.1 EL8 C8.1 HW2015-1449 1 5.049 Minutes Community Consultative Forum Minutes Feb16.pdf
- 2.1 EL8 C8.1 HW2015-1449 1 5.050 Minutes Community Consultative Forum Minutes Sep16.pdf
- 2.1 EL8 C8.2 HW2013-1244 9.068 Agreement 2015-16 Hunter Water Schools Education Program PROJECT PLAN & AGREEMENT.pdf
- 2.1 EL8 C8.2 HW2013-1457 1 10.003 Form Handover to Assets Drinking Water Catchment Signage project.docx
- 2.1 EL8 C8.2 HW2015-1449 1 5.054 Presentation Screenshot Hunter Water Twitter Page.JPG
- 2.1 EL8 C8.2 HW2015-1449 1 5.055 Map Hunter Water Water Supply Zones.pdf
- 2.1 EL8 C8.2 HW2015-1449 1 5.056 Presentation Screenshot Hunter Water Water Quality Internet Page.JPG
- 2.1 EL8 C8.2 HW2015-1449 1 5.057 Presentation Screenshot Hunter Water Catchment Management Internet Page.JPG
- 2.1 EL8 C8.2 HW2015-1449 1 5.058 Presentation Screenshot Hunter Water Drinking Water Catchments Internet Page.JPG
- 2.1 EL8 C8.2 HW2015-1449 1 5.059 Presentation Screenshot Hunter Water Where Does Your Water Come From Internet Page.JPG
- 2.1 EL8 C8.2 Media Release Hunter-Water-Moves-to-Learn-Lessons-from-April-Super-Storm.pdf

Element 9:

- 2.1 EL9 C9.1 HW2006-1417 27 9.007 Report Network Operations Report July 2016.docx
- 2.1 EL9 C9.1 HW2009-1367 3 29.005 Agreement Smart controls_Participation_Agreement_Hunter.doc
- 2.1 EL9 C9.1 HW2009-1367 11 6.003 Memo WaterRA Smart Monitoring Project initiation letter to Hunter Water.pdf
- 2.1 EL9 C9.1 HW2009-1367 11 6.006 Smartwater and E coli Water RA project kickoff meetings.msg
- 2.1 EL9 C9.1 HW2009-1367 19.008 Plan 2013-2017 R&D Plan.doc
- 2.1 EL9 C9.1 HW2009-1367 25.011 Memorandum of Understanding University of Newcastle and Hunter Water.pdf
- 2.1 EL9 C9.1 HW2009-1367.030 File note RD Projects Register 2009-2017.xls
- 2.1 EL9 C9.2 HW2006-1417 27 9.007 Report Network Operations Report July 2016.docx
- 2.1 EL9 C9.2 HW2006-1448 42 43.004 Minutes Disinfection and Filtered Turbidity Targets and Critical Limits 22 May 2013.doc
- 2.1 EL9 C9.2 HW2006-3430 36.058 Report On-line Water Quality Performance at WTPs June 2016.xlsm
- 2.1 EL9 C9.2 HW2012-635 4.009 File note PRC Paper Chichester Dam Sediment Tracing Study August 2016.docx
- 2.1 EL9 C9.3 HW2007-2744 5.082 Guideline QG052 Design Validation Guideline (in Integrum) CURRENT.docx
- 2.1 EL9 C9.3 HW2015-1449 1 5.060 Presentation Screenshot Hunter Water Design Manual Page.JPG
- 2.1 EL9 C9.3 HW2015-1449 1 5.061 Presentation Screenshot Approved Produces and Manufacturers Internet Page.JPG

Element 10:

- 2.1 EL10 C10.1 HW2012-441 9 1.002 Procedure Manage Document Control CURRENT.docx
- 2.1 EL10 C10.1 HW2013-421 22.002 Standard Corporate Document Control CURRENT.docx
- 2.1 EL10 C10.1 HW2015-1449 1 5.012 Procedure PR-HW-1-7694 Records Management Procedure.docx
- 2.1 EL10 C10.1 HW2015-1449 1 5.033 Procedure PR-ANZ-1-439 Document Management Procedure.docx
- 2.1 EL10 C10.2 HW2006-1448 41 7.009 Email Report Quarterly to NSW Health Drinking Water and Recycled Water Quality Exceptions.msg
- 2.1 EL10 C10.2 HW2006-2906 4 6.023 Procedure Water Quality Notification to NSW Health.doc
- 2.1 EL10 C10.2 HW2007-900 27 1.009 Corporate Emergency Management Plan.docx



- 2.1 EL10 C10.2 HW2007-900 27 10.001 Memo Incident Notification Protocol MSO 221012.doc
- 2.1 EL10 C10.2 HW2007-1642 31 3.013 Email Hunter Water Fluoride Report June 2016.msg
- 2.1 EL10 C10.2 HW2010-1986 8.023 Procedure Water Quality Exception Reporting Current Version.docx
- 2.1 EL10 C10.2 HW2011-662 14 5.002 Emergency Response Communications Plan.docx
- 2.1 EL10 C10.2 HW2012-778 48.001 Data Compliance Calendar June 2016.xlsx
- 2.1 EL10 C10.2 HW2012-807 13.002 Report Monthly Drinking Water Monitoring Report July 2015.pdf
- 2.1 EL10 C10.2 HW2013-421 9.007 Register Summary of Corporate Reporting Requirements.xlsx
- 2.1 EL10 C10.2 HW2013-830 7.011 Report EMT Paper Corporate Risk Profile & Treatment Plan 6 June 2016.docx
- 2.1 EL10 C10.2 HW2013-830 7.022 Data Summary Corporate Risk Profile 28 July 2016.docx
- 2.1 EL10 C10.2 HW2015-1449 1 5.006 Report MCR CS0341 May 2016 Monthly Contract Report.pdf

Element 11:

- 2.1 EL11 C11.1 HW2006-1417 27 8.008 Data WQC Meeting Zone Mean Graphs.xlsx
- 2.1 EL11 C11.1 HW2006-1417 27 8.009 Report Network Operations Report June 2016.docx
- 2.1 EL11 C11.1 HW2014-778 15 3.006 Report HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL.pdf
- 2.1 EL11 C11.1 HW2014-1579 2.002 Data Lemon Tree Passage WTP.xlsb
- 2.1 EL11 C11.2 HW2013-421 9.008 Register 2015 2018 Internal Audit Schedule (Quality Issues, Drinking Water, Recycled Water, ALS, Veolia).xlsx
- 2.1 EL11 C11.2 HW2013-421 11.002 Procedure Conduct Management System Internal Audit CURRENT.docx
- 2.1 EL11 C11.2 HW2014-778 15 4.001 Report 2015 Veolia DWQMS Audit Report V2.pdf
- 2.1 EL11 C11.2 HW2015-106 7 2.001 Register ALS Lab Contract Audit Inspection Register.xls
- 2.1 EL11 C11.2 HW2015-1449 1 5.032 Procedure PR-ANZ-1-475 Audit Procedure.docx
- 2.1 EL11 C11.2 HW2015-1449 1 5.052 Report Audit Records July 16.pdf
- 2.1 EL11 C11.2 HW2015-1449 1 5.053 Report Audit Report Creation July 16.pdf

Element 12:

- 2.1 EL12 C12.1 HW2006-1417 27 8.002 Agenda July 2016 Water Quality Committee Meeting.docx
- 2.1 EL12 C12.1 HW2006-1417 27 8.015 Minutes July 2016 Water Quality Committee Meeting.docx
- 2.1 EL12 C12.1 HW2012-1302 3.046 Report Water Planning Monthly Report Jul 2016.docx
- 2.1 EL12 C12.1 HW2013-1447 2.014 Report Management System Review Meeting May 2016 (pre-reading for EMT).docx
- 2.1 EL12 C12.1 HW2015-1449 1 5.034 Procedure PR-ANZ-1-476 Management Review Procedure.docx
- 2.1 EL12 C12.2 HW2006-2906 10 2.005 2014-17 Drinking Water Quality Improvement Plan (Extract).pdf
- 2.1 EL12 C12.2 HW2006-2906 10 2.007 Standard Maintaining the Drinking Water Quality Improvement Plan 13.07.2015.docx

Post interview evidence:

- Agenda IMS Management Review Meeting 5 November 2015.docx
- Agreement Hunter Water and Midcoast Water Supply and water and sewer services (2002).PDF
- CS0341 Treatment Operations Contract Schedules 1 and 2 Facility Boundaries.pdf
- Data Water Operator Training Register Aug 2016.xlsx
- Risk Edge to Hunter Water Clarification #1 041016.pdf
- Drinking Water Quality Completed_2015 2016 FY.xlsm
- Email Drinking Water Quality Preparedness 22 09 15 Session 1 QMS003.PDF



- Extracts from CS0341 Treatment Operations Contract 5.5 Interface with Hunter Water Operations, Section 23 and Schedule 5 Abnormal operating events.pdf
- Form Introduction TRIM 1 June 2016.PDF
- HW2008-2500.006 Guideline QG050 How to Add TRIM File Structure for Consultancy Contract (ex-QP013) CURRENT.docx
- HW2013-1447 2.013 Report Management System Review Meeting May 2016 Report (pre-reading for EMT.doc
- HW2013-1447 2.017 Minutes Integrated Management System Review Meeting 20 May 2016.docx
- Hunter Water Corporate Induction 1 February 2016.pdf
- Hunter Water Corporate Induction 14 September 2015.PDF
- Presentation DWQ_Management Training_FINAL.pptx
- SCADA Screen Shots Lemon Tree Passage WTP CCPs.pptx
- Screenshot Managing Document Control.docx
- Screenshot TRIM Sensitive Information Processes.docx
- Screenshot TRIM Training Intranet Page.docx
- Screenshot TRIM User Guides.docx
- Veolia Hunter Water Improvement and Innovation Committee Meeting 15th Oct 2015 Minutes.docx
- Veolia Hunter Water Improvement and Innovation Committee Meeting 17th Feb 2016 Minutes.docx

Summary of reasons for grade

Hunter Water has processes and procedures in place to support the compliance of this clause including an overarching DWQMS, which is accessed through a portal as part of Hunter Water's Integrated Management System. Hunter Water uses Veolia as a contract operator of its drinking water and wastewater plants and contracts are in place and largely implemented to support compliance with this clause. The reason for the high compliance grade is based on several adequacy issues, in particular, flow diagrams which were not in compliance with the Framework Element 2 requirements, some gaps in document currency in Element 6 which have the potential to lead to emergency mis-management and some work that is still required to finalise the CCP recommendation (Element 3) namely, clarity around the evidence base for selection of critical limits. Once these issues are addressed, Hunter Water will be considered to have a sound DWQMS in place. Hunter Water reported to NSW Health on significant changes to its DWQMS.

Discussion and notes

Clause 2.1.1: Hunter Water manages this licence condition through a Drinking Water Quality Management System (DWQMS)⁴². The DWQMS is implemented through Hunter Water's Integrated Management System (IMS) and is consistent with the 12 elements of the Framework (see commentary below). As noted, while Hunter Water is responsible under its licence from catchment to tap, Hunter Water contracts the operation and maintenance (O&M) of its water treatment plants to Veolia. Veolia has a Drinking Water Quality Management Plan (DWQMP) in place as part of the contract (Treatment Operations Contract/Agreement CS0341). It was confirmed at interview that 'contract' is the correct term.

The DWQMS portal and its use were confirmed at interview.

The Veolia DWQMP was sighted⁴³ and includes the 12 elements of the Framework as well as clear links and integration with Hunter Water's systems. Midcoast Water is not listed as a third party stakeholder⁴⁴ yet is a receiver of water from the LTP WTP system and was involved in the LTP WTP risk workshop. The DWQMP was

⁴² DWQMS Portal sighted 2.1.1 HW2015-1449 1 5.070 Presentation - Screenshot DWQMS Intranet Page.docx.

^{43 2.1.1} HW2014-778 15 2.001 Plan - Drinking Water Quality Management System - Veolia.pdf, Ref #: PL-HW-20-7211-2, 25.09.2015.

⁴⁴ DWQMP, Section 2.1.3, p8.

assessed by a specialist drinking water auditor and that auditor found the Veolia DWQMP in compliance with the Framework. Note that given the findings for Element 2 (flow diagrams in particular), we did not find the Veolia DWQMP currently in compliance with the Framework.

Clause 2.1.2: The DWQMS and the DWQMP are used to implement the Framework requirements throughout Hunter Water's and Veolia's drinking water operations. Key overall aspects of implementation include:

- Drinking Water Quality Policy⁴⁵
- Regulatory Reporting Requirements
- Treatment Operations Contract implementation requirements
- Catchment to Tap risk assessment process (documented calendar revision approach)⁴⁶
- Establishment and management of Critical Control Points (CCPs)^{47,48}
- System-wide Water Quality Monitoring Plan.⁴⁹ We note that Version 2 of the ADWG not the current Version (3.2, 2016 update) is referenced in the Monitoring Plan (second page, Document History). Changes to the ADWG monitoring section have been undertaken including more focus on types of monitoring such as validation. It was confirmed at interview that NSW Health had signed off on Version 2 of the ADWG for the 2014-2017 monitoring plan period. However, the plan is subject to rolling review.
- Hunter Water Drinking Water Quality Improvement Plan⁵⁰

The auditor has also assessed the conditions for these clauses by reviewing each of the requirements of the Framework elements against Hunter Water's interpretation and implementation. The element by element results are noted below.

Clause 2.1.3: It is a requirement that Hunter Water notifies NSW Health of DWQMS significant changes. The significant change occurring in the 2015-2016 period was a review of CCPs and their limits (as part of an IPART recommendation – see commentary for Clause 2.1.2 for CCP evidence provided). Revised CCPs were implemented in September 2015. Evidence to show correspondence (approval and 'endorsement'⁵¹ letters) with NSW Health on this matter was provided. ⁵² A letter of response from NSW Health confirms that, subject to some revisions, NSW Health was satisfied with the changes pending results of subsequent reviews and findings of adequacy from the operational audit approach. ⁵³ All correspondence was conducted within the audit date scope. Further, arising from the 2014-2015 reporting period, the Veolia DWQMP (see above) was developed and implemented. As well as the CCP tables (see Clause 2.1.2), a HACCP Response procedure⁵⁴ was also provided from Veolia as evidence of corrective action response to CCP limit breaches. The procedure sets out clear responsibilities and communication lines and applies to all six of Hunter Water's WTPs. There are still some remaining compliance uncertainties in relation to CCPs which are covered below.



⁴⁵ 2.1.2 HW2006-2968 41 44.001 Policy - Drinking Water Policy - PDF - April 2015 - CURRENT.pdf

⁴⁶ 2.1.2 HW2006-2906 8 33.014 Register - Drinking Water Quality Risk Assessment Calendar - CURRENT.xlsx.

⁴⁷ 2.1.2 copy HW2014-778 15 2.004 Register - Anna Bay WTP HACCP Limit Table.pdf; 2.1.2 copy HW2014-778 15 2.007 Register - Gresford WTP HACCP Limit Table.pdf; 2.1.2 HW2014-778 15 2.005 Register - Dungog WTP HACCP Limit Table.pdf; 2.1.2 HW2014-778 15 2.006 Register - Greahamstown WTP HACCP Limit Table.pdf; 2.1.2 copy HW2014-778 15 2.008 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW2014-778 15 2.009 Register - Lemon Tree Passage WTP HACCP Limit.pdf; 2.1.2 copy HW20

⁴⁸ 2.1.2 HW2015-1303 10.003 Register - Network Chlorinators - HACCP Limit Table.pdf – protozoa spelt incorrectly.

⁴⁹ 2.1.2 HW2006-2906 2 6.006 Plan - Water Quality Monitoring Plan June 2016.doc.

⁵⁰ 2.1.2 HW2006-2906102.005 2014-17 Drinking Water Quality Improvement Plan Extract.pdf.

⁵¹ Noting that NSW Health does not have authority to, and nor does it, 'endorse', documents, plans etc. NSW Health provides comment on 'satisfaction' with the approach and/or content.

^{52 2.1.3} HW2006-2906 7 5.019 Letter - REQUEST FOR NSW HEALTH APPROVAL OF PROPOSED CRITICAL CONTROL POINT DETAILS - Submitted to Health - 15 09 2015.pdf; 2.1.3 HW2015-1343 4.003 Letter -

REQUEST FOR NSW HEALTH ENDORSMENT OF CCP CRITICAL LIMITS - 7 6 2016.pdf.

⁵³ 2.1.3 HW2015-1343 4.008 Letter - 270616 - NSW Health response to request for endorsement of CCP critical limits.pdf.

⁵⁴ 2.1.3 HW2014-778 15 2.002 Plan - Veolia HACCP Response 17.09.2015.pdf, PR-HW-9-7654-2, 17.09.2015.

ELEMENT 1: COMMITMENT TO DRINKING WATER QUALITY MANAGEMENT

A drinking water (DW) policy is in place⁵⁵. It is in within the audit scope⁵⁶. It contains appropriate requirements including taking a risk-based approach from catchment to customer and including training for both staff and contractors. The DW policy has been signed off at the highest level (Managing Director) demonstrating organizational commitment.

Evidence was provided to show that all Hunter Water staff must undertake drinking water quality awareness training.⁵⁷ The email was from the 2014-2015 period but confirmed at interview as still being in scope.

A DWMS (drinking water management system) presentation was provided as evidence of training content⁵⁸. The presentation was comprehensive and meets the requirements of both the ADWG in general and the framework specifically. The pptx file was assumed to be for Veolia staff as it was in Veolia format. The content showed the linkage between Hunter Water and Veolia as a contractor including responsibility allocation i.e. that the Veolia systems are a subset of Hunter Water's overall DWMS and licence obligations. It was confirmed at interview that the date for the pptx training presentation was August 2015 and therefore, it was current for the audit date scope.

Other training material was provided in Hunter Water format⁵⁹. The content of the material is appropriate but could benefit with referencing material that has been taken from other author's presentations such as in the slides on pages 2, 3 and 26. Reference to the DW policy is included in the slides⁶⁰. The date of the material is 19/05/14 but confirmed at interview as still current and in date scope for this audit.

A quality induction set of slides was provided⁶¹. The slides are in scope and clearly set out the importance of drinking and recycled water quality including focusing on the policies of each.

The Drinking Water Quality Policy for both Veolia and Hunter Water were viewed at site (Level 1 and 2 break rooms at Hunter Water head office and at the LTP WTP).

A procedure for ensuring legal and formal currencies is in place⁶². The document history clearly shows that the procedure has been reviewed⁶³ and contains information relating to Hunter Water's products and services. A Compliance Commitments Tracker⁶⁴ is in place and contains information in the audit scope and beyond showing good evidence that a dynamic process is in place. Water quality issues are covered in the tracker. A Corporate Reporting Register is in place⁶⁵. The register includes key drinking water and recycled water relevant material such as Monthly Fluoridation Report, Monthly Drinking Water Quality Reports, Recycled Water Quality Report and Algae Notification Report. The register includes key parameters including responsibility, reporting frequency and reason for the report. Hunter Water position descriptions (PDs)⁶⁶ were provided for a range of positions including Manager Treatment Operations, Team Leader Water Resource Planning and Water Quality Engineer, Treatment Operations. The PDs were in scope and clearly set out responsibilities in relation to drinking and recycled water including managing and interfacing with the treatment contractor (Veolia), managing water from catchment to tap and co-ordinating the implementation of Hunter Water's Drinking Water Quality Management System. Veolia's responsibility matrix was provided from the Operational Management Plan⁶⁷. The matrix shows how drinking water and recycled water quality responsibilities are



^{55 2.1} EL1 c1.1 HW2006-2968 41 44.001 Policy - Drinking Water Policy - PDF - April 2015 - CURRENT.pdf, TRIM HW2006-2968/41/44.

⁵⁶ Reviewed and effective from March 2015, next review March 2018.

⁵⁷ Email from Group Manager People & Safety to all Hunter Water employees. 2.1 EL1 c1.1 HW2015-1303 10.008 Email - Email All Staff Mandatory WQ training 2014-15.pdf

⁵⁸ 2.1 EL1 C1.1 HW2015-1449 1 5.011 Presentation - DWQ_Management Training_FINAL.PPTX

⁵⁹ 2.1 EL1 C1.1 HW2015-1449 1 5.023 Presentation - Edmore Material - Drinking Water Quality Awareness Employees - August 2014.docx

⁶⁰ Slide on p10.

⁶¹ 2.1 EL1 C1.1 HW2015-130310.009 Presentation - Quality Induction Training_Employees.PPTX, July 2015 v1.

⁶² 2.1 EL1 C1.2 HW2012-441 23 1.029 Procedure - Managing Legal and Other Requirements - CURRENT.docx, TRIM: HW2012-441/23/1.029.

⁶³ Approved, 22 July 2015.

^{64 2.1} EL1 C1.2 HW2012-778 48.001 Data - Compliance Calendar - June 2016.xlsx

^{65 2.1} EL1 C1.2 HW2013-421 9.007 Register - Summary of Corporate Reporting Requirements.xlsx.

⁶⁶ E.g. 2.1 EL1 C1.2 HW2015-1449 1 5.008 File note - Manager Treatment Operations.doc.

⁶⁷ 2.1 EL1 C1.1 HW2015-1449 1 5.062 Register - Veolia responsibility matrix.pdf, pp94-104, PL-HW-1-7100-3, 01.10.2015.

incorporated in key positions including Water Treatment Manager and Wastewater Treatment Manager. The matrix is in scope. All these processes support the requirement in the framework for compliance and understanding of responsibilities for drinking water quality management. The register was confirmed as being in scope.

Contact information was provided for NSW Health⁶⁸ (Hunter New England Health) and is in scope (September 2015).

An agreement to supply water to MidCoast Water is in place.⁶⁹ The agreement is from 17 September 2002. There is information in the agreement, which is now out of date⁷⁰ e.g. ADWG 1996 vs ADWG 2011 (version 2016). Midcoast Water is now included as a member of Hunter Water's Water Quality Committee.

Documents generally have a TRIM reference and document history table associated with them. There are some exceptions such as some of the training material.

The Drinking Water Quality Management System (DWQMS) portal is available on Hunter Water's intranet and is accessible to all staff. The management system hosts information pertinent to the DWQMS, along with relevant internal and external information and resources. The portal was reviewed at the interviews.

Key internal and external stakeholders that may be affected during incidents or emergencies are included in Hunter Water's Emergency Management Plan (EMP)⁷¹ with links included to the Emergency Response Communications Plan (ERCP)⁷². The ERCP is out of date scope. As it is dated August 2016 and Version 1, it cannot be counted as continuing from the last audit period. The EMP⁷³ covers expected areas for emergency and incident management including incident levels (including water quality) and responses. The Trigger Guide (Section 5, p15) in the EMP refers the reader to Section 7 however, Section 6 appears to be the more appropriate Section. Drinking water and recycled water are both covered in the EMP. The review cycle of the EMP (last review date was 18/12/2014) may result in potential currency deficits in the stakeholder list, including contact details.

A list⁷⁴ of Veolia contacts exists as at August 2016. ALS (Mayfield West) laboratory contact details⁷⁵ were provided (filenote) for August 2016. The currency for the audit scope date was confirmed at interview.

ELEMENT 2: ASSESSMENT OF THE WATER SUPPLY SYSTEM

Hunter Water covers the requirement for a 'team' through the Water Quality Committee and relevant personnel attendance at the risk assessment workshops. The Water Quality Committee has comprehensive terms of reference and includes representation from key operational and contractual staff (Veolia)⁷⁶. Various examples of meeting minutes from the Water Quality Committee were provided to show ongoing commitment and evidence of process implementation⁷⁷. Relevant personnel took part in risk assessment workshops⁷⁸ including representation from NSW Health. Midcoast Water is now a member of the Water Quality Committee but is not yet included in the Committee's Terms of Reference.

Flow diagrams were provided for all systems⁷⁹. Flow diagrams were not always consistent or clear in terms of colour coding and number of process elements e.g. 'filters' vs number of filters, clear water tank vs chlorine contact tank⁸⁰ (both were used interchangeably in some circumstances e.g. LTP WTP) nor were responsibilities clearly

70 Clause 27(c), p7.

72 2.1 EL1 C1.3 HW2011-662 14 5.002 Emergency Response Communications Plan.docx.

⁷⁸ E.g. 2.1 EL2 C2.1 HW2015-1343 1 11.013 Report - Tomago and Gresford catchment risks report V2.pdf, Section 4, p8.

^{68 2.1} EL1 C1.3 HW2006-2906 4 6.010 Register - Contact Details NSW Health current September 2015.doc.

^{69 2.1} EL1 C1.3 HW2007-2177 23 26.038 Agreement - MidCoast Water Agreement to Provide Water and Sewerage Services 17 09 2002.PDF.

⁷¹ 2.1 EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, HPRM Ref: HW2007-900/27/1.009, Version 5, December 2014 (review due December 2016); commencing Section 17.2, p40.

⁷³ 2.1 EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, HPRM Ref: HW2007-900/27/1.009, Version 5, December 2014 (review due December 2016).

^{74 2.1} EL1 C1.3 HW2015-1449 1 5.013 Data - Veolia Staff Contact Details Aug 2016.xlsx.

⁷⁵ 2.1 EL1 C1.3 HW2015-1449 1 5.015 File note - Lab Staff Contact Details Aug 2016.docx.

⁷⁶ 2.1 EL2 C2.1 HW2006-1417 15 16.001 Statement - Water Quality Committee Terms of Reference - March 2014.DOC (dated March 2015).

⁷⁷ E.g. 2.1 EL2 C2.1 HW2006-1417 27 8.015 Minutes - July 2016 Water Quality Committee Meeting docx (covers actions and outcomes from previous meeting's minutes which were in audit date scope).

⁷⁹ 2.1 EL2 C2.1 HW2015-705 1.001 Plan - Anna Bay WTP - Flow Diagram.pdf; 2.1 EL2 C2.1 HW2015-705 1.002 Plan - Dungog WTP - Flow Diagram.PDF; 2.1 EL2 C2.1 HW2015-705 1.003 Plan - Grashamstown WTP - Flow Diagram.pdf; 2.1 EL2 C2.1 HW2015-705 1.005 Plan - Lemon Tree Passage WTP - Flow Diagram.pdf; 2.1 EL2 C2.1 HW2015-705 1.006 Plan - Nelson Bay WTP - Flow Diagram.pdf.

⁸⁰ ADWG (February 2016; V3.2, p27): "The diagram should outline all steps and processes, whether or not they are under control of the drinking water supplier." [bold our emphasis].

shown⁸¹. Document history was only included on one diagram, therefore it was not possible to confirm date scope for all flow diagrams. Flow diagrams did not have verification sign off by an authorized party so it was not possible to confirm if the diagrams had been ground-truthed. It is not always clear or specifically indicated, where monitoring takes place. Discrepancies in flow diagrams are noted in the Site Visit Details section.

Documentation was available to show how information had been collated, reviewed and synthesized including as briefing papers⁸² for workshop participants and workshop summary papers⁸³. The information was relevant (system component specific including for both Hunter Water (catchments) and Veolia components) and in a form that facilitated understanding of the hazards, events and risks.

The risk methodology chosen followed the Hunter Water corporate approach⁸⁴ and is clearly stated in the risk reports⁸⁵. The choice of what constitutes a significant risk is covered further under the drinking water quality recommendations' evidence and within the risk reports. The risk register was provided as evidence⁸⁶. Is not clear if the risk register covers Midcoast Water handover or risks from consuming water as if it were potable (CTGM customers).

Follow-up actions and priorities from the risk assessment are captured in the Drinking Water Quality Improvement Plan⁸⁷. CCP tables for each plant were provided as evidence and link back to identified risks and operational monitoring. The risk register includes clear links⁸⁸ to relevant section of the O&M Manual for each plant.

ELEMENT 3: PREVENTIVE MEASURES FOR DRINKING WATER QUALITY MANAGEMENT

A risk calendar⁸⁹ is used to schedule risk assessment reviews. A risk register was provided as evidence of implementation⁹⁰. Evidence to support risk review was sighted in the risk register⁹¹. There is an agreement⁹² in place between Hunter Water and Midcoast Water specifying the handover point for water. Hunter Water noted that Midcoast Water representation is included on the Water Quality Committee but there was no Midcoast Water representation for the latest Water Quality Committee minutes⁹³.

Midcoast Water is not included in the Water Quality Committee TOR (see comments at Element 2 above)⁹⁴.

Gresford and Tomago catchment risk assessment were completed in March 2016 and the risk registers for each were sighted at interview.

Follow-up actions and priorities from the risk assessment are captured in the Drinking Water Quality Improvement Plan⁹⁵. The ERM Framework⁹⁶ sets out the methodology for prioritizing and managing risks.

The Veolia LTP flow diagram⁹⁷ does not show handover point between parties and is missing several key steps and inputs (see Site Visit notes).



⁸¹ Dungog flow diagram, last updated 6/11/2015.

⁸² 2.1 ELZ C2.1 HW2014-778 15 3.006 Report - HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL (for workshop dates of 3 and 4 August 2016) – while outside date scope of the audit, the paper shows the ongoing process of implementation.

^{83 2.1} EL2 C2.1 HW2015-1343 1 11.013 Report - Tomago and Gresford catchment risks report V2.pdf for workshop held 14 March 2016).

^{84 2.1} EL2 C2.3 HW2008-704 17.004 Procedure - CURRENT - Enterprise Risk Management Framework - Ver 3.0.pdf.

⁸⁵ E.g. 2.1 EL2 C2.2 HW2015-1343 1 11.013 Report - Tomago and Gresford catchment risks report V2, Section 2, p6 and Section 6, p9.

⁸⁶ 2.1 2013-14-05 HW2015-1303 6 5.002 Data - Strategic Risk Register - Non compliance with agreed water quality standards.xlsx.

⁸⁷ 2.1 EL2 C2.3 HW2006-2906102.005 Register - Drinking Water Quality Improvement Plan Extract.pdf.

⁸⁸ 'Existing Preventive Measures (Reference to O&M manual section underlined if applicable)' column in risk register (2.1 2013-14-05 HW2015-1303 6 5.002 Data - Strategic Risk Register - Non compliance with agreed water quality standards.xlsx.).

⁸⁹ 2.1 EL3 C3.1 HW2006-2906 8 33.014 Register - Drinking Water Quality Risk Assessment Calendar - CURRENT.xlsx.

^{90 2.1 2013-14-05} HW2015-1303 6 5.002 Data - Strategic Risk Register - Non compliance with agreed water quality standards.xlsx.

⁹¹ Last risk update 29 February 2016 for some systems.

^{92 2.1} EL3 C3.1 HW2007-2177 23 26.038 Agreement - MidCoast Water Agreement to Provide Water and Sewerage Services 17 09 2002.PDF.

^{93 2.1} EL2 C2.1 HW2006-1417 27 8.015 Minutes - July 2016 Water Quality Committee Meeting.docx.

⁹⁴ 2.1 EL2 C2.1 HW2006-1417 15 16.001 Statement - Water Quality Committee Terms of Reference - March 2014.DOC.

⁹⁵ 2.1 EL2 C2.3 HW2006-2906102.005 Register - Drinking Water Quality Improvement Plan Extract.pdf.

⁹⁶ Figure 4, p28.

⁹⁷ E.g. Appendix B, 2.1 EL2 C2.1 HW2014-778 15 3.006 Report - HACCP Workshop Briefing Paper_Lemon Tree Passage_FINAL.pdf.

Hunter Water water supply zone flow diagram is in existence and while a good overview of the distribution system, does not detail the handover point between Hunter Water and Midcoast Water at North Karuah or clearly show that non-potable connections apply to the CTGM⁹⁸.

CCP tables are in existence for all systems (see Element 2 above). The CCP tables, while complex, appear to be well understood in practice (implementation was checked at the LTP WTP site visit). While it is not usual to include contractual targets in CCP tables, this is not against the requirements of the Framework. The C.t's for chlorine disinfection at the LTP WTP have been calculated based on it being supplied with a groundwater, not surface water, source (and therefore likely to be less subject to contamination than a surface water source). Due to the fact that the LTP WTP is not a continuous production plant, the C.t calculation includes several parameters to take account of chlorine decay post the disinfection point, before plant startup:

- Hydraulic residence time.
- Baffled residence time (using US EPA guidance).
- Chlorine mass balance.
- 1st order exponential chlorine decay.
- Approximated integration of modelled [chlorine] vs baffled residence time to give a C.t.

This approach seems logical and was further explained post the site visit. This information⁹⁹ has also been provided to NSW Health as part of the validation basis for choice and level of limits for all CCPs. However, for some of the other CCPs (plants not visited), there appear to be discrepancies in the value suggested for NSW Health's 'endorsement' (noting that NSW Health does not endorse, it makes a statement of 'satisfaction') and that provided in the ADWG. Nelson Bay is an example where the turbidity critical limit for disinfection is set at 'must not be > 5 NTU for 5 consecutive minutes'. It is not clear why as stated, this limit meets the ADWG for disinfection as 5 NTU is an aesthetic guideline value, or whether it has been 'context validated':

"Disinfection: A turbidity of less than 1 NTU [our emphasis] is desirable at the time of disinfection with chlorine unless a higher value can be validated in a specific context.

Aesthetic: Based on aesthetic [our emphasis] considerations, the turbidity should not exceed 5 NTU [our emphasis] at the consumer's tap."¹⁰⁰

Figures provided in the NSW Health letter¹⁰¹ state that the value is in compliance with the ADWG and also validated from 'consultation with NSW Health'. The evidence for the latter appears to have come from meeting minutes with NSW Health however, this is not clear in the letter and Hunter Water should develop a clear table of validation for the critical limits clearly stating the exact piece of evidence (e.g. instrument, version, location of specific information) which supports the choice of value especially where the value deviates from the ADWG and is 'context validated'.

Further, at the LTP WTP, the critical high limit for C.t is set at 100,000¹⁰². It was explained at interview that this value is manually entered into the spreadsheet as there is no critical high for CT and therefore, a placeholder number had to be added. This approach could cause confusion. Relying on CT rather than also having free chlorine residual or other operational parameters such as pH, temperature on the CCP table, has potential to cause operational confusion.

ELEMENT 4: OPERATIONAL PROCEDURES AND PROCESS CONTROL

 ⁹⁸ 2.1 EL2 C2.1 S09-13 16 1.004 File note - Hunter Water Water Supply Zones - Simplified System Schematic 2015.pdf.
 ⁹⁹ 2.1.3 HW2015-1343 4.003 Letter - REQUEST FOR NSW HEALTH ENDORSMENT OF CCP CRITICAL LIMITS - 7 6 2016.pdf.

¹⁰⁰ ADWG, Version 3.2, Turbidity Fact sheet, p1000,

¹⁰¹ TRIM HW2015-1 343/4.001, Table 5.

¹⁰² 2.1 EL5 C5.3 HW2006-3430 36.058 Report - On-line Water Quality Performance at WTPs - June 2016.xlsm.

See evidence in Element 2 for existence of CCP tables and information. Documentation to support implementation of CCPs (including CCP tables and procedures ¹⁰³) was reviewed. Hunter Water liaised with NSW Health in terms of this recommendation and meeting minutes and letters were provided to demonstrate consideration and communication ¹⁰⁴.

O&M Manuals are referred to in the risk register. Documentation is split between Veolia and Hunter Water depending on the system component. Veolia's 'Ontap' document centre was reviewed at the site visit and manuals and other requested documentation could be easily found and retrieved.

Hunter Water's documents exist in 'Asset Operation Framework'¹⁰⁵ and work instructions within the 'OurSafety' intranet pages. Hunter Water also provides links to Veolia documentation¹⁰⁶. Veolia manuals¹⁰⁷ and Hunter Water work instructions were provided as evidence and were in date scope¹⁰⁸. Water quality protection measures are covered in the work instructions¹⁰⁹. The Drinking Water Quality Policy is not referenced as a reference document in the work instructions sighted.

O&M was discussed at the Tomago borefield (Station 17) site visit and procedures were requested by the asset team to support bore maintenance. Existence and location of Station 17 and the bores visited was confirmed later through Dekho (a GIS-viewing software tool).

A WTP Operating Manual update program is in place and evidence supports its implementation¹¹⁰. The completed Operating Manuals¹¹¹ reviewed detail the preventive measures in place including for the significant risks and CCPs. The other Operating Manuals will be produced according to the update program.

Catchment monitoring procedures are in place, which are implemented by Hunter Water's rangers¹¹². The catchment map matches with the surveillance schedule for Tomago Sandbeds¹¹³. Rangers hand out catchment and water quality awareness pamphlets¹¹⁴ as part of their work. A work instruction for catchment surveillance was sighted¹¹⁵. Drinking Water Quality Monitoring Plan is in place¹¹⁶. A system-wide Water Quality Monitoring Plan is in place¹¹⁶. A system-wide Water Quality Monitoring Plan is in place¹¹⁷. SCADA is used for overall system data monitoring and alarms including for CCPs. Corrective actions for CCPs are in place (see Element 2 evidence). Veolia reports monthly as part of its contract¹¹⁸. Section 3 of the monthly report covers water treatment plant compliance and also covers minor capital works' replacements e.g. Grahamstown Clarifier Condition Assessment¹¹⁹. All works are assigned a priority.

CCPs and limits were checked at the LTP WTP site visit. Further information is included in the Site Visit notes in this appendix.

Asset reliability is covered in the risk register and asset maintenance and work orders were reviewed in Ellipse. Information requested was retrievable and accurate.

¹⁰³ E.g. 2.1.3 HW2006-2906 7 5.013 Procedure - Establishing and Reviewing Critical Control Points.docx, for further evidence see Clause 2.1.1 to 2.1.3 including liaison with NSW Health for approval and endorsement. ¹⁰⁴ 2.1 2013-14-01 HW2006-1448 49 1.013 Minutes - Hunter Water NSW Health Liaison Committee Meeting - September 2015.docx; 2.1 2013-14-01 HW2006-1448 49 3.006 Minutes - Hunter Water NSW Health Liaison

Committee Meeting-March 2016.docx and footnote above.

¹⁰⁵ 2.1 EL4 C4.1 HW2015-1449 1 5.024 Presentation - Screenshot Asset Operation Intranet Page.

¹⁰⁶ 2.1 EL4 C4.1 HW2015-1449 1 5.027 Presentation - Screenshot Treatment Operations Contract Intranet Page.JPG.

¹⁰⁷ 2.1 EL4 C4.1 HW2014-1563 3 1.002 Procedure - Plant Operating Manual - Dungog WTP and Chichester Dam.pdf; 2.1 EL4 C4.1 HW2015-1449 1 5.063 Report - MN-HWT-20-7813 LTP Operations Manual.pdf.

¹⁰⁸ 2.1 EL4 C4.1 HW2013-421 6.096 Work Instruction - 001 - Working on Potable Water Mains and Fittings.docx TRIM: HW2013-421/6.096; 2.1 EL4 C4.1 HW2013-421 6.129 Work Instruction - 026 - Catchment General Surveillance.docx TRIM: HW2013-421/6.129.

¹⁰⁹ E.g. "Water Quality Controls – Minimise presence of water within excavated area to prevent potential ingress into the water main", p4, TRIM: HW2013-421/6.096.

¹¹⁰ 2.1 2013-14-05 HW2015-1159 1.018 Plan - Water Treatment Plant Operating Manual Update Program.xlsx.

¹¹¹ 2.1 2013-14-05 HW2014-1563 3 1.001 Procedure - Plant Operating Manual - Grahamstown WTP.PDF; 2.1 2013-14-05 HW2014-1563 3 1.002 Procedure - Plant Operating Manual - Dungog WTP and Chichester Dam.PDF.

^{112 2.1} EL4 C4.1 HW2007-2747 12 4.003 Schedule - Catchment Surveillance Program.xlsx. Includes all catchments including walking the Campvale Drain area.

¹¹³ 2.1 EL4 C4.1 HW2007-2747 12 9.001 Map - Catchment map_Tomago_Sandbeds_Labelled.pdf.

¹¹⁴ 2.1 EL4 C4.1 HW2015-1449 1 5.003 Email - CatchmentBrochure_april14.pdf.

¹¹⁵ 2.1 EL4 C4.1 HW2013-421 6.129 Work Instruction - 026 - Catchment General Surveillance.docx TRIM: HW2013-421/6.129.

¹¹⁶ 2.1 EL4 C4.1 HW2006-2906 2 6.006 Plan - Drinking Water Quality Monitoring Plan June 2016.doc.

¹¹⁷ 2.1.2 HW2006-2906 2 6.006 Plan - Water Quality Monitoring Plan June 2016.doc.

¹¹⁸ 2.1 EL4 C4.2 HW2015-1449 1 5.006 Report - MCR CS0341 May 2016 Monthly Contract Report.pdf, 1 May 2016 through 31 May 2016.

¹¹⁹ Table 2.3, p2.

Equipment calibration was reviewed for LTP WTP¹²⁰. A data sheet was provided with forms for records of calibration. Records of calibration were reviewed at the LTP WTP site visit. Notes to support this part of the element are covered in the Site Visit notes in this appendix.

Reservoirs are scheduled for inspections and evidence was provided to support this¹²¹. Treatment Operations Contract CS0341 is in place with Veolia to operate and maintain all drinking water treatment and wastewater treatment plants. Schedules and reporting requirements are in place for Veolia operations (see above). A service agreement is in place for laboratory services. Sampling schedules are in place for the plants including responsibilities for the samples e.g. Hunter Water vs Veolia¹²². Appropriate parameters appear to be tested for and samples appear to be taken at appropriate frequencies. Spelling errors were evident for some parameters in the sampling schedules e.g. Pesticides and Pesticides, but overall the schedule appeared sound and currency was confirmed at interview. It was confirmed at interview that radiological hazards are also analysed by ALS as part of its contract with Hunter Water.

Incidents and emergency corrective actions are managed through the corporate emergency responses and further detail is covered under Element 6. CCPs have associated response plans and further detail is covered in Element 3.

Hunter Water has Approved Products and Manufacturers' Registers¹²³. The standard AS 4020 is specified as a criterion to be met for materials in contact with drinking water¹²⁴. Veolia uses approved suppliers and follows a QA process for purchasing and receiving chemicals. Hunter Water uses a contractual process for the supply and delivery of bulk chemicals¹²⁵. Standards and Maximum Allowable Limits for use with drinking water are clearly stated¹²⁶. Procedures are in place for treatment chemical testing¹²⁷ such as validation of calcium hypochlorite tablets. Veolia work instructions were provided as evidence for ordering and receiving chemicals¹²⁸. Work instructions were assumed to be in date scope (28.05.2015) but did not have a review cycle attached. Veolia confirmed that documents have a standard review cycle of four years but may be reviewed earlier if required and depending on criticality.

ELEMENT 5: VERIFICATION OF DRINKING WATER QUALITY

A Water Quality Monitoring Plan (WQMP) is in place¹²⁹. Radiological hazards are included in the suite of parameters with frequencies in the WQMP being in line with ADWG recommendations and good practice (e.g. more frequent for groundwater vs surface water sources)¹³⁰. Sampling schedules are in place for the plants including responsibilities for the samples e.g. Hunter Water vs Veolia¹³¹. Based on audit sampling of the WQMP appropriate parameters are tested for and samples are taken at appropriate frequencies. Appropriate analytical agencies are used by Hunter Water e.g. ALS and AWQC, depending on the parameter. A Network Operations report for June 2016¹³² was provided as evidence of data analysis. Still some issues noted with chlorine residual maintenance around the Medowie area. Contract reports are also provided by Veolia, drinking water quality issues are covered in the report¹³³.



¹²⁰ 2.1 EL5 C5.3 HW2014-1579 2.002 Data - Lemon Tree Passage WTP.xlsb.

¹²¹ 2.1 EL4 C4.2 HW2015-1449 1 5.072 Procedure - Reservoir Inspection Program - Task Instructions.docx; 2.1 EL4 C4.2 HW2015-1449 1 5.073 Register - Reservoir Inspection Program - Adamstown Heights 3 Res - Maintenance Tasks.xlsx; 2.1 EL4 C4.2 HW2015-1449 1 5.074 Register - Reservoir Inspection Program - Adamstown Heights 3 Res - Work Order History 15-16.xlsx

¹²² 2.1 EL4 C4.1 HW2015-1449 1 5.026 Presentation - Screenshot Lab Contract Intranet Page.JPG; 2.1 EL4 C4.2 HW2015-1449 1 5.037 Schedule - REG-HWT-20-7176 Lab Schedule WTPs.xlsx EG-HWT-20-7176-1 19-09-2014.

¹²³ 2.1 EL4 C4.5 HW2015-1449 1 5.061 Presentation - Screenshot Approved Produces and Manufacturers Internet Page.JPG; <u>http://www.hunterwater.com.au/Building-and-Development/Approved-Designers-Suppliers-and-Contractors/Approved-Products-and-Manufacturers.aspx</u> checked 21 September 2016.

¹²⁴ http://www.hunterwater.com.au/Resources/Documents/Approved-Designers-Suppliers-Contractors/Approved-Products-and-Manufacturers/Guideline---Approved-Products--Manufacturers---Water-v3.0----May-2016.PDF, checked 21 September 2016.

¹²⁵ 2.1 EL4 C4.5 Agreement - Contract for Supply and Delivery of Bulk Chemicals - CS0525 IXOM.PDF, December 2015.

¹²⁶ E.g. CS0525, Section 2, p8.

¹²⁷ 2.1 EL4 C4.5 HW2012-1337 14 2.001 Procedure - Hypochlorite Tablet Validation.DOCX.

¹²⁸ 2.1 EL4 C4.5 HW2015-1449 1 5.043 Procedure - WI-HW-20-7842 Procurement procedures for ordering and receiving liquid polymer.docx 28.05.2015; 2.1 EL4 C4.5 HW2015-1449 1 5.044 Procedure - WI-HW-20-7841 Procurement procedures for ordering and receiving hydrated lime.docx 28.05.2015.

¹²⁹ 2.1 EL5 C5.1 HW2006-2906 2 6.006 Plan - Drinking Water Quality Monitoring Plan June 2016.doc.

¹³⁰ Table 3.1, p7.

¹³¹ 2.1 EL4 C4.1 HW2015-1449 1 5.026 Presentation - Screenshot Lab Contract Intranet Page.JPG; 2.1 EL4 C4.2 HW2015-1449 1 5.037 Schedule - REG-HWT-20-7176 Lab Schedule WTPs.xlsx EG-HWT-20-7176-1 19-09-2014.

¹³² 2.1 EL5 C5.2 HW2006-1417 27 8.009 Report - Network Operations Report - June 2016.DOCX.

¹³³ 2.1 EL5 C5.2 HW2015-1449 1 5.006 Report - MCR CS0341 May 2016 Monthly Contract Report.pdf, May 2016.

Consumer requests and management were also reviewed under the requirements for Section 5 of the Operating Licence, specifically in relation to clauses covering the Customer Contract, Procedure for Financial Hardship, Payment Difficulties, Water Flow Restriction and Disconnection and Internal Dispute Resolution Process. The processes in place were found to be sound. Staff are trained in fault responses with the service fault map¹³⁴ linking to water quality issues such as 'white water', 'chlorine' and 'dirty water'. Guideline responses are available for each complaint – chlorine¹³⁵ and air/white water were provided as evidence. Only the document relating to chlorine could be opened – the air/white water guideline¹³⁶ was password protected. The chlorine guideline document history needs updating, it appears that the document was reviewed 7/6/16 but the footer still says May 2012. A Veolia complaints' handling procedure¹³⁷ was provided as evidence. It is not clear how that document links with Hunter Water.

Monitoring for the North Karuah handover point compliance does not appear to be in the Water Quality Monitoring Plan¹³⁸.

Evidence for training for both Hunter Water and Veolia is also covered under Element 1. A competency assessment form¹³⁹ for customer service was checked at interview.

Short term evaluation of results is conducted through multiple avenues including daily review of monitoring results, operator field checks, water quality database and plant logs. Responsibility for data evaluation depends on the role, for instance, the Water Quality Committee reviews results on a monthly basis¹⁴⁰ while daily review of monitoring results is conducted by the Duty Operator. Cumulative water quality complaints in the distribution system and water quality compliance results are reported monthly to Hunter Water's Board. A quarterly report is provided to NSW Health for both drinking water and recycled water exceptions.

The Terms of Reference for the WQC do not state frequencies of review cycles for data. Consider adding data review cycles to the Terms of Reference.

A quarterly water quality report is supplied to NSW Health and evidence was provided to support this¹⁴¹. Water quality data are also analysed by Veolia and evidence for LTP WTP monthly data for June (1-30th, 2016) was provided. A C.t of 162.55 mg.min/L was noted and while high, was confirmed as being accurate.

ELEMENT 6: MANAGEMENT OF INCIDENTS AND EMERGENCIES

Key internal and external stakeholders that may be affected during incidents or emergencies are included in Hunter Water's Emergency Management Plan (EMP)¹⁴² with links included to the Emergency Response Communications Plan (ERCP)¹⁴³. The ERCP is out of date scope, and as it is dated August 2016 and Version 1, cannot be counted as continuing from the last audit period. The EMP¹⁴⁴ covers expected areas for emergency and incident management including incident levels (including water quality) and responses. The Trigger Guide (Section 5, p15) in the EMP refers the reader to Section 7 however, Section 6 appears to be the more appropriate Section. Drinking water and recycled water are both covered in the EMP. Given the review cycle of the EMP, it is possible that the stakeholder list may be out of date.

See notes in Element 1 for communication modes with NSW Health. Midcoast Water is included¹⁴⁵ as a stakeholder that might need to be notified but there is no contact information for that stakeholder¹⁴⁶.

¹⁴¹ HW2006-1448/41/7.009.



¹³⁴ 2.1 EL5 C5.2 HW2008-235 7.001 Guideline - Service Fault Map.pdf.

¹³⁵ 2.1 EL5 C5.2 HW2008-235 6.017 Guideline - Water Quality - Chlorine.doc; Version 3, 7/6/16.

¹³⁶ 2.1 EL5 C5.2 HW2008-235 6.016 Guideline - Water Quality - Air White doc (password protected – unable to be opened).

¹³⁷ 2.1 EL5 C5.2 HW2015-1449 1 5.036 Procedure - PR-ANZ⁻¹-413 Handling of Complaints Procedure.docx, PR-ANZ-1-413-2, 07.05.2012.

¹³⁸ 2.1.2 HW2006-2906 2 6.006 Plan - Water Quality Monitoring Plan June 2016.doc.

^{139 2.1} EL5 C5.2 HW2008-235 13.061 Form - Competency Assessment Record - Customer Service - Diana Necovski.pdf.

¹⁴⁰ 2.1 EL5 C5.3 HW2006-1417 15 16.001 Statement - Water Quality Committee Terms of Reference - March 2014.DOC

^{142 2.1} EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, HPRM Ref: HW2007-900/27/1.009, Version 5, December 2014 (review due December 2016); commencing Section 17.2, p40.

¹⁴³ 2.1 EL1 C1.3 HW2011-662 14 5.002 Emergency Response Communications Plan.docx.

^{144 2.1} EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, HPRM Ref: HW2007-900/27/1.009, Version 5, December 2014 (review due December 2016).

¹⁴⁵ 2.1 EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, Section 15.3, p32.

¹⁴⁶ 2.1 EL1 C1.3 HW2007-900271.009 Corporate Emergency Management Plan.docx, Section 17.2, p40

A list¹⁴⁷ of Veolia contacts exists as at August 2016. ALS (Mayfield West) laboratory contact details¹⁴⁸ were provided (filenote) for August 2016. Currency was confirmed as being correct for the audit date scope.

Criteria are set for notification to NSW Health and drinking water quality incidents are managed through a supporting procedure¹⁴⁹. The procedure is variously dated as 15.01.2014 and 04.01.2013 in the headers. It is not clear which date is correct. Not understanding which documents are current during a crisis can exacerbate the issue and lengthen corrective responses¹⁵⁰.

Scenario training is undertaken on a two-yearly basis.

Corrective actions are covered under Element 4. Veolia also has a Crisis Management Plan (CMP) in place¹⁵¹. The CMP review cycle notes that the document "*will be reviewed annually and updated (as required) by the Document Owner*" however, the document was dated 31.01.2014 and there was no evidence of review in the cycle stated.

A follow-up of incidents is undertaken as part of the process. Evidence was provided for a chlorine elevation at Grahamstown WTP and an incident debrief was provided for the 'Super Storm' of 2015¹⁵² which caused an East Coast Low (ECL). While outside of the audit date scope, and noting that large incidents do not always happen within an audit scope, the latter document provides evidence of procedure implementation. Further, the ECL event was supported by recommendations to improve outcomes for the future – evidence was provided in a filenote, for the audit date scope, demonstrating an on-going and follow-up process¹⁵³.

ELEMENT 7: EMPLOYEE AWARENESS AND TRAINING

Evidence was provided to show that all Hunter Water staff must undertake drinking water quality awareness training¹⁵⁴. The email was from the 2014-2015 period but still considered in scope (confirmed at interview).

A DWMS (drinking water management system) presentation was provided as evidence of training content¹⁵⁵. The presentation was comprehensive and meets the requirements of both the ADWG in general and the framework specifically. The pptx file was assumed to be for Veolia staff as it was in Veolia format. The content showed the linkage between Hunter Water and Veolia as a contractor including responsibility allocation i.e. that the Veolia systems are a subset of Hunter Water's overall DWMS and licence obligations.

Other training material was provided in Hunter Water format¹⁵⁶. The content of the material is appropriate but could benefit from referencing material that has been taken from other authors' presentations such as in the slides on pages 2, 3 and 26. Reference to the DW policy is included in the slides¹⁵⁷. The date of the material is 19/05/14 but confirmed as still current for the audit date scope.

A file of drinking water quality training completion¹⁵⁸ was provided as evidence but there are no dates against each attendee. Training completion has been undertaken by representatives from many divisions with Hunter Water as well as Veolia staff. Post-site interviews, evidence was provided showing those personnel who had attended training in 2015-2016¹⁵⁹.



¹⁴⁷ 2.1 EL1 C1.3 HW2015-1449 1 5.013 Data - Veolia Staff Contact Details Aug 2016.xlsx.

¹⁴⁸ 2.1 EL1 C1.3 HW2015-1449 1 5.015 File note - Lab Staff Contact Details Aug 2016.docx.

^{149 2.1} EL6 C6.2 HW2015-1449 1 5.038 Procedure - PR-ANZ-9-465 Incident Reporting Recording and Investigation Procedure.docx, PR-ANZ-9-465-2.

¹⁵⁰ https://lgnsw.org.au/files/imce-uploads/48/3.Elizabeth%20Knight.pdf

¹⁵¹ 2.1 EL5 C5.4 HW2015-1449 1 5.039 Procedure - PL-ANZ-9-382 Crisis Management Plan.docx, PL-ANZ-9-382-2 31.01.2014.

¹⁵² 2.1 EL6 C6.2 HW2006-1448491.012 Report - Hunter Water NSW Health Debrief April 2015 Super Storm.DOCX.

^{153 2.1} EL6 C6.2 HW2007-2747 10 16.001 File note - PRC Paper - Water Quality Impacts of East Coast Low Storm Event - April 2015(2). docx, 21 October 2015.

¹⁵⁴ Email from Group Manager People & Safety to all Hunter Water employees. 2.1 EL1 c1.1 HW2015-1303 10.008 Email - Email All Staff Mandatory WQ training 2014-15.pdf

¹⁵⁵ 2.1 EL1 C1.1 HW2015-1449 1 5.011 Presentation - DWQ_Management Training_FINAL.PPTX

^{156 2.1} EL1 C1.1 HW2015-1449 1 5.023 Presentation - Edmore Material - Drinking Water Quality Awareness Employees - August 2014.docx

¹⁵⁷ Slide on p10.

¹⁵⁸ 2.1 EL7 C7.1 HW2015-1449 1 5.017 Data - Edmore Water Quality Report_August 2016.xlsx.

¹⁵⁹ Drinking Water Quality Completed_2015 2016 FY.xlsm.

A quality induction set of slides was provided¹⁶⁰. The slides are in scope and clearly set out the importance of drinking and recycled water quality including focusing on the policies of each. Induction records and other training records were provided as evidence post the site interviews¹⁶¹.

Hunter Water position descriptions (PDs)¹⁶² were provided for a range of positions including Manager Treatment Operations, Team Leader Water Resource Planning and Water Quality Engineer, Treatment Operations. The PDs were in scope and clearly set out responsibilities in relation to drinking and recycled water including managing and interfacing with the treatment contractor (Veolia), managing water from catchment to tap and co-ordinating the implementation of Hunter Water's Drinking Water Quality Management System. Veolia's responsibility matrix was provided from the Operational Manager and Wastewater Treatment Manager. The matrix shows how drinking water and recycled water quality responsibilities are incorporated in key positions including Water Treatment Manager and Wastewater Treatment Manager. The matrix is in scope. All these processes support the requirement in the framework for compliance and understanding of responsibilities for drinking water quality management.

Hunter Water's laboratory services require NATA accreditation, which in turn requires trained staff. Evidence was provided to show training for one laboratory personnel¹⁶⁴. The record showed that competencies are checked. While there appeared to be a long time between checking of competencies, Hunter Water was able to confirm that staff members are audited by Hunter Water for competency¹⁶⁵.

ELEMENT 8: COMMUNITY INVOLVEMENT AND AWARENESS

Hunter Water uses a range of methods for communication including its website¹⁶⁶, social media (Twitter @HunterWater¹⁶⁷), rangers (for the catchment) and a Community Consultative Forum.

Rangers hand out catchment and water quality awareness pamphlets¹⁶⁸ as part of their work, which facilitates catchment education and communication.

The CCF meets thrice yearly – minutes for three meetings were provided as evidence (May 2016 and February 2016 were within scope)¹⁶⁹. A range of community representation¹⁷⁰ is included on the CCF.

Evidence provided for Recommendation 2013-14-01 supports communication with the raw water users with CTGM connections.

Evidence provided for Section 5 of the licence also supports communication.

Hunter Water has also undertaken wider education through a schools program in conjunction with the Local Land Services (Hunter)¹⁷¹ and an increase in catchment signage.¹⁷²

The auditor report¹⁷³ of Veolia's DWQMS/P noted that Element 8 was not considered as Veolia's responsibility:

"It was considered that these aspects of the ADWG were managed by Hunter Water."



¹⁶⁰ 2.1 EL1 C1.1 HW2015-130310.009 Presentation - Quality Induction Training_Employees.PPTX, July 2015 v1.

¹⁶¹ Data - Water Operator Training Register Aug 2016.xlsx, Email - Drinking Water Quality Preparedness 22 09 15 Session 1 QMS003.PDF, Form - Introduction TRIM 1 June 2016.PDF.

¹⁶² E.g. 2.1 EL1 C1.2 HW2015-1449 1 5.008 File note - Manager Treatment Operations.doc.

^{183 2.1} EL1 C1.1 HW2015-1449 1 5.062 Register - Veolia responsibility matrix.pdf, pp94-104, PL-HW-1-7100-3, 01.10.2015.

¹⁶⁴ 2.1 EL7 C7.2 HW2015-1449 1 5.016 Report - Lab Staff Training Record Example.pdf.

¹⁶⁵ Laboratory Services Contact CS0509 Inspections and Audit Checklist.

¹⁶⁶ http://hunterwater.com.au/Major-Projects/Project-Pages/Water-Quality-Improvement.aspx.

¹⁶⁷ https://twitter.com/HunterWater/status/743555417821716480.

¹⁶⁸ 2.1 EL4 C4.1 HW2015-1449 1 5.003 Email - CatchmentBrochure_april14.pdf.

¹⁶⁹ 2.1 EL8 C8.1 HW2015-1449 1 5.048 Minutes - Community Consultative Forum Minutes May16.pdf; 2.1 EL8 C8.1 HW2015-1449 1 5.049 Minutes - Community Consultative Forum Minutes Sep16.pdf; 2.1 EL8 C8.1 HW2015-1449 1 5.050 Minutes - Community Consultative Forum Minutes Sep16.pdf.

¹⁷⁰ E.g. Local Land Services, No Tillegra Dam Group and Newcastle Older Women's Network

^{171 2.1} EL8 C8.2 HW2013-1244 9.068 Agreement - 2015-16 Hunter Water Schools Education Program - PROJECT PLAN & AGREEMENT.pdf.

^{172 2.1} EL8 C8.2 HW2013-1457 1 10.003 Form - Handover to Assets - Drinking Water Catchment Signage project.docx, completion date of works: 15/04/16.

¹⁷³ 2.1 EL11 C11.2 HW2014-778 15 4.001 Report - 2015 Veolia DWQMS Audit Report V2.pdf

We do not agree with this position as Veolia has an important part to play in the community in which it operates. The Veolia DWQMP¹⁷⁴ does have a section on Element 8 and therefore, this section should have been audited as part of the audit undertaken by the external auditor for a full contractual compliance health check to have been completed.

ELEMENT 9: RESEARCH AND DEVELOPMENT

Hunter Water undertakes a range of activities which support the adequacy and implementation of this Element. Hunter Water provided its 4 year research and development (R&D) program (2013-2017¹⁷⁵) as evidence for part of this Element. Water Quality and Public Health are viewed as priority areas for the R&D program. In November 2015, Hunter Water commenced a Memorandum of Understanding¹⁷⁶ with Newcastle University lasting until 31 October 2018, demonstrating commitment to research and in particular, research of benefit to both parties. Hunter Water also requested funding for a project under Water Research Australia¹⁷⁷ for smart monitoring of microbial risk. The Project Register ¹⁷⁸ shows good evidence of implementation of the R&D program. One of Hunter Water's key programs with operational improvements is the Disinfection Optimisation Strategy - chlorine mapping information was reviewed elsewhere and now shows few 'cold spots' 179 of residual chlorine in the distribution network.

Hunter Water has undertaken a review of catchment protection measures for the Chichester Dam¹⁸⁰.

Hunter Water has a Design Validation Guideline¹⁸¹ document in place as part of the Asset Creation Framework. The version is dated 21/07/2016 which is outside the date scope but is assumed to have been developed within scope. The document is principles-based and can be easily applied to drinking or recycled water assets. Approved products and suppliers are also part of Hunter Water's approach to ensuring that the correct fixtures, fittings and services are used (see Element 4 for evidence and discussion).

The auditor report¹⁸² of Veolia's DWQMS/P noted that Element 9 was not considered as Veolia's responsibility:

"It was considered that these aspects of the ADWG were managed by Hunter Water."

We do not agree with this position as Veolia has a critical input to the validation of limits and process efficacy. Further, at interview it was confirmed that Veolia has an Innovations Committee, which looks at process improvements. The Veolia DWQMP¹⁸³ does have a section on Element 9 and therefore, this section should have been audited as part of the audit undertaken by the external auditor for a full contractual compliance health check to have been completed.

ELEMENT 10: DOCUMENTATION AND REPORTING

Hunter Water has a corporate approach to document control as does its contractor, Veolia. Evidence was supplied from both parties¹⁸⁴. Note, in external documents cited, ensure that documents are correctly referenced to avoid confusion e.g. Australian Guidelines for Recycled Water (as cited¹⁸⁵), should be Australian Guidelines for Water Recycling.

HW2015-1449 1 5.012 Procedure - PR-HW-1-7694 Records Management Procedure.docx; 2.1 EL10 C10.1 HW2015-1449 1 5.033 Procedure - PR-ANZ-1-439 Document Management Procedure.docx.



¹⁷⁴ 2.1.1 HW2014-778 15 2.001 Plan - Drinking Water Quality Management System - Veolia.pdf, p26.

¹⁷⁵ 2.1 EL9 C9.1 HW2009-1367 19.008 Plan - 2013-2017 R&D Plan.doc.

¹⁷⁶ 2.1 EL9 C9.1 HW2009-1367 25.011 Memorandum of Understanding - University of Newcastle and Hunter Water.pdf.

¹⁷⁷ 2.1 EL9 C9.1 HW2009-1367 11 6.003 Memo - WaterRA Smart Monitoring Project initiation letter to Hunter Water.pdf.

¹⁷⁸ 2.1 EL9 C9.1 HW2009-1367.030 File note - RD Projects Register 2009-2017.xls.

¹⁷⁹ 2.1 EL9 C9.2 HW2006-1417 27 9.007 Report - Network Operations Report - July 2016.docx.

^{180 2.1} EL9 C9.2 HW2012-635 4.009 File note - PRC Paper - Chichester Dam Sediment Tracing Study - August 2016.docx.

^{181 2.1} EL9 C9.3 HW2007-2744 5.082 Guideline - QG052 Design Validation Guideline (in Integrum) - CURRENT.docx.

^{182 2.1} EL11 C11.2 HW2014-778 15 4.001 Report - 2015 Veolia DWQMS Audit Report V2.pdf

¹⁸³ 2.1.1 HW2014-778 15 2.001 Plan - Drinking Water Quality Management System - Veolia.pdf, p26.

^{184 2.1} EL10 C10.1 HW2012-441 9 1.002 Procedure - Manage Document Control - CURRENT.docx: 2.1 EL10 C10.1 HW2013-421 22.002 Standard - Corporate Document Control - CURRENT.docx: 2.1 EL10 C10.1

^{185 2.1} EL10 C10.1 HW2012-441 9 1.002 Procedure - Manage Document Control - CURRENT.docx, Section 9, p8.

Documents and records are managed through TRIM (HP Records Manager). Laboratory records are managed by ALS through LabWare software and data are provided to Hunter Water for input into LabData in which data can be stored and analysed.

Staff are trained in HPRM use and records management. Evidence was sighted at interview¹⁸⁶ and confirmed that training of HPRM use was in place¹⁸⁷. Further, during the file searches requested in the interviews, we confirmed that staff could easily locate and retrieve information on request, demonstrating sound TRIM competency in practice.

Water quality reports are provided to the Board and regulators¹⁸⁸ as detailed under Element 5 and Element 6. Evidence to show how Hunter Water reports to the community is provided and discussed under Element 8. A Compliance Calendar is used to track reporting requirements (see Element 1). CCP reporting is undertaken through Veolia and through the Water Quality Committee (evidence reviewed under other elements). Water quality is embedded in Hunter Water's corporate ERM approach (see Element 2) and reported to the Board and Executive Management Team in Quarterly Strategic Risk Update reports¹⁸⁹. Reporting on incidents is covered under Element 6. Hunter Water produces an Annual Report as part of its licence obligations.

ELEMENT 11: EVALUATION AND AUDIT

See Element 2 for discussion of how water quality data are collated and analysed to feed into the risk assessment process. The Water Quality Committee reviews water quality data on a monthly basis. See Element 3 and Element 4 for further information of data evaluation outcomes. Formal procedures are in place for internal audit ¹⁹⁰. Veolia has undertaken an external audit of its drinking water management system in the audit period (September 2015) as required in the contract with Hunter Water – there were some minor findings of non-compliance ¹⁹¹. However, while flow diagrams were included in the audit, the auditor did not express an opinion on flow diagram compliance. Further, certain elements of the Framework were 'considered' to be Hunter Water's responsibility (Element 5, 8 and 9) therefore it is not clear how Veolia can be considered to yet be Framework-compliant as required by the Hunter Water/Veolia contract.

An ALS audit report was provided ¹⁹² as evidence of internal audit for that body. The report provides recommendations for changes.

Hunter Water has an audit schedule in place¹⁹³ and implemented including requirements for drinking and recycled water. The schedule covers both the ADWG and AGWR by element and component, as well as the ALS and Veolia contracts (by both ADWG and AGWR).

ELEMENT 12: REVIEW AND CONTINUAL IMPROVEMENT

Hunter Water has a number of approaches to demonstrate compliance with the senior executive management review and action on findings, of its drinking water management system. Examples include the management system review report¹⁹⁴ and standing agenda items on water quality committee and water planning monthly reports¹⁹⁵.

Hunter Water has a Drinking Water Quality Improvement Plan in place and evidence was provided to show implementation of actions. See notes in Element 2 for more information.



¹⁸⁶ Training evidence sighted under QMS training – SOP on setting up TRIM folders HW2008-2500.006. Asset Creation requirements were also demonstrated at interview as well as demonstration of the TRIM workspace.
¹⁸⁷ Also viewed Screenshot - Managing Document Control.docx, Screenshot - TRIM Sensitive Information Processes.docx, Screenshot - TRIM Training Intranet Page.docx.
Screenshot - TRIM User Guides.docx

¹⁸⁸ E.g. exception reporting: Report - Quarterly to NSW Health - Drinking Water and Recycled Water Quality Exceptions - April to June 2016.DOC.

¹⁸⁹ 2.1 EL10 C10.2 HW2013-830 7.011 Report - EMT Paper - Corporate Risk Profile & Treatment Plan - 6 June 2016.docx includes "Non-compliance with agreed water quality standards" as one of the strategic risks at Appendix A.

¹⁹⁰2.1 EL11 C11.2 HW2013-421 11.002 Procedure - Conduct Management System Internal Audit - CURRENT.docx.

¹⁹¹ 2.1 EL11 C11.2 HW2014-778 15 4.001 Report - 2015 Veolia DWQMS Audit Report V2.pdf.

¹⁹² 2.1 EL11 C11.2 HW2015-1449 1 5.052 Report - Audit Records July 16.pdf.

¹⁹³ Triennial Internal Quality Audit Program: 2015-2018 (HW2013-421/9.008).

¹⁹⁴ 2.1 EL12 C12.1 HW2013-1447 2.014 Report - Management System Review Meeting May 2016 (pre-reading for EMT) docx

¹⁹⁵ 2.1 EL12 C12.1 HW2006-1417 27 8.002 Ågenda - July 2016 Water Quality Committee Meeting.docx; 2.1 EL12 C12.1 HW2006-1417 27 8.015 Minutes - July 2016 Water Quality Committee Meeting.docx; 2.1 EL12 C12.1 HW2012-1302 3.046 Report - Water Planning Monthly Report - Jul 2016.docx.

Recommendation	ns
2015-2016 2.1.1 EL2 R-1	 Review all risk conceptual system process flow diagrams including: Step by step review of all process steps.
	 Identification of all inputs (e.g. fluoride, filter backwash water, filter backwash return etc.).
	 Identification of monitoring points (operational and CCP).
	 Identification of key characteristics (e.g. filter backwash return quality and flow limits).
	 Identification of governance handover points between parties where applicable (e.g. between Hunter Water and Veolia and between Hunter Water and Midcoast Water).
	 Identification of raw water customers.
	Ensure that each conceptual flow diagram matches the SCADA diagram.
	Ensure that each conceptual flow diagram and SCADA diagram is signed off by someone with appropriate authority to do so.
	Ensure that each diagram has associated version history and review cycle information.
2015-2016 2.1.1 EL2 R-2	Use the revised flow diagrams to revise the risk assessments.
2015-2016 2.1.1 EL2 R-3	 Using an independent, Exemplar Global qualified Drinking Water Management System Lead Auditor, undertake an external audit of Veolia's DWQMP with a specific focus on Element 2, Element 5, Element 8 and Element 9.
2015-2016 2.1.2	Review and revise documentation associated with the emergency management process including:
EL6 R-1	 Update of Veolia's Crisis Management Plan (CMP). The CMP review cycle notes that the document "will be reviewed annually and update required) by the Document Owner" however, the document was dated 31.01.2014 and there was no evidence of review in the cycle stated
	 Review and revise cross-referencing in the Hunter Water Emergency Management Plan.
	Veolia's Incident Recording and Reporting procedure should be checked for currency across all document history fields (the procedure is vari dated as 15.01.2014 and 04.01.2013 in the headers).
Opportunities for	· improvement



OFI DWQ E1-1 Review the 'MidCoast Water Agreement to Provide Water and Sewerage Services' to check alignment with current Australian Drinking Water Guidelines (the 1996 version is currently stated) OFI DWQ E2-1 Ensure that Midcoast Water is added to the Water Quality Committee Terms of Reference. OFI DWQ E2-2 At LTP, consider labelling the flow meter at the handover point between Hunter Water and Veolia, as a Hunter Water asset, to improve governance visibility and understanding. OFI DWQ E3-1 Consider labelling all CCPs where they occur (such as the labelling undertaken for the EPL monitoring points) on site e.g. filter beds, chlorine disinfection or CCP instrumentation etc. We have seen this approach taken at other sites we have audited and it improves operator understanding and visibility. OFI DWQ E3-2 Consider the worthiness of having the CCP table for that CCP only, in place at its physical location, for example like having the SDSs in place where those chemicals are used. Undertake a review of all SDSs to ensure that chemicals are confirmed as appropriate for use in drinking water treatment. OFI DWQ E4-1 OFI DWQ E4-2 Ensure that operator initials are always added to the 'Done' column on calibration checklists to provide a record of who conducted the task. OFI DWQ E4-3 To facilitate further embedding of water quality protection, ensure that the Water Quality Policy is referenced in the work instructions as a key instrument guiding water quality protection at Hunter Water. OFI DWQ E5-1 The Terms of Reference for the Water Quality Committee do not state frequencies of review cycles for data. Consider adding data review cycles to the Terms of Reference. OFI DWQ E5-2 Review and formalize the approach around water quality monitoring (including the sharing of information) for the North Karuah handover point between Hunter Water and Midcoast Water. OFI DWQ E5-3 Version 2 of the ADWG not the current Version (3.2, 2016 update) is referenced in the System-wide Water Quality Monitoring Plan. Changes to the ADWG monitoring section have been undertaken including more focus on types of monitoring such as validation. It was confirmed at interview that NSW Health had signed off on Version 2 of the ADWG for the 2014-2017 monitoring plan period. However, because the plan is subject to rolling review, the plan should be reviewed for consistency with the current version of ADWG to ensure that any changes or guidance on monitoring types is covered in the plan. OFI DWQ E6-1 Ensure that Midcoast Water and contact details are included as a stakeholder in the Emergency Management Plan. OFI DWQ E6-2 Ensure that the Trigger Guide (Section 5, p15) in the Emergency Management Plan is reviewed as it currently refers the reader to Section 7 however, Section 6 appears to be the more appropriate Section.

Appendix A2 – Recycled Water Quality

 Table A2.1: Recycled Water (Clause 2.2)

Sub-clause	Requirement		Comp	liance grade
(2) Water Quality (2.2) Recycled Water (Clauses 2.2.1, 2.2.2 & 2.2.3)	that applies to Hunter Water, the Australian Guid NSW Health, (Recycled Water Quality Management System [Note: It is generally expected that Hunter Water Guidelines for Water Recycling, including the Re Health considers it appropriate, the application of	; or ddition to the Australian Guidelines for Water Recycling delines for Water Recycling as amended or added to by	HIGH	COMPLIANCE
	Clause 2.2.2: Hunter Water must ensure that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the system, including to the satisfaction of NSW Health.		ADEQUATE COMPLIANCE	
	Clause 2.2.3: Hunter Water must notify IPART and NSW Healt the Recycled Water Quality Management Syster	th of any significant changes that it proposes to make to m in accordance with the Reporting Manual.	NO RE	QUIREMENT
Risk		Target for full compliance		
	ent can be placed at risk if recycled water that is nd/or used for the wrong purpose.	Systems and processes in place to identify the requireme Guidelines for Water Recycling (assumed to also include <i>Management of Recycled Water Quality and Use</i>), in Hun their implementation in practice across the overall source chain (depending on properly identified responsibilities an components). Evidence to demonstrate reporting on signi NSW Health.	the <i>Framew</i> iter Water's to enduse/end accountable	rork for context, and endpoint supply pilities for system

A-30

Evidence sighted

- Interviews with recycled water quality team members 28 September 2016:
 - Team Leader Recycled Water Compliance
- Business Compliance Coordinator
- Quality Manager
- Biosolids, Residuals and Reuse Officer (Veolia)
- Manager Systems Reporting Risk and Compliance (Veolia)
- Cadet Engineer, Technical Team (Veolia)
- Site visit 27 September 2016
- 2.2.1 Corporate Recycled Water Quality Management Plan DRAFT.docx
- 2.2.1 PR-HW-9-7123 Incident and Emergency Response Procedure.docx
- 2.2.1 Recycled Water Quality Monitoring Plan CURRENT.DOCX
- 2.2.1 Email Karuah WWTW RWQMP CCPs.pdf
- 2.2.1 Karuah Operating Manual MN-HWW-20-7810.pdf
- 2.2.1 Karuah RWQMP Veolia.docx
- 2.2.1 Karuah WWTW Sample Schedule 9 Hunter Water External Laboratory Analysis.xlsx
- 2.2.1 Karuah WWTW Recycled Water Quality Management Plan.docx
- 2.2.1 Policy Recycled_Water_Policy_Website_Version 2014.PDF
- 2.2.1 Procedure Recycled Water Quality Incident Response CURRENT.DOC
- 2.2.1 Recycled Water Awareness Training Records.PDF
- 2.2.1 Recycled Water Training.pptx
- 2.2.1 REF-HWW-24-7487 Karuah WWTW Sampling Calendar.xlsx
- 2.2.1 REF-HWW-24-7623 Karuah WWTW Sampling Guide Sheet.docx
- 2.2.1 Register Recycled Water Improvement Plan.XLSX
- 2.2.1 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2.1 Report Karuah WWTW risk workshop summary.DOC
- 2.2.1 Training Matrix for WWT.pdf
- 2.2.1- Karuah WWTW risk assessment.XLSM



- 2.2.2 Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2.2 Wastewater Treatment Performance.docx
- 2.2.2 Email and attachment micro exceedences.pdf
- 2.2.2 Incident Register (Summary of Karuah and Boulder Bay WWTW).DOCX
- 2.2.2 Incident Register (Summary of Karuah and Boulder Bay WWTW).xlsx
- 2.2.2 Internal audit report Branxton RW.docx
- 2.2.2 Internal audit report Cessnock RW.docx
- 2.2.2 Recycled water operational committee meeting agenda and minutes.pdf
- 2.2.2 Register Recycled Water Improvement Plan.XLSX
- 2.2.2 Report Karuah site audit 30 6 16.XLSX
- 2.2.2 Veolia Document Control and Access for Operators.docx
- Element 1:
 - 2.2 E1 C1.1 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
 - 2.2 E1 C1.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
 - 2.2 E1 C1.3 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
 - 2.2 E1 C1.4 Policy Recycled_Water_Policy_Website_Version 2014.PDF

Element 2:

- 2.2 E2 C2.1 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E2 C2.1 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2 E2 C2.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E2 C2.2 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2 E2 C2.3 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E2 C2.3 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2 E2 C2.4 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E2 C2.4 Report Karuah WWTW risk assessment briefing paper.DOC

Element 3:

- 2.2 E3 C3.1 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E3 C3.1 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2 E3 C3.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E3 C3.2 Standard Establishment and Review of Recycled Water CCPs CURRENT.DOCX
- Element 4:
 - 2.2 E4 C4.1 Email C4.1 Karuah WWTW RWQMP CCPs.pdf
- 2.2 E4 C4.1 Standard Recycled Water Quality Monitoring and Communication CURRENT.DOCX



- 2.2 E4 C4.2 Karuah Operating Manual MN-HWW-20-7810.PDF
- 2.2 E4 C4.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E4 C4.3 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E4 C4.3 Standard Recycled Water Quality Monitoring and Communication CURRENT.DOCX
- 2.2 E4 C4.4 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E4 C4.4 Standard Recycled Water Asset Construction and Maintenance CURRENT.DOCX
- 2.2 E4 C4.5 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX

Element 5:

- 2.2 E5 C5.1 Karuah WWTW Sample Schedule 9 Hunter Water External Lab Analysis.XLSX
- 2.2 E5 C5.1 RWQ Monitoring Plan.DOCX
- 2.2 E5 C5.2 Karuah site audit 30 6 16.XLSX
- 2.2 E5 C5.3 Plan Recycled Water Quality Monitoring Plan CURRENT.DOCX
- 2.2 E5 C5.4 Karuah site audit 30 6 16.XLSX
- 2.2 E5 C5.5 RWQ Monitoring and Communication.DOCX
- 2.2 E5 C5.6 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E5 C5.6 Procedure Recycled Water Quality Incident Response CURRENT.DOC
- 2.2 E5 C5.6 RWQ Monitoring and Communications.DOCX

Element 6:

- 2.2 E6 C6.1 Email C6.1 MN-HW-9-7101 I&EM Manual (Comms Procedure).docx
- 2.2 E6 C6.1 Plan Corporate_EM_Plan_Dec14_V5.DOCX
- 2.2 E6 C6.1 Procedure Recycled Water Quality Incident Response CURRENT.DOC
- 2.2 E6 C6.2 Procedure Recycled Water Quality Incident Response CURRENT.DOC

Element 7:

- 2.2 E7 C7.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX
- 2.2 E7 C7.2 Recycled Water Awareness Training Records.PDF
- 2.2 E7 C7.2 Recycled Water Training.PPTX
- 2.2 E7 C7.2 Training Matrix for WWT.PDF

Element 8:

- No specific evidence was provided for Element 8 or notes provided in the questionnaire.
- Evidence for this section was taken from that provided in other components of the audit.

Element 9:

- 2.2 E9 C9.1 Plan WWTW Recycled Water Existing Schemes Validation Program DRAFT.DOCX
- 2.2 E9 C9.2 Plan Karuah WWTW Recycled Water Quality Management Plan DRAFT.DOCX

Element 10:

- 2.2 E10 C10.1 Evidence of TRIM Location.docx
- 2.2 E10 C10.2 Standard Recycled Water Reporting and Review Requirements (Internal and External) CURRENT.DOCX



Element 11:

- 2.2 E11 C11.1 Report Karuah WWTW risk assessment briefing paper.DOC
- 2.2 E11 C11.2 Procedure IMS Management Review Meeting CURRENT.DOCX
- 2.2 E11 C11.2 Register 2018 Internal Audit Schedule.xlsx

Element 12:

- 2.2 E12 C12.1 Procedure IMS Management Review Meeting CURRENT.DOCX
- 2.2 E12 C12.2 Register Recycled Water Improvement Plan.XLSX

Post interview evidence:

- Checklist Handover of Assets to System Operations Form Karuah UV dis....docx
- Contract with Sanders and Assoc Karuah Reuse.PDF
- CP289806 B Technical Specification Karuah_Final.pdf
- Risk Edge to Hunter Water Clarification #1 041016.pdf
- Extract TAK validation report 2009.pdf
- FM-HW-16-7612 Agenda_Meeting Minutes KERE-CERE 10616.docx
- Generic Veolia Induction Kris Doyle and Ian Bowie.pdf
- Hunter Water-PIRMP-KaruahWWTW.pdf
- Staff member Site Specific Induction.pdf
- RW Policy at Karuah WWTW Control Room.JPG
- Screenshot CCP.docx
- Screenshot RW Karuah Wind monitor (SCADA flow diagram).docx
- Screenshot UVT.docx
- Veolia Portal Screenshots RW.docx
- Working Paper Karuah WWTW risk assessment.XLSM
- Karuah Bore and Soil Monitoring.xlsx
- Karuah Soil Sampling Event 12 October 2016.pdf
- Report Environmental Internal Audit Compliance Audit Karuah Effluent Reuse Enterprise September 2015.DOCX

Summary of reasons for grade

Hunter Water has developed a Recycled Water Quality Management System (RWQMS) based on the Framework for Management of Recycled Water Quality and Use within the Australian Guidelines for Water Recycling 2006 (AGWR). Sitting under the RWQMS are site-specific and an overarching Corporate Recycled Water Quality Management Plans (RWQMP/s). Some compliance gaps in adequacy and implementation were noted which include the risk assessment (not being completed by flow diagram component by component, missing key preventive measures etc.), CCPs (accuracy of CCP tables and validation of limits, particularly for helminth controls) and the Recycled Water Management Improvement Plan (close out of improvements in particular). Hunter Water did not formally report the installation of the new UV validated unit at Karuah to NSW Health although it was suggested in the Karuah RWQMP. The unit change is not a like for like' replacement but it is a validated system replacing a non-validated system. This licence area is considered in high compliance for Clause 2.2.1 and adequate compliance for Clause 2.2.2.



Discussion and notes

Hunter Water:

(Clause 2.2.1)

Hunter Water has developed a Recycled Water Quality Management System (RWQMS) based on the Framework for Management of Recycled Water Quality and Use within the Australian Guidelines for Water Recycling 2006 (AGWR). Sitting under the RWQMS are site-specific and an overarching Corporate Recycled Water Quality Management Plans (RWQMP/s). Hunter Water notes that it has been liaising with NSW Health throughout the development process. We verified with NSW Health (Hunter New England Region¹⁹⁶) that liaison had occurred and NSW Health confirmed that RWQMPs were handed to NSW Health by the end of the 2016 financial year. Hunter Water notes that NSW Health is in the process of 'endorsing' the RWQMPs however as per the note in the drinking water section, NSW Health does not have authority to 'endorse', however, it will review and make a statement of its 'satisfaction' with process and contents. There has been no further requirement from NSW Health, other than the AGWR obligations. The RWQMPs include information on supporting requirements including incident management, risk assessments and recycled water quality reporting requirements (see below under each element for more detail). In addition, Veolia is contracted to manage the wastewater treatment works (WWTWs) and recycled water components and has developed its own site-specific RWQMPs¹⁹⁷ and WWTW Operational Manuals. Further information to support the adequacy requirements of this clause are provided under each element below.

(Clause 2.2.2)

As noted above and confirmed with NSW Health, NSW Health has been consulted with and involved in the development of the RWQMPs. Further information to support the implementation requirements of this clause are provided under each element below.

The auditor has assessed the conditions for this clause by reviewing each of the requirements of the Framework elements against Hunter Water's interpretation and implementation. The results are noted below with specific emphasis on Karuah and the KERE.

(Clause 2.2.3)

It is a requirement that Hunter Water notifies NSW Health of RWQMS significant changes. Hunter Water stated that there were no significant changes within the audit period and this was confirmed at interview. However, a validated UV system was installed at Karuah during the audit date scope.

ELEMENT 1: COMMITMENT TO RESPONSIBLE USE AND MANAGEMENT OF RECYCLED WATER QUALITY

Hunter Water has a corporate RWQMS (Corporate RWQMP¹⁹⁸) in place as well as individual RWQMPs (see notes for Clause 2.2.1). Details of the overarching internal Hunter Water stakeholders' relevant roles and responsibilities are listed in Table 1-1 of the Corporate RWQMP and external stakeholders in Table 1-2 of that document. Scheme specific stakeholders are listed in the individual RWQMPs¹⁹⁹. Stakeholders listed and involved are appropriate. Roles and responsibilities are clearly listed and appropriate.



¹⁹⁶ Teleconference, 22 September 2016.

¹⁹⁷ E.g. 2.2.1 Karuah WWTW Recycled Water Quality Management Plan.docx, PL-HWW-20-8306-1, 30.09.2015.

¹⁹⁸ 2.2.1 - Corporate Recycled Water Quality Management Plan - DRAFT.docx.

¹⁹⁹ E.g. 2.2 E1 C1.1 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Section 1.3, which identifies particular stakeholders, and Section 2.2 which details involvement in the risk assessment process.

The appropriate regulatory and formal requirements are generally listed in both the Corporate RWQMP²⁰⁰ and the scheme-specific RWQMP²⁰¹ however, the following are missing or perhaps erroneously included:

Competition and Consumer Act 2010 and Protection of the Environment Legislation Amendment Act 2011 (NSW) in the Corporate RWQMP.

Pollution Incident Response Management Plan (PIRMP) in the Karuah RWQMP.

Reference to the Occupational Health and Safety Act 2000 (NSW) in the Corporate RWQMP (it is understood that this Act is now repealed).

Hunter Water notes that communication of legal and formal requirements is undertaken through the intranet and internet and that a review of the formal requirements is undertaken on exception or as the review cycle of the RWQMP is due.

Agencies are identified in the Corporate and scheme-specific RWQMPs as is how they are engaged. For instance, it is clear that the KERE contractor²⁰² was involved in the risk assessment process for the KERE scheme. NSW Health is reviewing the draft RWQMPs. Recycled water customers and contractors are engaged through formal contracts²⁰³ and roles and responsibilities are outlined (see comments above).

A Recycled Water Policy²⁰⁴ is in place, approved by the Managing Director and is in scope.

Veolia has its own Water Quality Policy which incorporates drinking and recycled water²⁰⁵. The policy is in scope and signed by the Managing Director/CEO Veolia Australia and New Zealand. The policy was visible at the Karuah WWTW control room²⁰⁶.

ELEMENT 2: ASSESSMENT OF THE RECYCLED WATER SYSTEM

Sources of water for each scheme are considered in the scheme-specific RWQMPs²⁰⁷. The scheme-specific description is sufficient to allow potential source water contaminants to be understood and clearly outlines information on end uses, exposure pathways, process train and potential recycled water misuses.

A risk assessment briefing paper shows how the system information was collated and used to help guide the risk assessment process including definition of potential and actual log reduction values based on treatment and non-treatment barriers²⁰⁸ and clear linkages to appropriate guidance in the AGWR²⁰⁹.

The scheme-specific RWQMP²¹⁰ details the individuals involved in the risk assessment. As noted in Element 1, these personnel are appropriate. Veolia was not involved in the original risk assessment for Karuah conducted in 2014 as it was not the contractor the wastewater/recycled water components at that time, therefore the team details' information in the Karuah RWQMP is correct for the audit date scope.

Flow diagrams of all systems are included in the scheme-specific RWQMPs. Flow diagrams are generally compliant and well-constructed. We reviewed the flow diagram at the Karuah site visit and did not identify any discrepancies for Figure 2-3 of the Karuah RWQMP. Some components were missing from the simplified diagram (Figure 2-1) developed for the purposes of communication in the risk assessment, which could lead to confusion. Further, the effluent storage dam on the flow diagram was



²⁰⁰ Table 1-3.

²⁰¹ 2.2 E1 C1.2 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX. Table 1-1.

²⁰² 2.2 E1 C1.2 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Table 2-3.

²⁰³ E.g. Contract between Hunter Water and Veolia (noted in Drinking Water Section) and contract between Hunter Water and the KERE contractor (salient points noted at Section 1.2 of the Karuah RWQMP, p9).

²⁰⁴ 2.2 E1 C1.4 Policy - Recycled_Water_Policy_Website_Version 2014.PDF, Version 2, next review due 1 March 2017.

²⁰⁵ 2.2.1 Karuah WWTW Recycled Water Quality Management Plan.docx. Appendix 1, 48.

²⁰⁶ RW Policy at Karuah WWTW Control Room.JPG.

²⁰⁷ E.g. Karuah RWQMP, Section 2.1, Table 2-1, p13.

²⁰⁸ 2.2 E2 C2.1 Report - Karuah WWTW risk assessment briefing paper.DOC, e.g. Section 2.4, p11.

²⁰⁹ 2.2 E2 C2.1 Report - Karuah WWTW risk assessment briefing paper DOC, e.g. Section 2.5, p11.

²¹⁰ 2.2 E2 C2.2 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Table 2-3, p15.

variously referenced as a 'maturation pond' in other parts of the document, which again could lead to confusion in terminology and risk identification (especially where log₁₀ reduction credits are being claimed for a particular process step). While the flow diagram at Figure 2-3 of the Karuah RWQMP was considered comprehensive, it had not been signed off by a person in authority and there was no version control information on the diagram. The diagram also implied that the 'tankered sewage' component was currently in operation but at the site visit, it was confirmed to be not yet in operation.

Recycled water and other relevant process quality information is detailed in the scheme-specific risk assessment briefing paper.²¹¹ The analysis is appropriate and adequate including comparison with AGWR water quality requirements²¹². However, in the scheme-specific RWQMP for Karuah, water quality was confused with that reviewed for Dungog:

"These guidelines have been considered in developing the water quality objectives applied to the Dungog recycled water scheme."213

Risk methodology chosen for the risk assessment workshops was based on the corporate approach (see Element 2, Drinking Water section for more information). The methodology is appropriate and adequate. An independent facilitator was used to conduct the risk assessment workshops. Risk assessment details are included in the scheme-specific risk workshop summary papers and RWQMPs. We note however that we were only provided with a briefing paper for the Karuah scheme and in the risk summary section of the Karuah RWQMP, that the risks are currently out of date for the audit date scope. Given the date the risk assessment was completed²¹⁴ and the RWQMP developed – the risks in the RWQMP summary section should have been updated given that the RWQMPs were submitted to NSW Health at the end of June 2016 e.g.:

UV disinfection system:

- *Risk:* Loss of UV disinfection from the WWTW and the current UV system is not validated.
- Action: Replace the current UV system (current action) and ensure that the replacement UV system is validated.²¹⁵

The UV system was replaced with a validated system²¹⁶ within the audit date scope (confirmed at interview as November 2015) and therefore this risk should have been updated or a note added that the action had been completed.

Helminths:

- Risk: The required hydraulic lagoon residence in the maturation pond time wasn't validated and assured and there was no filtration system.
- Action: This risk will be discussed with Department of Primary Industries. It may be necessary to set a minimum trigger level on pond depth, flow rate and/or sludge level.²¹⁷

The flow diagram does not include a maturation pond (as noted above), it has a 'storage dam' as one of the process steps. It was confirmed at interview that DPI had been approached but had not responded. However, considering that the KERE scheme is active, the action to consult with DPI should have high priority and should have been followed up and completed before now, especially as the effluent storage dam is identified as a CCP for helminths in the RWQMP²¹⁸. Further, in the risk register,



²¹¹ 2.2 E2 C2.2 Report - Karuah WWTW risk assessment briefing paper.DOC, Section 2.3, p10.

²¹² 2.2 E2 C2.2 Report - Karuah WWTW risk assessment briefing paper DOC, Section 2.3, Table 2-3, p10.

²¹³ 2.2 E2 C2.3 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Section 2.3.1, p20.

²¹⁴ 11 April 2014.

²¹⁵ 2.2 E2 C2.3 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Section 2.4.2, p23.

²¹⁶ CP289806 B Technical Specification Karuah_Final.pdf – contains specifications for the UV system at B11.1.3, p31; A validation certificate was provided for the UV unit (Extract TAK validation report 2009.pdf)

²¹⁷ 2.2 E2 C2.3 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Section 2.4.2, p24.

²¹⁸ 2.2 E2 C2.3 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Table 4-1, p30.

the residual risk score for 'Helminth transfer to stock (KAR26²¹⁹)' was reduced to 'Medium' from 'High' (inherent risk). Given that the residence time in the effluent storage lagoon has not yet been validated and that it is acknowledged that short circuiting could occur, the residual risk should still be 'High' to flag the importance of this event.

It was possible to construe from the Karuah RWQMP that risks had been considered from source to end user²²⁰. The Karuah scheme risk register²²¹ was also reviewed as evidence and confirmed that the 'WWTW' and 'Farm' had been considered separately, and therefore broadly met 'source to end user' assessment. The Framework requires components within the WWTW to be considered separately²²². In the risk register, WWTW process components are grouped. Grouping process steps/components can result in risks being missed. There is also confusion between the 'WWTW' and 'Farm' events as storage lagoons seem to have been covered twice. Further, from the flow diagram and as confirmed at the site visit, there is only one storage lagoon and it is not the *customer's* lagoon as implied by the risk register:

"KAR24 End use - storage Dams Algal bloom on customers pond [our emphasis], leading to health or environmental impacts"

The time allocated for the risk assessment process from source to end user was only two hours, normally risk workshops for a whole scheme take a full day, usually including a site verification of the flow diagram.

Veolia's Karuah RWQMP²²³ was confirmed to integrate with Hunter Water's RWQMP.

ELEMENT 3: PREVENTIVE MEASURES FOR RECYCLED WATER MANAGEMENT

See comments above relating to the Karuah risk register. The register is in existence, details significant hazards and risks, preventive measures and residual risks. There is some confusion over the process components from source to end user. The significant risks miss the importance of the helminth issue i.e. that the residual risk is reduced to 'Medium' although the residence time is not yet validated and short circuiting may be occurring. In terms of 'whole of system' risks – 'lack of trained operators or failure of operating staff resulting in system errors' and 'materials and chemicals' risks are not covered. UV lamp stocks are not considered as a control for the UV failure, it is also not clear whether the unit in place at the time was 'self-cleaning' or required manual cleaning. These controls should have been itemized.

A Recycled Water Improvement Plan²²⁴ is in place with columns for the WWTW, the scheme, action, responsibility, date evidence etc. There are many actions that were overdue for completion within the audit date scope.

CCP tables are included in the individual RWQMP. For the Karuah RWQMP, three CCPs were identified²²⁵. CCP 3 (Storage Dam) was not validated during the audit date scope (nor is it yet). Further, a new UV system has been installed at the WWTW and therefore the RWQMP needs to be revised based on system changes. The AGWR states that:

"The hazard identification and risk assessment should be reviewed and updated periodically, because changing conditions may introduce important new hazards or modify risks associated with identified hazards²²⁶.

Given that the UV system was installed within the audit date scope, the risk assessment should have been reviewed and the RWQMP revised before completion and submission of the RWQMP to NSW Health.

²¹⁹ Working Paper - Karuah WWTW risk assessment.XLSM.

^{220 2.2} E2 Č2.3 Plan - Karuah WWTW Recycled Water Quality Management Plan - DRAFT.DOCX, Table 2-6, p23.

²²¹ Working Paper - Karuah WWTW risk assessment.XLSM.

²²² AGWR 2006, p32 "A2.4.3: Identify and document hazards and hazardous events for each component [our emphasis] of the recycled water system."

²²³ PL-HWW-20-8306-1, 30.09.2015.

²²⁴ 2.2.1 Register - Recycled Water Improvement Plan.XLSX.

²²⁵ Table 4-1, p29.

²²⁶ AGWR 2006, p32.

Other evidence was presented to demonstrate how CCPs are established and reviewed (CCP Standard)²²⁷. CCPs are established and reviewed through a CCP Standard and/or professional judgement. This Element is considered of adequate compliance but as the discrepancies are still captured by the existing recommendation (2013-14-05, 2014-15-01), a new recommendation has not been included for this audit.

ELEMENT 4: OPERATIONAL PROCEDURES AND PROCESS CONTROL

For the individual schemes, Hunter Water covers operational procedures and process control within the CCP tables. For the Karuah RWQMP, three CCPs were identified²²⁸. The information in the CCP table was not current (nor is it yet current) within the audit date scope and is imprecise e.g.:

"Target limit: The pond residence time is determined by the flow in and the pumped flow for irrigation. When the flow exceeds 20.8 L/s the UV is bypassed however the dam size is approximately 50 ML which at ADWF would have ~147 days residence time. However pumping to the irrigation is targeted at 21 L/s which could be as high as 1.8 ML/day.

Critical limit: Ensure that the residence time does not drop below a validated period of 25 days.

Corrective action: Advise reuser when residence time drops below a validated period of 25 days²²⁹.

The CCP tables should have definite limits and clear information within them to be useful operationally and scientifically sound. While 25 days is an acceptable limit for residence time, this value still needs to be validated to be useful in practice and for CCP 3 to be currently claimed as a CCP protective of stock health (especially as at the time of the audit date scope, it was still the case that recycled water would be transferred to the effluent storage dam even if the UV was not working). See notes above in Element 3 relating to the CCP Standard. Operational procedures are not specifically cited in the CCP Table e.g. as SOP XYZ, and information in the RWQMP under Element 4 is general and not scheme specific e.g.:

"Hunter Water would notify NSW Health if there was evidence of a possibility that effluent with reduced quality had been supplied to the reuse customer due to a major system failure e.g. treatment process failure."

The Karuah system does not have a 'customer', it has a 'contractor' for farm irrigation – therefore demonstrating a lack of specificity. During the audit date scope, CCP 3 was not validated and therefore, there was a risk that water 'not fit for purpose' was potentially always being supplied. By having the word 'would' in the sentence, it is not a definitive statement about what Hunter Water will do in the event of a non-complying incident occurring.

Veolia manages its own procedures through its systems (document and records management was confirmed during the drinking water site visit and during the audit interview on 28 September 2016²³⁰, SCADA was also viewed²³¹) and through the site-specific RWQMPs²³². SCADA records were checked for UVT during the audit date scope – records could be easily found and demonstrated.

Hunter Water was able to demonstrate its RWQMS on screen at the audit interview. As per the DWQMS, records are compiled per each element. The auditee was able to click through on the requested elements and show evidence of the information collated under each element including plans and procedures. Procedures and recycled water quality awareness is included in training (see Element 7).



²²⁷ 2.2 E3 C3.2 Standard - Establishment and Review of Recycled Water CCPs CURRENT.DOCX.

²²⁸ Table 4-1, p29.

²²⁹ Karuah RWQMP, Table 4-1, p30.

²³⁰ Veolia Protal Screenshots RW.docx.

²³¹ RW Policy at Karuah WWTW Control Room.JPG, Screenshot - RW Karuah Wind monitor (SCADA flow diagram).docx, Screenshot - UVT.docx.

²³² PL-HWW-20-8306-1, 30.09.2015, Section 7.8.

Veolia has developed scheme specific manuals and SCADA systems to support its operational monitoring (see comments above). Meeting minutes were also provided as evidence to demonstrate discussion of operations' issues at the site level.²³³ The meeting was held within the audit date scope.

A communication standard²³⁴ has been developed between Hunter Water and Veolia for reporting of recycled water issues including triggers for communication and communication governance in general. The document is presumed to be in audit date scope but there is no date on the document itself.

Equipment capability and maintenance was partially covered within the risk register²³⁵.

Operation and maintenance procedures and systems were reviewed as part of the asset audit components. It was also demonstrated that O&M is undertaken in practice including procurement and implementation of a new UV system²³⁶ (demonstrated as being required through the risk assessment) and via meeting minutes with the KERE contractor. The contract with the KERE contractor²³⁷ was also taken as evidence to support O&M and specifications around responsibilities that were in place during the audit date scope. Veolia used a formalized maintenance management system (Global Asset Management and Analysis or GAMA) during the audit date scope – that system is now called InforEAM.

Approved materials and chemicals procedures are managed through the Corporate RWQMP (see more detail under Element 4 of the drinking water section). A standard exists to manage Recycled Water Asset Construction and Maintenance²³⁸ including detail on customer specific asset responsibilities. The document is assumed to have been current for the audit date scope but this could not be checked as there was no date on the document itself. Veolia manages chemicals at all the WWTW.

Hunter Water is also required to have a Pollution Incident Reduction Management Plan (PIRMP) in place as part of its licensing obligations from EPA. The PIRMP covers corrections and communication procedures in the event of incidents. The PIRMP for Karuah WWTW was provided as evidence and was current for the audit date scope.²³⁹

ELEMENT 5: VERIFICATION OF RECYCLED WATER QUALITY AND ENVIRONMENTAL PERFORMANCE

Hunter Water has a Recycled Water Quality Monitoring Plan²⁴⁰ in place and is required to monitor effluent quality as part of its Environment Protection Licence requirements. The Recycled Water Quality Monitoring Plan covers monitoring of the Karuah reuse water²⁴¹. Hunter Water has a contract in place with ALS for sampling and analysis and this is covered in detail in the drinking water section. Veolia has sampling calendars in place. Site monitoring is not specifically addressed within the Karuah RWQMP:

"Recycled water users may undertake monitoring of application sites at their discretion. Hunter Water discusses this monitoring at meetings with the users. The frequency and nature of monitoring is very dependent on the way that recycled water is used and may vary from year-to-year and site-to-site. Monitoring is used to help inform the application rates for fertiliser and soil amendments."



²³³ FM-HW-16-7612 - Agenda_Meeting Minutes KERE-CERE 10616.docx.

²³⁴ 2.2 E4 C4.3 Standard - Recycled Water Quality Monitoring and Communication CURRENT.DOCX.

²³⁵ Working Paper - Karuah WWTW risk assessment.XLSM. "KAR12 Instrument failure and/or instrument calibration" and "KAR9 Programmable Logic Controller (PLC) failure".

²³⁶ Checklist - Handover of Assets to System Operations Form - Karuah UV dis....docx. CP289806 B Technical Specification Karuah_Final.pdf, Extract TAK validation report 2009.pdf.

²³⁷ Contract with Sanders and Assoc - Karuah Reuse.PDF.

²³⁸ 2.2 E4 C4.4 Standard - Recycled Water Asset Construction and Maintenance CURRENT.DOCX (Version 1).

²³⁹ Hunter Water-PIRMP-KaruahWWTW.pdf.

²⁴⁰ 2.2.1 - Recycled Water Quality Monitoring Plan - CURRENT.DOCX.

²⁴¹ 2.2.1 - Recycled Water Quality Monitoring Plan - CURRENT.DOCX, Section 3.2.8, p14.

However, the contract with the KERE contractor²⁴² does stipulate monitoring at various points in the contract. The RWQMP should therefore have included site specific details and not the general statement above. An internal audit also found that site monitoring was not being undertaken as required.

A summary of routine site specific verification monitoring is covered in the Karuah RWQMP²⁴³.

Hunter Water has a variety of channels for communication with recycled customers. Hunter Water's overarching customer request and management system is discussed in detail under the Retail Supply section of this document. Recycled water specific communication may be undertaken as part of the 'recycled water notifications' email address and through the contact centre. For the KERE site, monitoring results and plans are discussed at site meetings²⁴⁴ – this information is not specifically included in the Karuah RWQMP, the relevant sections of the RWQMP²⁴⁵ refer back to the Corporate RWQMP.

A communication standard²⁴⁶ has been developed between Hunter Water and Veolia for reporting of recycled water issues including triggers for communication and communication governance in general. The document is presumed to be in audit date scope but there is no date on the document itself. A specific incident response procedure²⁴⁷ for recycled water issues has also been developed and was provided as evidence for this Element. It was not possible to confirm whether the incident response procedure was in date scope as the front cover stated that the 'Date of Next Review' was '2015' and the version history stated that the last update (Version 2.2) had occurred on 21/11/14 – although the version provided had Version 2.1 on the footer.

Corrective responses are covered at the site specific level in the CCP tables (see Elements 3 and 4 above).

Monitoring is also undertaken as part of the auditing process and this is covered further under Element 11.

ELEMENT 6: MANAGEMENT OF INCIDENTS AND EMERGENCIES

A Hunter Water/Veolia communication standard²⁴⁸ has been developed for reporting of recycled water issues including triggers for communication and communication governance in genera – the document was in audit date scope. A specific incident response procedure²⁴⁹ for recycled water issues exists, currency for the audit date scope was assumed based on the review history table although the front over stated 'Date of Next Review' was '2015' and the version history stated that the last update (Version 2.2) has occurred on 21/11/14.

Discussion on overarching corporate responses to managing water quality incidents is covered in more detail in the drinking water section as part of reviewing the Corporate Emergency Management Plan. Veolia's response is also covered further in that section.

The Karuah RWQMP provides a summary of the incident notification requirements for the 'Karuah WWTW Reuse Scheme' at Table 6-1²⁵⁰ of that document. A footnote to that table states:

"This table is correct at the time of writing. The live, current table is given as Appendix 2 of the Recycled Water Quality Incident Response Protocol as described in the Corporate RWQMP."



 ²⁴² Contract with Sanders and Assoc - Karuah Reuse.PDF, Clause A6.5 Sampling and Monitoring, Purging and sampling of groundwater bores, Sampling of soil, Sampling of runoff water, Crop sampling.
 ²⁴³ Table 5-1. p36.

²⁴⁴ FM-HW-16-7612 - Agenda_Meeting Minutes KERE-CERE 10616.docx.

²⁴⁵ Sections 5.4 to 5.6.

²⁴⁶ 2.2 E4 C4.3 Standard - Recycled Water Quality Monitoring and Communication CURRENT.DOCX.

²⁴⁷ 2.2 E5 C5.6 Procedure - Recycled Water Quality Incident Response CURRENT.DOC.

²⁴⁸ 2.2 E4 C4.3 Standard - Recycled Water Quality Monitoring and Communication CURRENT.DOCX.

²⁴⁹ 2.2 E5 C5.6 Procedure - Recycled Water Quality Incident Response CURRENT.DOC.

²⁵⁰ p38.

We have assumed that the Recycled Water Quality Incident Response Protocol is that provided with TRIM identifier HW2008-1592/8/2.²⁵¹ If this is the case, it is not possible to verify that the document was current for the audit date scope. To avoid confusion, it may be preferable to just refer to the Recycled Water Quality Incident Response Protocol (including the TRIM number) in the specific RWQMPs rather than produce a second table that contains inconsistencies e.g. in the naming of agencies. The Karuah RWQMP should cover notifications between Hunter Water, Veolia and the KERE contractor specifically including what has been agreed in the contracts between all parties (noting that the contract was between Hunter Water and KERE contractor as the time of the audit date scope).

Training on recycled water issues is covered under Element 7.

ELEMENT 7: OPERATOR, CONTRACTOR AND END USER AWARENESS AND TRAINING

Hunter Water uses a number of channels to ensure that recycled water training of both personnel, end users and contractors occurs. Examples include inductions (Environmental Protection Licence and reuse training²⁵²), site audits which are used to inform end users of obligations²⁵³, meetings with end users/contractors²⁵⁴. The Karuah RWQMP notes that no site specific training has been developed for the Karuah scheme²⁵⁵ however, the induction and subsequent follow up site meetings with Veolia, coupled with the site audits, satisfy the training and awareness requirements. At the site visit, the KERE contractor was able to confirm that he understood that the irrigation water was recycled water and that he had to wear appropriate PPE and use proper hygiene when working with and after working with the irrigation equipment.

Veolia has contractual requirements to ensure that its operators are appropriately trained. Evidence was provided to confirm that recycled water specific training is also included.²⁵⁶ Training material is comprehensive and covers all relevant aspects of managing a recycled water scheme. Records of training were provided.²⁵⁷ Veolia's Waste Water training matrix covers many aspects of system management including specific training requirements for operations and recycled water including CCPs²⁵⁸. However, training for the new Karuah CCPs has not yet occurred, this was awaiting the SCADA upgrade.

ELEMENT 8: COMMUNITY INVOLVEMENT AND AWARENESS

No specific evidence was provided for Element 8. Evidence for this section was taken from that provided in other components of the audit.

Corporate-level communication initiatives are covered in the Corporate RWQMP²⁵⁹. Corporate communication and customer enquiry management was reviewed further under the Retail Supply component of this audit. Hunter Water also has an active social media presence.

While there are no specific communication initiatives for the Karuah scheme²⁶⁰, as mentioned above in Element 7, awareness is covered under inductions, site audits and ongoing site meetings. Also to support awareness, the site is clearly marked with recycled water signage at the entrance gate (sighted at the site visit, 27 September 2016). Veolia's training material also covers why recycled water is important from a resource management perspective. Veolia's Karuah RWQMP notes that Element 8 is

²⁵¹ 2.2 E6 C6.2 Procedure - Recycled Water Quality Incident Response CURRENT.DOC.

²⁵² 2.2 E7 C7.2 Recycled Water Awareness Training Records.PDF, 23/7/15, Generic Veolia Induction – [including KERE contractors].pdf, 28/11/14 (current for the audit date scope), [KERE Contractor] - Site Specific Induction.pdf, 30/6/15 (considered current for the audit date scope).

²⁵³ 2.2.2 Report - Karuah site audit 30 6 16.XLSX.

²⁵⁴ FM-HW-16-7612 - Agenda_Meeting Minutes KERE-CERE 10616.docx.

²⁵⁵ Section 7, p38.

²⁵⁶ 2.2.2 Recycled water operational committee meeting agenda and minutes.pdf, Monthly Recycled Effluent Meeting Agenda, 16 June 2016 – noting requirement to be trained in CCPs following SCADA implementation; 2.2.1 Recycled Water Training.pptx

²⁵⁷ 2.2 E7 C7.2 Recycled Water Awareness Training Records.PDF.

²⁵⁸ 2.2 E7 C7.2 Training Matrix for WWT.PDF.

²⁵⁹ Section 8, p49.

²⁶⁰ Karuah RWQMP, Section 8, p38.

not a large part of its operations however, because it does have a presence in the community, it may deal with end users and contractors and has a role in this respect. Veolia has training, procedures and systems in place to support this element even though it is not given a high status in the RWQMP.

ELEMENT 9: VALIDATION, RESEARCH AND DEVELOPMENT

Evidence to support this Element is covered under the existing recommendations (2013-14-03 / 2013-14-04 / 2013-14-06 / 2013-14-13 (Water Quality Management Systems – Condition 2.1/2.2), 2013-14-05 (Water Quality Management Systems – Condition 2.1/2.2), 2014-15-01 (Water Quality Management System – Condition 2.2), 2014-15-02 (Recycled Water Quality Management System – Condition 2.2), the site visit details and the procurement and other procedures noted in the drinking water section.

See also the evidence under Element 3 of this section. Of note is the fact that validation of critical limits is still to be completed and this is of concern for CCP3 of the Karuah scheme for helminth control. Residence time in the lagoon is currently not validated and the scheme is live so there is a risk that water is being supplied that is not fit for purpose.

ELEMENT 10: DOCUMENTATION AND REPORTING

Hunter Water has a corporate approach to document control as does its contractor, Veolia. Evidence was supplied from both parties²⁶¹. Note, in external documents cited, ensure that documents are correctly referenced to avoid confusion e.g. Australian Guidelines for Recycled Water (as cited²⁶²), should be Australian Guidelines for Water Recycling.

Documents and records are managed through TRIM (HP Records Manager). Laboratory records are managed by ALS through LabWare software and data are provided to Hunter Water for input into LabData in which data can be stored and analysed.

Staff are trained in HPRM use and records management. Evidence was sighted at interview²⁶³ and confirmed that training of HPRM use was in place. A Recycled Water TRIM folder²⁶⁴ was reviewed at the audit interview. Further, during the file searches requested in the interviews, we confirmed that staff could easily locate and retrieve information on request, demonstrating sound TRIM competency in practice.

Hunter Water noted that Integrum is used to track approvals and revision requirements however, the implementation in practice was not always clear on the document histories reviewed. Further, given some of the gaps noted in the documents, such as the flow diagrams (noted elsewhere) and Figure 1-1 in the Corporate RWQMP²⁶⁵ which is stated as from the AGWR 2006 but is incorrect, document review and approval components could be improved.

Rules for document review and reporting are covered in the Recycled Water Reporting and Review Requirements Standard²⁶⁶ (including for internal and external requirements). However, this standard does not appear to be referenced in the Corporate RWQMP. As noted below, Hunter Water is required to report internally and externally and this information is covered further under Element 11 including IPART and NSW Health reporting. Veolia provides a monthly operational report to Hunter Water which covers all aspects of its management including CCP exceedances (covered in the drinking water section). An Annual Compliance and Performance Report is produced for IPART and this was reviewed as part of the evidence package.



 ²⁶¹ 2.1 EL10 C10.1 HW2012-441 9 1.002 Procedure - Manage Document Control - CURRENT.docx; 2.1 EL10 C10.1 HW2013-421 22.002 Standard - Corporate Document Control - CURRENT.docx; 2.1 EL10 C10.1 HW2015-1449 1 5.033 Procedure - PR-ANZ-1-439 Document Management Procedure.docx.
 ²⁶² 2.1 EL10 C10.1 HW2012-441 9 1.002 Procedure - Manage Document Control - CURRENT.docx; Section 9, p8.

²⁶³ Training evidence sighted under QMS training – SOP on setting up TRIM folders HW2008-2500.006. Asset Creation requirements were also demonstrated at interview as well as demonstration of the TRIM workspace. ²⁶⁴ 2.2 E10 C10.1 Evidence of TRIM Location.docx.

²⁶⁵ p7.

^{266 2.2} E10 C10.2 Standard - Recycled Water Reporting and Review Requirements (Internal and External) CURRENT.DOCX.

ELEMENT 11: EVALUATION AND AUDIT

As part of the risk assessment process, water quality data were reviewed, analysed and included in the risk workshop briefing papers. Evidence to support this approach is provided under Element 2. For ongoing long-term data analysis, the Corporate RWQMP notes that the:

"RWQMP will be regularly reviewed and where necessary, updated to ensure it remains relevant. The aim of the annual review is to:

- assess overall performance against licences, guidelines and regulatory requirements;
- address emerging issues and trends identified through monitoring results, internal reviews, incidents and emergencies;
- identify priorities for improving recycled water quality management, and research and development opportunities; and
- incorporate management responses to emerging issues that relate to recycled water quality, and confirm whether the RWQMP appropriately manages potential risks associated with these."²⁶⁷

There is a discrepancy in the above statement as the Document Revision History table at the beginning of the Corporate RWQMP implies that the review cycle is biannual not annual.²⁶⁸ It is also not clear whether the review statement pertains to the Corporate RWQMP or the scheme specific RWQMPs. Hunter Water notes that ongoing monitoring and data analysis *will be* [our emphasis] conducted as part of the annual review of the recycled water quality monitoring plans. The implementation of this action will need to be checked at the next Operational Audit. Hunter Water is also required to report on recycled water quality results as part of its licence obligations and evidence to support reporting was confirmed for both IPART and NSW Health.

Hunter Water has an audit schedule in place²⁶⁹ including requirements for drinking and recycled water. The schedule covers both the ADWG and AGWR by element and component, the ALS and Veolia contracts (by both ADWG and AGWR). Hunter Water undergoes annual external audits as part of its Operating Licence obligations and is required to act on Ministerial recommendations. A biannual management system review is undertaken with the Executive Management Team, outcomes of audits are discussed at these meetings.²⁷⁰ Site audits are also undertaken, examples have been provided elsewhere.²⁷¹

ELEMENT 12: REVIEW AND CONTINUOUS IMPROVEMENT

Review and continuous improvement is covered at a Corporate level in the Corporate RWQMP.²⁷² In particular, a bi-annual meeting at the Executive Management Team level is held to discuss performance of the management system as well as discuss the findings from audit reports. A formal management system review procedure²⁷³ has been developed and this was provided as evidence. The procedure was current for the audit date scope however the version information on the footer of the document does not match that in the version control table e.g. Version 3 authorised on 13/07/2015 (footer) vs Version 4 authorised 1-6-2016 (table). The procedure covers process, areas of review and responsibilities including the keeping of minutes on meeting outcomes. In addition, quarterly meetings are held with NSW Health and information to



²⁶⁷ Corporate RWQMP, Section 11.1.1, p55.

²⁶⁸ Corporate RWQMP, Document Revision History table, p2, e.g. Revision 7 Date of Review: June 2015, Next Scheduled Review: June 2017.

²⁶⁹ Triennial Internal Quality Audit Program: 2015-2018 (HW2013-421/9.008).

²⁷⁰ 2.2 E11 C11.2 - Procedure - IMS Management Review Meeting - CURRENT.DOCX.

²⁷¹ Examples were also provided for 2.2.2 Internal audit report Branxton RW.docx, 2.2.2 Internal audit report Cessnock RW.docx.

²⁷² Section 12, p57.

²⁷³ 2.2 E12 C12.1 - Procedure - IMS Management Review Meeting - CURRENT.DOCX.

satisfy this element is covered in the drinking water section. Hunter Water and Veolia also have a joint Improvement and Innovation Committee²⁷⁴ at which system improvements are discussed. Satisfactory records were provided to support the implementation of this component of the element.

A Recycled Water Improvement Plan²⁷⁵ is in place with columns for the WWTW, the scheme, action, responsibility, date evidence etc. Many actions were overdue for completion within the audit date scope including some that are relevant to critical control point validation e.g. helminth control in the effluent storage dam at Karuah (Hunter Water provided an update that this action is ongoing). This Element is considered in high compliance based on lack of close-out of items in the RWIP.

Recommendation	s
2015-2016 RWQ R-1	Hunter Water should review the implementation of recommendation from its Environmental Compliance Audit – Karuah Effluent Reuse Enterprise and develop appropriate deadlines for any recommendations that have not been addressed.
2015-2016 RWQ R-2	Hunter Water should ensure that a gap analysis is completed of all RWQMPs, against the Framework for Management of Recycled Water Quality and Use. Particular focus should be given to the gaps in compliance areas detailed in the findings table (Table 3-3). Compliance gaps in the current RWQMPs should be filled prior to re-submission of the RWQMPs to NSW Health.
Opportunities for	improvement
OFI RWQ E1-1	Review and address the missing information in the Corporate RWQMP and the scheme-specific RWQMPs e.g. the Competition and Consumer Act 2010 (Cth) is missing from the Corporate RWQMP (recycled water, when sold, is captured under Australian Consumer Law).
OFI RWQ E1-2	Given the findings (omissions and perhaps erroneous inclusions), the overarching compliance requirements for recycled water may sit better in a separate document outside of the Corporate RWQMP to facilitate maintenance of adequacy and currency. Hunter Water should give consideration to this approach as it matches what is in place for drinking water.
OFI RWQ E3/E9- 1	If the validation of the effluent storage dam is likely to take time, consider validating helminth levels in the silage bales after storage on site. It is likely that the thermal and biological processes occurring within the bale will facilitate reduction of helminths in the final silage product. If sound, the process could be used as evidence of 'context-specific validation', possibly circumventing the need for validation of the storage dam – although this approach would have to be reviewed with DPI for its acceptability.
OFI RWQ E6-1	To avoid confusion, for incident notification limits, it may be preferable to just refer to the Recycled Water Quality Incident Response Protocol (including the TRIM number) in the specific RWQMPs rather than produce a second table that contains inconsistencies e.g. in the naming of agencies.
OFI RWQ E6-2	The Karuah RWQMP should cover notifications between Hunter Water, Veolia and the KERE contractor specifically including what has been agreed in the contracts between all parties (noting that the contract was between Hunter Water and KERE contractor at the time of the audit date scope).

²⁷⁴ Veolia - Hunter Water Improvement and Innovation Committee Meeting 15th Oct 2015 Minutes.docx; Veolia - Hunter Water Improvement and Innovation Committee Meeting 17th Feb 2016 Minutes.docx. ²⁷⁵ 2.2.1 Register - Recycled Water Improvement Plan.XLSX.

·/////////////////////////////////////	
OFI RWQ E10-1	Ensure that the management system review procedure is reviewed for document history information (the version information on the footer of the document does not match that in the version control table e.g. Version 3 authorised on 13/07/2015 (footer) vs Version 4 authorised 1-6-2016 (table)).



Appendix A3 – Water Quantity

Table A3.1: Water Conservation Target (Clause 3.1.1)

Sub-clause	Requirement		Compliance grade
(3) Water Quantity(3.1) Water Conservation Target(Clause 3.1.1)		verage for annual residential water consumption calculated for s equal to or less than 215 kilolitres per year for each Property Target).	FULL COMPLIANCE
Risk		Target for full compliance	
health and the environment; howe	nents of this clause poses low (if any) risk to public ver, it poses a high level of risk in respect of the potential financial impact should system	Water Conservation Target is achieved	
Evidence sighted			
 Water Network Planning Tea Manager Technical Services Senior Civil Assets Engineer 			
	viewed meters associated with provision of drinking w nance Report 2015-16 pp 32 to 34	ater from LTP WTP)	
•	t Listing for Water Consumption Detail Export		
	RT Report Water Consumption by Premise Code Co	nceptual Solution	
•	r Consumption Excel Spreadsheet worksheet DOM (•	
3.1.1 - Data - 201516 Water Ba			
3.1.1 Data - Properties Connection	ected To HWC Services June 2016		
3.1.1 - Report - Demand Forec	ast Model Development (Final), pp 13-25		
3.1.1 - Data – Australian Burea	u of Statistics 2013 – 4602.0 Environmental Issues E	xcel Spreadsheet	
3.1.1 - Report - Hunter Valley F	Research Foundation – Hunter Region Environmenta	Attitudes Survey 2009-10	
3.1.1 - Register – 2015-2018 In	ternal Audit Schedule (Quality Issues, Drinking Wate	r, Recycled Water, ALS, Veolia) Excel Spreadsheet	



- 3.1.1 Register Annual Management Systems Audit Programme Current. Excel Spreadsheet.
- 3.1.1 Report Quality Audit Drinking Water Management of Incidents and Emergencies (Element 6) March 2016
- 3.1.1 HWC website Sustainability Grants http://www.hunterwater.com.au/Community/Community-Funding-Program/Sustainability-Grants/
- 3.1.1 HWC website Education Programs http://www.hunterwater.com.au/Save-Water/School-Education-Programs/Education-Programs.aspx

Summary of reasons for grade

- Hunter Water achieved the Water Conservation Target specified in the operational licence during the audit period with a 5 year rolling average of 171 KL consumption per property.
- Hunter Water demonstrated that the methods it uses to calculate the 5 year rolling average are accurate.
- Hunter Water demonstrated that it uses appropriate methods to monitor and influence water use amongst its residential customer base contributing to its Water Conservation Target.

Discussion and notes

Water Conservation Target performance

Hunter Water reports on its Water Conservation Target through its annual compliance and performance report²⁷⁶. Chapter 3 of this report details Hunter Water's performance in terms of water quantity management and includes details of performance against the Water Conservation Target. Hunter Water's performance against this target is shown across a ten year period and the 2015-16 report shows that the 5 year rolling average for residential consumption has decreased since 2005-06, with the average since 2011-12 remaining fairly constant at between 171 and 176 KL per property. The result recorded for 2015-16 of 171 KL per property is the lowest recorded in the last 10 years and represents a 2 KL per year reduction since 2014-15.

In its 2015-16 annual compliance report and in staff interviews, Hunter Water stated that significant uptake of water efficient products has occurred across its customer base and that this has contributed to the continued improvement in water efficiency. It was also noted that the customer base is now largely saturated with water efficient products and this has been reflected in the lower uptake of such devices in recent years. It was stated that this is supported by customer surveys and behaviour research^{277, 278}. Several water efficiency programs were discontinued in the audit period due to this, including the shower head replacement program. Water efficiency programs are now more focused on marketing campaigns such as the Water Wise Rules, which are advertised through signage on Hunter Water assets and media such as newsletters, Hunter Water's website etc. Other water efficiency programs undertaken by Hunter Water during the audit period include:

A sustainability grants program, which provides funding to local organisations such as schools and community groups for water and environmental conservation initiatives (a total of \$40,000 was provided to 13 organisations in the audit period through this program)²⁷⁹.



²⁷⁶ HWC Compliance and Performance Report 2015-16 pp 32 to 34

²⁷⁷ Data - Australian Bureau of Statistics 2013 - 4602.0 Environmental Issues Excel Spreadsheet

²⁷⁸ Hunter Valley Research Foundation – Hunter Region Environmental Attitudes Survey 2009-10

²⁷⁹ HWC website - Sustainability Grants - http://www.hunterwater.com.au/Community/Community-Funding-Program/Sustainability-Grants/

Education programs, including the 'Bubbles and Supa Squirt Water Saving Show' and the Hunter Water Centre for Education which opened at the Mayfield West Advanced Wastewater Treatment Plant in 2016²⁸⁰.

A major customer water efficiency audit program, which applies to commercial customers receiving over 50 ML per year (and therefore is not applicable to the Water Conservation Target specified under the operational licence for residential customers)²⁸¹.

Determination of Water Conservation Data

Residential water consumption is calculated by Hunter Water's customer service group, through its metering and billing systems which were found to be effectively implemented through the residential supply component of the audit²⁸². Hunter Water developed a specification for water consumption reporting²⁸³ to ensure water consumption data is calculated appropriately. It is noted that the status of this report is labelled *Draft* on its cover page while the footer indicates the document is final, and the date of the last revision (28 August 2013) does not align with the revision history listed on page 3 of the document – these issues are considered to be a minor administrative issue that do not affect Hunter Water's compliance with this clause as systems used to calculate water consumption appear to have been calculated correctly²⁸⁴.

Hunter Water uses an Integrated Supply-Demand Planning (iSDP) model to predict residential water use and determine priority areas for water conservation projects. This model breaks down water consumption in individual customer categories (e.g. residential, industrial, commercial and unaccounted for water). Individual customer categories can be broken down further into individual end uses (e.g. toilets, showers, taps, washing machines, gardens, etc. for residential)²⁸⁵. This model is maintained by the water planning group and uses a range of inputs, including: records of water use²⁸⁶, ABS data on average water use behaviours²⁷⁴ and other available research such as surveys undertaken by the Hunter Valley Research Foundation²⁷⁵.

The iSDP model was developed in 2012 and it was stated in audit interviews that the model is reviewed when annual water consumption data is calculated or if required for other reasons, such as for regulatory price and water demand reviews.

Recommendation	ns
The audit did not i	dentify any recommendations relevant this clause.
Opportunities for	r improvement
OFI 3.1.1 1-1	It is recommended that Hunter Water review the document titled RP168 – RT Report Water Consumption by Premise Code Conceptual Solution to ensure the revision history and status of the document are correctly referenced throughout.

²⁸⁰ HWC website - Education Programs - http://www.hunterwater.com.au/Save-Water/School-Education-Programs/Education-Programs.aspx

²⁸¹ Stated during audit interviews

²⁸² Refer to Section 5 of the main report

²⁸³ HWC RP168 - RT Report Water Consumption by Premise Code Conceptual Solution

²⁸⁴ HWC Residential Water Consumption Excel Spreadsheet worksheet DOM CELL E95

²⁸⁵ HWC Report - Demand Forecast Model Development (Final), pp 13-25

²⁸⁶ HWC Data - 201516 Water Balance HW2006-3431_4_12.006

Table A3.2: Economic Level of Leakage (Clause 3.2.3)

Sub-clause	Requirement		Compliance grade
(3) Water Quantity (3.2) Economic Level of Leakage (Clause 3.2.3)	When determining the Economic Level of Leakage from the 3.2.1, Hunter Water must use the methodology approved		FULL COMPLIANCE
Risk		Target for full compliance	
public health and the	the requirements of this clause poses low (if any) risk to environment; however, it poses a high level of risk in availability of water and the potential financial impact entation be required.	Correct application of the IPART approved methodology Level of Leakage during the audit period	for calculating Economic
Evidence sighted			
	inter Water Corporation to IPART (31 July 2013) Ref: HW20		
	pnomic Level of Leakage Provisions in the Operating Licence		
•	conomic Level of Leakage Determination v3.1 inc. Methodolo	ogy (HW2010-480/5/14.016)	
Summary of reasor	is for grade		
Hunter Water receive	ed approval for the methodology it uses to determine the ecc	onomic level of leakage from its drinking water network from	IPART on 14 July 2014.

Discussion and notes

Clauses 3.2.1 of the operating licence requires Hunter Water to determine the economic level of leakage from its drinking water network and submit a report on this to IPART (by 31 January 2014). Clause 3.2.2 requires Hunter Water to gain approval from IPART for the methodology it uses for determining the Economic Level of Leakage for reporting purposes. Clause 3.2.3 requires Hunter Water to use this method, approved under Clause 3.2.2 when determining the economic level of leakage.

In July 2013²⁸⁷, Hunter Water advised IPART that it could not provide the required economic level of leakage report by the required date due to other reviews of water costs associated with the Lower Hunter Water Plan and pricing revision being carried out by Hunter Water. Hunter Water submitted the first version of its proposed methodology for determining economic level of leakage on 9 December 2013²⁸⁸. Following feedback from IPART, Hunter Water submitted its final methodology and review of economic levels of leakage (as required by Clause 3.2.1. of the operating licence) to IPART. IPART approved the methodology and report via a letter dated 14 July 2014²⁸⁹. This letter noted that the methodology and report had been submitted later that the dates required under the licence, but stated that this was considered to be a minor contravention of the licence and no further action would be taken.

In its approval letter²⁸⁸, IPART noted some areas for improvement in determining Hunter Water's economic level of leakage. The letter states that 'Some of these were identified by Hunter Water in its Methodology and Report as areas that will be refined in due course' and that 'We encourage HWC to consider the appropriate level of effort to be invested in these refinements, to ensure that investment in any refinement is economic' ²⁸⁶. Hunter Water responded to each of these issues in a letter to IPART, in which it committed to incorporating these improvements for its next Pricing Submission (which was being prepared at the time of the audit)²⁹⁰.

Recommendations

The audit did not identify any recommendations relevant this clause.

Opportunities for improvement

No opportunities for improvement have been identified that relate to Clause 3.2.3.

²⁸⁷ Letter - Hunter Water Corporation to IPART (31 July 2013) Ref: HW2006-1417 RE: ECONOMIC LEVEL OF LEAKAGE

²⁸⁸ Report - Economic Level of Leakage Determination v3.1 inc. Methodology (HW2010-480/5/14.016)

²⁸⁹ Letter - Economic Level of Leakage Provisions in the Operating Licence - 14 July 2014 (HW2011-560/24/30.020)

²⁹⁰ Letter – Economic Level of Leakage Provisions of the Operating Licence – 8 September 2014 (HW2011-5680/24/30.020)

Appendix A4 – Assets

Table A4.1: Asset Management System (Clause 4.1.1)

Sub-clause	Requirement		Compliance grade
(4) Assets (4.1) Asset Management System (Clause 4.1.1)	Hunter Water must maintain a Management System that a) the BSI PAS 55:2008 (PAS 55) Asset Management b) the Water Services Association of Australia's Aquam c) another asset management standard agreed to by IF (Asset Management System).	standard; or nark benchmarking tool; or	FULL COMPLIANCE
Risk		Target for full compliance	
the implementation 2017. This could be suitably qualified p	Water is unable to commit sufficient resources to complete n of an ISO 55001 Asset management system by July be caused by insufficient funds being available, lack of bersonnel to complete the identified tasks or a change in ecutive Management Team.	Demonstration of consistency with the WSAA's Aquamark b Implementation of an asset management system consistent	•
Evidence sighted			
 Interviews with Manager Ass Principal Ele Asset Manage Treatment O Senior Civil / Manager Sys Water Network 	the following Hunter Water staff on 26 and 28 September 2 set Management ectrical Engineer gement Contractor operations Contract Manager Assets Engineer stem Operations ork Planning Team Leader ater Network Operations	016:	
 Interviews with Manager Ass Principal Ele Asset Manage Treatment O Senior Civil / Manager Sys Water Netword Manager Wa Asset Manager 	the following Hunter Water staff on 26 and 28 September 2 set Management ectrical Engineer gement Contractor Operations Contract Manager Assets Engineer stem Operations ork Planning Team Leader ater Network Operations ger (Veolia)	016:	
 Interviews with Manager Ass Principal Ele Asset Manage Treatment O Senior Civil / Manager Sys Water Netword Manager Water Netword Asset Manage Site visit 27 September 2015 	the following Hunter Water staff on 26 and 28 September 2 set Management ectrical Engineer gement Contractor Operations Contract Manager Assets Engineer stem Operations ork Planning Team Leader ater Network Operations ger (Veolia)	016:	
 Interviews with Manager Ass Principal Ele Asset Manage Treatment O Senior Civil / Manager Sys Water Netword Manager Water Netword Asset Manage Site visit 27 Seg 4.1.1 - Complia 	the following Hunter Water staff on 26 and 28 September 2 set Management ectrical Engineer gement Contractor Operations Contract Manager Assets Engineer stem Operations ork Planning Team Leader ater Network Operations ger (Veolia) ptember 2016		

- 4.1.1 State of the Assets 2015 Summary
- 4.1.1 State of the Assets 2015 Final
- 4.1.1 ISO55000 AMS Implementation Plan
- 4.1.1 ISO55001 Final Gap Analysis Report 30_03_2015
- 4.1.1 Signed Asset Management Policy June 2016
- 4.1.1 AMS ISO5501 Steering Committee Terms of Reference
- 4.1.1 Procedure CURRENT Enterprise Risk Management Framework Ver 3.0
- 4.1.1 EMT Paper Critical Asset Assessment Methodology
- 4.1.1 List of Hunter Water Critical Asset Facilities (excluding linear assets)
- 4.1.1 Super Critical Assets (Supercritical assets) version 1.0 February 2016
- 4.1.1 Standard Managing Strategic Risks CURRENT
- 4.1.1 PRC Paper Critical Asset Program 2016-17
- 4.1.1 QAI 001 Asset Information Standard 1 Ellipse Equipment Identifiers & Groups
- 4.1.1 QAI 002 Asset Information Standard 2 Ellipse Equipment Hierarchy & Descriptions
- 4.1.1 QAI 003 Asset Information Standard 3 Ellipse Equipment Nameplates
- 4.1.1 QAI 004 Asset Information Standard 4 Ellipse Equipment Classifications
- 4.1.1 QAI 005 Asset Information Standard 5 Ellipse Work Groups
- 4.1.1 QG043 Capital Project Programs Guideline
- 4.1.1 Guideline QT005 Post Completion Review Report
- 4.1.1 Template QT102 Project Plan
- 4.1.1 Form QF028 Construction Site Daily Inspection Report
- 4.1.1 Capital Portfolio Management Guide
- 4.1.1 PRC Paper Pressure Sewer Systems Review 2015.DOCX
- 4.1.1 Asset Class Management Plan Drive Controllers
- 4.1.1 Asset Standards Management Plan
- 4.1.1 Asset Management Plan Program
- 4.1.1 PRC Paper Asset Class Management Initiatives
- 4.1.1 Guideline Asset Class Management Plan



- 4.1.1 PRC Paper Asset Management PRC Submission Schedule
- 4.1.1 PRC Paper Stormwater Asset Class Management Plan
- 4.1.1 Report Stormwater Asset Class Management Plan November 2015
- 4.1.1 PRC Paper Sewer Rising Mains Asset Class Management Plan
- 4.1.1 Asset Class Management Plan Sewer Rising Mains
- 4.1.1 PRC Paper Reservoir Asset Class Management Plan 2016
- 4.1.1 Asset Class Management Plan Reservoirs 2016
- 4.1.1 PRC Paper Statutory Asset Program 2016-17
- 4.1.1 Treatment Facility Site Inspection Record Boulder Bay WWTW (3.2.16)
- 4.1.1 Corporate Emergency Management Plan (Version 5, December 2014)
- 4.1.1 Form Handover of Assets
- 4.1.1 Document Properties Experiencing Dry Weather Sewage Overflows (uncontrolled)
- 4.1.1 QP0521 Procedure for System Performance Standard Licence Reporting
- 4.1.1 Project Development Plan for Contract CS0341 (Karuah Irrigator)
- 4.1.1 Project Development Plan for Contract CS0341 Minor Capital Works (Karuah Weather Station)
- 4.1.1 Document Strategic Audit Schedule (uncontrolled)
- 4.1.1 Presentation Operational Licence Audit AMS ISO 550001 Sept 2016.pptx

Summary of reasons for grade

Hunter Water was found to have developed an asset management system that is consistent with the Aquamark Benchmarking Tool. Hunter Water is in transition between the Aquamark and ISO 55001 based asset management systems, and it was found that Hunter Water has continued to maintain its operational asset management system to be consistent with the Aquamark system until the transition is complete.

Discussion and notes

In 2010, Hunter Water developed an asset management system that it claims²⁹¹ is consistent with the Water Services Association of Australia (WSAA) Aquamark benchmarking tool²⁹². Hunter Water participated in the 2012 Asset Management Performance Improvement Project and was found to have a 'generally mature level in asset management'²⁹³. As the detailed requirements of this system are only available to members of the WSAA, the auditors did not assess Hunter Water's current



²⁹¹ Compliance and Performance Report 2015-16, page 39

²⁹² Compliance and Performance Report 2015-16 Section 4

²⁹³ WSAA 2012 Asset Management Performance Improvement Project Final Utility Report (AQUAMARK) - October 2012

compliance with this system. However; Hunter Water's asset management system was observed to be consistent with the core elements of this system as outlined by WSAA's Aquamark Asset Management Framework. Reviews against the Aquamark benchmarking tool are undertaken every four years and the 2016 benchmark assessment was being undertaken under the title of Asset Management Customer Value Project (AMCV) which was under preparation at the time of the audit and was not available during the audit.

Hunter Water's current asset management system is guided by its Asset Standards Management Plan. The auditors note that this plan will be superseded by the Strategic Asset Management Plan (SAMP), which will be aligned to ISO 55001, although the SAMP is still under development and has not been implemented.

In 2014 Hunter Water made a commitment to implement the ISO 55001 series of asset management standards, as part of its Integrated Quality Management System (IQMS) project. A gap analysis was undertaken to identify tasks required to change the existing Aquamark based system²⁹⁴ and an implementation plan was developed to guide this process²⁹⁵. The initial phase of the implementation plan, the gap analysis identified a number of initiatives for improvement.

Hunter Water has engaged a team of two contractors to develop, review and update, where necessary, existing Asset Management documentation in response to the ISO55001 Gap analysis and as part of the transition process to an ISO 55001 consistent Asset Management System. The key areas for improvement are strategic planning, integration with the Business Management Systems (BMS), Operation and Maintenance Procedures and Asset Information. To effectively manage the project a steering committee has been developed²⁹⁶. During audit interviews, it was reported that of the 193 identified tasks required to transition the system to ISO 55001, 36 had been completed.

Hunter Water has developed risk assessment tools for asset management, which are built around the Australian Standard for risk management (AS/NZS ISO 31000:2009). The assessment tools are described in Hunter Water's Enterprise Risk Management Framework²⁹⁷.

Hunter Water has also undertaken criticality assessments for all physical assets using a methodology accepted by Hunter Water's executive team²⁹⁸. Detailed asset risk profiling has also commenced for water network mains and fittings, rising mains, carrier mains and dams²⁹⁹.

Hunter Water has developed asset information standards through the implementation of the Ellipse system^{300.}

Hunter Water's Asset Management Framework provides guidance for the planning, development and delivery of capital infrastructure assets¹¹.

Prioritisation of infrastructure investment is undertaken through the capital portfolio framework³⁰¹. Condition assessments of all at-risk assets are undertaken as part of Hunter Water's routine condition assessment program which is managed through the Ellipse system. The outcomes from these inspections are used to assist with prioritisation within the identified renewals program.

Hunter Water reported that it has, or is in the process of developing asset class management plans³⁰². The purpose of plans link asset management requirements for groups of similar assets with corporate objectives.

- 296 AMS ISO5501 Steering Committee Terms of Reference 297 Enterprise Risk Management Framework - Ver 3.0
- 297 Enterprise Risk Management Framework Ver 3.0 298 EMT Paper - Critical Asset Assessment Methodology
- 299 PRC Paper Critical Asset Program 2016-17

301 Capital Portfolio Management Guideline

²⁹⁴ ISO55001 Final Gap Analysis Report 30_03_2015

²⁹⁵ ISO55000 AMS Implementation Plan

³⁰⁰ Asset Information Stanards1-5 sighted during the audit

³⁰² Refer to pre-audit questionnaire provided by Hunter Water

It was reported that a review of the preventative maintenance has been completed by the treatment operations contractor, Veolia and that this review has now been implemented³⁰⁸.

Recommendations

The audit did not identify any recommendations relevant to this clause.

Opportunities for improvement

The audit did not identify any recommendations relevant to this clause.



Table A4.2: Asset Management System (Clause 4.1.2)

Sub-clause	Requirement	Complia	ince grade
(4) Assets (4.1) Asset Management System (Clause 4.1.2)	Hunter Water must ensure that the Asset Management System is fully implemented and that all relevant activities are carried out in accordance with the system.	HIGH	COMPLIANCE
Risk	Target for full compliance		
Non-compliance with the requirements of this clause poses a high level of operational risk in respect of public health, the environment and the ability of Hunter Water to meet its business objectives.	Effective implementation of Hunter Water's existing asset management system and compliance of all asset creation a this system.	nd maintenance	e activities with
Evidence sighte	d		
 Manager As Principal Ele Asset Mana Treatment C Senior Civil Manager Sy Water Netw 	a the following Hunter Water staff on 26 and 28 September 2016: seet Management ectrical Engineer igement Contractor Operations Contract Manager Assets Engineer /stem Operations ork Planning Team Leader ater Network Operations iger (Veolia)		





- Site visit 27 September 2016
- 4.2.2 Compliance and Performance Report 2015-16 Section 4
- 4.2.2 Business Case CTGM Tarro to Beresfield Renewal Revised Business Case
- 4.2.2 PRC paper CTGM Asset Management Plan
- 4.2.2 CTGM Asset Management Plan
- 4.2.2 ERM Methodology Treatment Assets
- 4.2.2 Wastewater Treatment ERM risk profiles
- 4.2.2 Lemon Tree Passage WTP Electrical Condition Assessment
- 4.2.2 Karuah WWTW Electrical Condition Assessment
- 4.2.2 Boulder Bay WWTW Civil and Mechanical Condition Assessment
- 4.2.2 Lemon Tree Passage WTP Civil and Mechanical Condition Assessment
- 4.2.2 Preventive Maintenance Review
- 4.2.2 Preventive Maintenance Change Register
- 4.2.2 Lemon Tree Passage WTP review
- 4.2.2 Boulder Bay WWTW PM review
- 4.2.2 Karuah WWTW PM review
- 4.2.2 ERC Business Case Summary Fluoridation System Upgrades
- 4.2.2 Business Case Fluoridation System Upgrades
- 4.2.2 Treatment Plant critical spares review
- 4.2.2 Treatment Plant critical spares listing (4.1.2 Veolia Critical Spares Asset Breakdown)

Summary of reasons for grade

Hunter Water was found to be devoting considerable effort to populate their asset management systems with all relevant asset information, including nameplate data. A maintenance optimisation program is also being implemented for Hunter Water maintained network assets. Hunter Water have completed a similar exercise with Veolia managed treatment works. Other asset management systems such as processes for identifying replace/ replacement of assets and decision-making appear well understood and embedded in the organisation.

A number of administrative issues were identified with implementation of the asset management system. These include:

use of plans that were overdue for review

inconsistent implementation of document control

duplication of tasks across Hunter Water's range of management systems.

Hunter Water is in the process of addressing the improvement areas identified in the 2012 Aquamark benchmarking assessment and has completed two of the five areas identified for improvement under the 2012 Aquamark assessment. Hunter Water is now transitioning to an ISO 55001 based system and has to complete a number of tasks to implement this system. For these reasons, the auditors found that Hunter Water had achieved a high level of compliance with this clause.

Discussion and notes

The key systems Hunter Water uses to implement its asset management system were observed in use by Hunter Water staff during the audit and include:

- Ellipse includes an integrated asset management application suite used for routine and scheduled maintenance activities³⁰³. This system was observed to be used by relevant Hunter Water staff, including maintenance staff and work schedulers managing their activities. Veolia use a separate system for managing maintenance activities at the treatment plants (InforEAM³⁰⁴) and it was reported in interviews that Hunter Water and Veolia have can access each other's management systems, although this occurs through information requests between staff members and direct access does not occur. During the site inspection of Tomago Borefield the audit team observed a leaking bore pump valve, Hunter Water staff took note of this and entered a maintenance request in Ellipse which was later observed by the auditors at Hunter Water's office. This entry scheduled the task to a relevant work group and provided a detailed history of the asset.
- InforEAM the system used by Veolia for asset management associated with Hunter Water's water and wastewater treatment plants. It was reported that a dedicated staff member is employed full time to ensure data from the Ellipse system is copied into InforEAM.
- Dekho a geographical information system (GIS) available to all Hunter Water staff through standard web browser software. This system contains geospatial details of all Hunter Water assets. Dekho is a product developed by Esri which was 'retired' on 31 August 2016³⁰⁵, meaning that it is no longer actively supported by Esri. It is noted that this is outside the audit period. Hunter Water upgraded its GIS platform to the more current ArcGIS and ArcFM³⁰⁶ on 7 October 2016³⁰⁷.
- Integrum an integrated management system used by Hunter Water to manage incidents that are considered more hazardous or urgent than would be managed through Ellipse.
- TRIM a records management system available to all Hunter Water staff through its intranet.

The audit found that Hunter Water undertook a range of asset improvement actions, maintenance activities and asset replacement activities during the audit period. These included:

- The Chichester Trunk Gravity Main (CTGM) Condition Assessment and Management Plan³⁰⁸.
- Completion of a replacement of the CTGM between Tarro and Beresfield and approval for preparation of a detailed business case for replacement of the CTGM between Duckenfield and Tarro

Veolia also undertook the following asset management activities during the audit period:

³⁰³ http://new.abb.com/enterprise-software/asset-optimization-management/ellipse-eam

³⁰⁴ http://www.infor.com/solutions/eam/

³⁰⁵ http://dekhoforum.com/

³⁰⁶ HW2009-752/2.107 ERC Summary – Business Case and Request for Capital Funding

³⁰⁷ Comments from Hunter Water to the auditors, provided in 'Comments Register Revised Draft audit report - 251116.xlsx'

³⁰⁸ Chichester Trunk Gravity Main Asset Management Plan (Hunter H20, May 2016)

Centred Mainte	Anintenance review which involved a maintenance specialist review using a combination of Reliability Centred Maintenance (RCM) and Operator enance (OCM), which reviewed every asset within every treatment plant (water and wastewater), and identified the optimum preventive maintenance intenance) to manage the compliance and operational risks ³⁰⁹ .
existing progra business risk tl	es review, which involved a risk-based asset assessment to determine business risk associated with failure. Where current controlled risks (allowing for ims) exceeded the business risk threshold, critical asset spares were identified and purchased to effectively manage the risk. In addition to managing his program is also aimed at improving maintenance, as the critical spares will be used to minimise reactive breakdown maintenance. The review res storage strategy so that spares required across sites could be stored at central locations and those that are site specific would be stored at the ⁰ .
	views, it was reported that the establishment of a contract with Veolia to manage Hunter Water's treatment plants has improved definition of etween the plant operators and Hunter Water and resulted in improved reporting and accountability between Hunter Water and the treatment plant
had not occurred ³ examples of asse	urrent asset management system is guided by its Asset Standards Management Plan. This plan was found to be due for a review in January 2016 that ³¹¹ . The Asset Standards Management Plan should be maintained until the ISO 55001 system is successfully implemented. Hunter Water provided three t class management plans ³¹² and it was found that each plan followed a different document control format, with none of the plans containing a TRIM of the Drive Controllers plan also states that it was due for review in September 2015 and this does not appear to have occurred.
Recommendatio	ns
2015-2016 4.1.2	Review the Asset Standards Management Plan as this document was due for review in January 2016
R-1	Review the Asset Class Management Plan – Drive Controllers as required on page 2 of that plan
2015-2016 4.1.2 R-2	Ensure all Asset Class Management Plans meet the requirements of Hunter Water's document control system
Opportunities fo	r improvement
OFI 4.1.2 1-1	Consider amalgamating existing systems into an integrated management system to reduce the number of systems in use across the organisation.



 ³⁰⁹ Preventative Maintenance Change Register (uncontrolled), Veolia Document – Matter for Endorsement PM review (update) – Rev B
 310 Veolia document – Treatment Plant critical review (5 May 2015), Veolia Critical Spares Asset Breakdown (excel spreadsheet)
 311 Asset Standards Management Plan Version 3.0 (15 January 2015) page 2
 ³¹² Asset Class Management Plans – Drive Controllers, Reservoirs 2016 and Sewer Rising Mains

Table A4.3: Asset Management System (Clause 4.1.3)

Sub-clause	Requirement		Compliance grade
(4) Assets (4.1) Asset Management System (Clause 4.1.3)	Hunter Water must notify IPART of any significant change in accordance with the Reporting Manual.	s that it proposes to make to the Asset Management System	NO REQUIREMENT
Risk		Target for full compliance	
operational risk in	ith the requirements of this clause poses a high level of respect of public health, the environment and the ability of eet its business objectives.	Evidence of appropriate correspondence with IPART regard changes to Hunter Water's asset management system.	ling any significant
Evidence sighted			
Not applicable			
Summary of reas	ons for grade		
There were no cha	inges to the Asset management System in 2015-2016 and as s	uch, Hunter Water did not liaise with IPART on this issue.	
Discussion and n	otes		
Hunter Water repo	rted that there were no changes to the Asset Management Sys	tem in 2015-16. The audit did not identify any evidence to contra	adict this.
Recommendatior	IS		
The audit did not id	dentify any recommendations relevant to this clause.		
Opportunities for	improvement		



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The audit did not identify any recommendations relevant to this clause.

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Table A4.5: Water pressure, water continuity and wastewater overflow standards (Clause 4.2.2)

Sub-clause	Requirement		Compliance grade
(4) Assets	Water Pressure Standard		
(4.2) Water pressure, water	a) Hunter Water must ensure that no more than 4,800 Properties experience a Water Pressure Failure in a financial year (Water Pressure Standard).		
continuity and	b) A Property is taken to have experienced a Water Pressu		
wastewater overflow standards	i) when a person notifies Hunter Water that the Property has experienced a Water Pressure Failure and that Water Pressure Failure is confirmed by Hunter Water; or		
(Clause 4.2.2)	ii) when Hunter Water's systems identify that the F	FULL COMPLIANCE	
	c) Despite condition 4.2.2(b), a Property will not be taken to	o have experienced	
	d) a Water Pressure Failure if that Water Pressure Failure	occurred only because of:	
	i) a Planned Water Interruption or Unplanned Wat	er Interruption;	
	ii) water usage by authorised fire authorities in the		
	iii) a short term or temporary operational problem occurrence.	(such as a main break) which is remedied within 4 days of its	
Risk		Target for full compliance	
	the requirements of this clause poses high risk to public cate that Hunter Water has failed to maintain an adequate	No more than 4,800 properties experience a water pressur period.	e failure in the audit
Evidence sighted			
 Interviews with the Manager Asset 	following Hunter Water staff on 26 and 28 September 2016: Management		
	Management		
 Manager Asset 	Management cal Engineer		
 Manager Asset Principal Electri Asset Manager 	Management cal Engineer		
 Manager Asset Principal Electri Asset Manager 	Management cal Engineer ent Contractor ations Contract Manager		
 Manager Asset Principal Electri Asset Manager Treatment Oper 	Management cal Engineer ent Contractor ations Contract Manager et Engineer		

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- Manager Water Network Operations
- Asset Manager (Veolia)
- 4.2.2 Compliance and Performance Report 2015-16 page 101
- 4.2.2 Manual ClearSCADA User Reference Manual 2013 View Only V1_06 page 39
- 4.2.2 SCADA Help View
- 4.2.2 AOMS Training Manual
- 4.2.2 Hunter Water Monitoring & Reporting Protocol Water Pressure

Summary of reasons for grade

Hunter Water met the water pressure standard specified under this clause during the audit period with a total of 1,312 properties experiencing low pressure failures, which is substantially lower than the target of 4,800. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.

Discussion and notes

Hunter Water utilises a network of pressure and flow instrumentation to monitor the performance of its reticulated water network. This instrumentation streams data via Hunter Water's SCADA system and alerts the Hunter Water Control Centre via alarms. This system was observed in operation by the auditors.

Water pressure problems are also recorded by employees attending complaints of low pressure. Readings and flow times are recorded in an AOMS database when an investigation is undertaken. An example water discontinuity report observed during the audit³¹³ provided extensive details of a reported water leak resulting in pressure failure for 507 customers. This included details such as duration, properties affected, causes, customer calls received and recommendations.

Hunter Water staff reported that pressure problems are identified by performing calculations using a hydraulic model which examines demand, supply capabilities and property elevation. This model is calibrated using records from the SCADA (which provides details of interruptions such as that reported in the exampled discontinuity report sighted³⁰⁸ and water pressure tests/monitoring. The procedure for calculating water pressure is detailed Hunter Water's Monitoring and Reporting Protocol (Section 5.1 Water Pressure).

Recommendations

The audit did not identify any recommendations relating to this clause.

³¹³ Completed Water Continuity Report – 4B Riawena Street Valentine (AOMS 491132)

Opportunities for improvement

The audit did not identify any observations relating to this clause.

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Table A4.6: Water pressure, water continuity and wastewater overflow standards (Clause 4.2.3)

Sub-clause	Requirement		Compliance grade
(4) Assets	Water Continuity Standard		
(4.2) Water pressure, water continuity and wastewater overflow standards	a) Hunter Water must ensure that in a financial year:		
	i) no more than 10,000 Properties experience an Unplanned Wa		
	ii) no more than 5,000 Properties experience 3 or more Unplanned Water Interruptions that each lasts more than 1 hour, (Water Continuity Standard).		
(Clause 4.2.3)	b) For the purposes of condition 4.2.3(a), Hunter Water must use the best available data (taking account of water pressure data where that data is available) to determine:		FULL COMPLIANCE
	i) whether a Property has experienced an Unplanned Water Inte	rruption; and	
	ii) the duration of the Unplanned Water Interruption.		
	c) If a Property experiences an Unplanned Water Interruption the have experienced an Unplanned Water Interruption for the purp		
Risk		Target for full compliance	
	ne requirements of this clause poses high risk to public health as unter Water has failed to maintain an adequate level of service.	No more than:	
		 10,000 properties experience an unplanned water interrupt continuous hours 	ion that lasts more than 5
		5,000 properties experience three of more unplanned wate last more than 1 hour	r interruptions that each
Evidence sighted			
Interviews with the f	ollowing Hunter Water staff on 26 and 28 September 2016:		
 Manager Asset M 	lanagement		
 Principal Electrica 	al Engineer		
 Asset Manageme 	ent Contractor		
 Treatment Opera 	tions Contract Manager		
 Senior Civil Asse 	t Engineer		
 Manager System 			



- Water Network Planning Team Leader
- Manager Water Network Operations
- Asset Manager (Veolia)
- 4.2.3 Compliance and Performance Report 2015-16 page 102
- 4.2.3 Manual ClearSCADA User Reference Manual 2013 View Only V1_06 page 39
- 4.2.3 SCADA Help View
- 4.2.3 AOMS Training Manual Water Continuity
- 4.2.3 Hunter Water Monitoring & Reporting Protocol Water Continuity
- 4.2.3 Discontinuity Assessment and Reporting Procedure
- 4.2.3 Completed Water Continuity Report 4B Riawena Street Valentine AOMS 491132

Summary of reasons for grade

Hunter Water met the water continuity standard specified under this clause during the audit period with 3,901 properties experiencing unplanned outages of over five hours and 1,488 properties experiencing three or more unplanned outages, which is substantially lower than the target of 10,000 and 5,000 respectively. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.

Discussion and notes

Hunter Water utilises a network of pressure and flow instrumentation to monitor the performance of its reticulated water network. This instrumentation streams data via Hunter Water's SCADA system and alerts the Hunter Water Control Centre via alarms. This system was observed in operation by the auditors.

Unplanned water interruptions are recorded in the AOMS system and the extent of the outage is identified by a valve trace in the GIS or by system modelling for larger outages. Outages are assessed using a procedure³¹⁴ that aligns with IPART guidelines to classify them as either planned or unplanned.

On more complex discontinuity events, the Water Network Operations Team carry out a more detailed analysis using data gathered from various sources including computer hydraulic models, SCADA, field operative commentary and customer call information, to determine the area's/properties impacted by discontinuity events.

During audit interviews, Hunter Water staff reported that a contractor is engaged to undertake an annual leak detection program with about 20% of the water network being subject to leak detection tests each year.

³¹⁴ Procedure – Discontinuity Assessment and Reporting Procedure (TRIM: S14-2/2/4.001)

Recommendations

The audit did not identify any recommendations relating to this clause.

Opportunities for improvement

The audit did not identify any observations relating to this clause.



Table A4.7: Water pressure, water continuity and wastewater overflow standards (Clause 4.2.4)

Sub-clause	Requirement		Compliance grade
(4) Assets (4.2) Water pressure, water continuity and wastewater overflow standards (Clause 4.2.4)	Wastewater Overflow Standard a) Hunter Water must ensure that in a financial year: i) no more than 5,000 Properties (other than Public Properties) eventher; and ii) no more than 45 Properties (other than Public Properties) exp weather, (Wastewater Overflow Standard)		FULL COMPLIANCE
Risk		Target for full compliance	
	he requirements of this clause poses high risk to public health t as it would indicate that Hunter Water has failed to maintain an ce.	 No more than: 5,000 non-public properties experience an uncontrolled was conditions 45 non-public properties experience three of more uncontrol in dry conditions 	
Evidence sighted			
 Manager Asset M Principal Electric Asset Manageme Treatment Opera Senior Civil Asset Manager System 	al Engineer ent Contractor ations Contract Manager et Engineer o Operations Planning Team Leader		
4.2.4 - Compliance	and Performance Report 2015-16 page 103		
4.2.4 - Guideline, W	astewater Overflow Standard, Priority Matrix		
121 - Memo W/W/	NO QMS Resourcing and budgetary needs, July 2016 to June 201	7 (shows actions taken by Hunter Water to ensure that dry weat	har uncontrollad



Summary of reasons for grade

Hunter Water met the wastewater overflow standard specified under this clause during the audit period with 2,951 properties and 14 properties experiencing one or three or more uncontrolled sewage overflows respectively, which is substantially lower than the target of 5,000 and 45 respectively. Hunter Water showed evidence that it has sufficient systems in place to accurately measure and report on the performance requirement for this clause.

Discussion and notes

Properties that experience a dry weather overflow are identified through Hunter Water's customer service centre (by a customer or employee providing notification). This is entered into the AOMS database through which a maintenance team is notified to attend the site. A dry weather event is defined as 'when less than 10 millimetres of rainfall has been measured in a rain gauge in the catchment of the sewage treatment system during a 24 hour period' under Environmental Protection Licence 3755 (Paxton Wastewater Treatment Works)³¹⁵.

Repeat dry weather wastewater overflows are monitored using the AOMS system via a Charter History which is created against the rateable premise ID after the first overflow event. Subsequent overflow events are recorded and trigger an automated alarm for staff to investigate further.

All reports of dry weather overflows are assigned as priority 1 jobs against Hunter Water's priority matrix³¹⁶. This means that the site will be assessed within 1 hour and the overflow ceased within 4 hours.

Hunter Water has also developed contingency plans for high risk WWPS in 2014. A project to prepared 'key information summary documents' to improve operational responses to these WWPS's was completed in 2015. Hunter Water hired three contractors to extend this process to all WWPS's in late 2015³¹⁷.

Recommendations

The audit did not identify any recommendations relating to this clause.

Opportunities for improvement

The audit did not identify any observations relating to this clause.



³¹⁵ Other Environmental Protection Licences relevant to Hunter Water, such as those covering the Boulder Bay and Karuah treatment plants, do not include a definition of dry weather

³¹⁶ Guideline – Wastewater Overflow Standard, Priority Matrix (excel spreadsheet).

³¹⁷ Memo – WWNO, QMS Resourcing and budgetary needs, July 2016 to June 2017

Appendix A5 – Customers and Consumers

Table A5.1: Customer Contract (Clause 5.1)

Consumers Hu (5.1) Customer wi Contract (Clause 5.1.2) Risk	lause 5.1.2: unter Water must notify IPART of any significant changes that ith the Reporting Manual.	it proposes to make to the Customer Contract in accordance NO REQUIREME Target for full compliance
		Target for full compliance
Not informing IDAPT of sig		
	nificant proposed changes to the Customer Contract means ed or may be inappropriate to manage customer	That Hunter Water can show it has not undertaken any changes to its Customer Contract or if it has, that it informed IPART first and has a procedure in place to ma the process including changes to the documentation.
Evidence sighted		
Interviews 28 September 2 – Manager Billing and 0		
 Manager Customer C 	Care and Complaints	
 General Counsel 		
 Property Officer. 		
Responses to audit question	onnaire questions.	
Summary of reasons for g	grade	
Since there had been no ch	hanges, this clause was not auditable.	
Discussion and notes		

IPART noted that in Hunter Water's report of 31 March 2016, Hunter Water advised that there had been no significant changes. Hunter Water noted in its questionnaire response that no changes had been made to the Customer Contract during the audit period. Hunter Water also noted that:

"The Customer Contract forms a schedule to Hunter Water's Operating Licence therefore any change to the Customer Contract requires a licence variation. The licence may only be varied by the Governor by notice in the NSW government gazette (Hunter Water 2012-2017 Operating Licence clause 1.5.1 and Hunter Water Act 1991, Division 1 and Division 5). Neither occurred during 2015-16.

IPART's Review of the Hunter Water Corporation Operating Licence (currently underway) considers changes to the Customer Contract. Hunter Water's submission notifies IPART and the public of proposed significant changes. Hunter Water's submission was lodged on 15 July 2016 (as required), which is outside the audit period."

This issue was further reviewed with staff at the audit interviews to confirm status.

Recommendations

There are no recommendations for this licence clause.

Opportunities for improvement

There are no opportunities for improvement for this licence clause.



Table A5.2: Procedure for Financial Hardship,	Payment Difficulties	Water Flow Restriction and Disconnection	(Clause 5 4)
	r aymont Binioanioo		

Sub-clause	Requirement		Compliance grade
(5) Customers and Consumers (5.4) Customer	Clause 5.4.1: Hunter Water must notify IPART of any significant changes that with the Reporting Manual.	it proposes to make to the Customer Contract in accordance	
Contract (Clause 5.4.1 & 5.4.3)	Hunter Water must maintain and fully implement procedures relating to financial hardship, payment difficulties, water flow restriction and disconnection (Procedure for Payment Difficulties and Actions for Non-payment), which must include:		
	 (a) a financial hardship policy that helps residential Customers and future Bills; 	experiencing financial hardship better manage their current	
	 (b) procedures relating to a payment plan for residential Custor Hunter Water's opinion, experiencing financial hardship; 	mers who are responsible for paying their Bills and who are, in	
	(c) conditions for disconnection of supply or water flow restriction; and		FULL COMPLIANCE
	(d) provisions for self-identification, identification by community welfare organisations and identification by Hunter Water of residential Customers experiencing financial hardship.		
	Clause 5.4.3: Hunter Water must provide an explanation of the Procedure for Payment Difficulties and Actions for Non-payment free of charge to: (a) residential Customers, at least annually with their Bills;		
	 (b) residential Customers whom Hunter Water identifies as exprequests it. 	periencing financial hardship; and any other person who	
Risk		Target for full compliance	
Without appropriate procedures in place, customers may not understand their payment options in times of hardship and may default on their bills, resulting in potential for disconnection and amplified work for the utility in the longer term.		That Hunter Water demonstrates that it has in place adequate systems, to show adequacy and compliance with this clause. That Hunter Water communicates with its residential customers implements its Procedure including actions for non-payment. That Hunter Water has a method in place to provide the require	s to clearly show how it
		free of charge.	
Evidence sighted			



- Interviews 28 September 2016 with:
 - Manager Billing and Collections
 - Manager Customer Care and Complaints
 - General Counsel
 - Property Officer.
- Responses to audit questionnaire questions.
- Clause 5.4.1:
 - 5.4.1 Account Assistance Business Rules.pdf
 - 5.4.1 Account_Assistance_Flyer.pdf
 - 5.4.1 Code-of-practice-on-debt-and-disconnection-Nov2012.pdf
 - 5.4.1 Copy of monthly report for September 2015 of all payment plans and extensions in billing system.XLSX
 - 5.4.1 Credit Management Business Rules.pdf
 - 5.4.1 Debt & Disconnection Website Page.docx
 - 5.4.1 Debt-Recovery-and-Hardship-Policy.pdf
 - 5.4.1 Example Restricted property process from bill issue to collection including system screenshots.DOCX
 - 5.4.1 Example of Payment Extension and Payment Plans including screenshots from billing system.DOCX
 - 5.4.1 Framework & Policies Register Reservoir (Intranet).docx
 - 5.4.1 List of properties restricted 2015-16 extracted from billing system.XLSX
 - 5.4.1 Making Waves March June 2016 includes notification of Account Assistance and Debt and Disconnection.PDF
 - 5.4.1 Payment Assistance Website Page.docx
- Clause 5.4.3:
 - 5.4.3 Account Assistance Business Rules.pdf
 - 5.4.3 Account_Assistance_Flyer.pdf
 - 5.4.3 Code-of-practice-on-debt-and-disconnection-Nov2012.pdf
 - 5.4.3 Credit Management Business Rules.pdf
 - 5.4.3 Data Copy of monthly report for September 2015 of all payment plans and extensions in billing system.XLSX
 - 5.4.3 Data List of properties restricted 2015-16 extracted from billing system.XLSX
 - 5.4.3 Debt & Disconnection Website Page.docx
 - 5.4.3 Debt-Recovery-and-Hardship-Policy.pdf
 - 5.4.3 Example Restricted property process from bill issue to collection including system screenshots.DOCX
 - 5.4.3 Framework & Policies Register Reservoir (Intranet).docx
 - 5.4.3 Making Waves March June 2016 includes notification of Account Assistance and Debt and Disconnection.PDF
 - 5.4.3 Payment Assistance Website Page.docx
 - 5.4.3 Report Example of Payment Extension and Payment Plans including screenshots from billing system. DOCX
- Additional Evidence:
 - Standard Account Assistance HW2015-1469/2/12.001 Version 01 (replaces the Business Rules document).
- Framework Customer Services Framework.DOCX



- Report Policy Status Report Jan 2015.docx
- Report Policy Status Report July 2015.docx
- Post interview evidence:
 - Extract from bill print contractor (Making Waves, Internal Complaints Handling).docx
 - PAS FORUM 2016.pptx

Summary of reasons for grade

Hunter Water has processes and records in place to support the full compliance of this clause. In particular, Hunter Water has a Code of Practice on Debt and Disconnection³¹⁸ and various communication modes including a 'Making Waves' customer newsletter and its website on which its Debt Recovery and Hardship Policy³¹⁹ is published. The policy covers payment plans under conditions of hardship through Hunter Water's Account Assistance Program and for emergency payment assistance through the Payment Assistance Scheme. The policy includes all the information required by the licence clause i.e. states that customers are responsible for paying their bills, sets out the payment terms, covers disconnection conditions and water flow restriction conditions (5.4.1 (c)) and largely covers self-identification and identification by community welfare organisations with support from other components on the Hunter Water website (5.4.1 (d)). Records for payment plans were provided and random samples for two individuals checked at interview. Records could easily be found and the payment history reviewed. In addition to its procedures and documentation, Hunter Water also holds a half-day annual forum with key stakeholders including its partner welfare agencies. The results are used to optimise business process and improve financial hardship customer outcomes. This licence clause is considered fully compliant.

Discussion and notes

5.4.1 Financial hardship, payment difficulties, water flow restriction and disconnection

Hunter Water provided a copy of its Code of Practice on Debt and Disconnection³²⁰ and noted that the same was available on its website³²¹. We checked the website link provided³²² and note that the web document matches the document provided by Hunter Water. The document does not contain document control information so we have assumed that it has not been changed and is current for the purposes of the audit.

Hunter Water stated that the March-June 2016 version of 'Making Waves', its customer newsletter, contained information on Account Assistance and Debt and Disconnection. The version provided as evidence³²³ had only the first page which did not have the stated information attached. We checked the website for a copy of the newsletter and were able to confirm that the Code of Practice – Debt and Disconnection was covered on the second page of the newsletter³²⁴.

We were able to confirm that the Debt Recovery and Hardship Policy was published on the Hunter Water website³²⁵. The policy satisfies Clause 5.4.1 (a) through its existence. The policy covers payment plans under conditions of hardship through Hunter Water's Account Assistance Program and for emergency payment assistance through the Payment Assistance Scheme. The version of the policy currently on the web is that effective 1 July 2016 however, the document control information on the policy notes that the last review date was 30 June 2016, which is within the audit period. The policy:



³¹⁸ 5.4.1 Code-of-practice-on-debt-and-disconnection-Nov2012.pdf

³¹⁹ http://www.hunterwater.com.au/Resources/Documents/Policies/Billing/Debt-Recovery-and-Hardship-Policy.pdf, checked 5 September 2016.

^{320 5.4.1} Code-of-practice-on-debt-and-disconnection-Nov2012.pdf

³²¹ Dated November 2012.

³²² http://www.hunterwater.com.au/Resources/Documents/Guidelines--Manuals/Code-of-practice-on-debt-and-disconnection-Nov2012.pdf, checked 1 September 2016.

³²³ 5.4.1 Making Waves - March - June 2016 - includes notification of Account Assistance and Debt and Disconnection.PDF

³²⁴ http://www.hunterwater.com.au/Resources/Documents/Newsletters/Customer/MakingWaves_March-June2016_Web.pdf, checked 1 September 2016.

³²⁵ http://www.hunterwater.com.au/Resources/Documents/Policies/Billing/Debt-Recovery-and-Hardship-Policy.pdf, checked 5 September 2016.

- States that customers are responsible for paying their bills.
- Sets out the payment terms.
- Covers disconnection conditions and water flow restriction conditions (5.4.1 (c)).
- Largely covers self-identification and identification by community welfare organisations with support from other components on the Hunter Water website (5.4.1 (d)).

The policy is supported by information on Hunter Water's website³²⁶. Further information on welfare agencies/community organisations working with Hunter Water in the payment assistance scheme, is also clearly provided and easily accessible³²⁷.

Hunter Water has two main procedures in place to facilitate identification and management of hardship identification. The Account Assistance Business Rules³²⁸ covers the process of hardship assessment and clearly states the objectives³²⁹, process³³⁰ and roles and responsibilities³³¹. The Business Rules section (6) covers the types of hardship³³² and self- and Hunter Water-identification of customer hardship³³³.

The Account Assistance Business Rules document states that a review was due October 2013. It appears that this review cycle has not been met however, Hunter Water³³⁴ noted the following in terms of mapping and updating policies:

"Executive Management Team (EMT) has been receiving a quarterly policy status report on the review status of corporate policies, for awareness and reprioritisation (as needed):

Jan 2015 Policy Status Report – This report shows preliminary mapping of all existing policies and standards to the new controlled document hierarchy. Page 4 list the Customer Services Framework, Credit Management Policy now renamed as Debt Recovery and Hardship Policy (shading indicates "Document being drafted" per the legend on page 5) and Account Assistance Standard.

July 2015 Policy Status Report – This report shows a more refined mapping of controlled documents under the Corporate Document Hierarchy. Page 3 shows the Customer Services Framework, Credit Management Policy now renamed as Debt Recovery and Hardship Policy (shading indicates "Document being drafted" per the legend on page 5) and Account Assistance Standard. The Credit Management Policy status is shown as "Being drafted" and has a target date of 30 Sept 2015. You will notice that the Debt Recovery and Hardship Policy mentioned below has a "last review date" of 30 June 2016. The delay in review/approval of the document was transparently reported to the EMT in each quarterly status report. Hierarchically, it made sense for the Customer Services Framework to be approved first, then the policies and standards. The Customer Services Framework was approved in June 2016 (copy attached)."

Along with the evidence above and viewing the document hierarchy and Master Policy Register at the interview, the explanation for the Account Assistance Business Rules document not meeting its review cycle is acceptable.

At interview, we confirmed, through review of 'Reservoir', that the new standard for Account Assistance was available.³³⁵ Updates to the standard include improvements made to broaden identification of vulnerable customers.

326 http://www.hunterwater.com.au/Your-Account/Managing-Your-Account/Debts--Disconnection/, checked 5 September 2016, also provided with 5.4.1 Debt & Disconnection Website Page.docx.



³²⁷ http://www.hunterwater.com.au/Your-Account/Managing-Your-Account/Payment-Assistance/Payment-Assistance-Scheme.aspx, checked 5 September 2016.

^{328 5.4.1} Account Assistance Business Rules.pdf, Trim File Ref: HW2012-821/1/5, 17/12/2012

³²⁹ Section 2, p6.

³³⁰ Section 3, p7.

³³¹ Section 4, p8.

³³² "Hunter Water defines a customer in hardship as someone who is willing to pay their water bills on time, but is unable to do so, due to temporary or ongoing financial hardship. Hardship can be divided into two categories: temporary and ongoing." p10.

³³³ Section 6, p11.

³³⁴ Email from Hunter Water, Regulatory Economist to Retail Supply Auditor, 14 September 2016.

³³⁵ Standard Account Assistance HW2015-1469/2/12.001 Version 01 (replaces the Business Rules document).

Hunter Water provided a copy of all extensions and payment plans for September 2015³³⁶ (2,599 in total). The tags of 'kept', 'active', 'broken' concur with the Account Assistance Business Rules.³³⁷ The CIS Billing System was reviewed at the interviews. A request for data from February 2016 was made and provided. The number of customers on payment plans was 3,285 (*cf* the 2,599 for September 2015). It was noted that numbers are always higher in this part of the year given the pressures of Christmas. The February 2016 data also included the relevant, 'kept', 'broken', 'active', tags.

The Account Assistance Business Rules are supported by the Credit Management Business Rules.³³⁸ Oracle Utilities Customer Care and Billing V2.2.0 is used as the customer database (Customer Information System or CIS).

Examples of bill issue transaction, reminder notices and final notice were provided as evidence.³³⁹

Examples of payment extension and payment were provided as evidence.³⁴⁰ Two examples of customers were chosen at random from the information supplied before the interviews. Information could be easily located and payment installment history viewed. Where required, Hunter Water has avenues for collecting money from recalcitrant payers including engaging a debt recovery agency.

A screenshot of the Frameworks and Policies Register (Reservoir) was provided as evidence³⁴¹ and existence confirmed at interview.

A database extract of restricted properties was provided³⁴². The 'Restricted' category is covered in the Credit Management Business Rules.³⁴³ Restricted properties are a type of 'difficult to collect' account and are reviewed on a case by case basis.

5.4.3 Provide an explanation of the Procedure for Payment Difficulties and Actions for Non-payment free of charge

Hunter Water must provide an explanation of the Procedure for Payment Difficulties and Actions for Non-payment free of charge to:

- (a) residential Customers, at least annually with their Bills;
- (b) residential Customers whom Hunter Water identifies as experiencing financial hardship; and

any other person who requests it.

Much of the evidence provided for Clause 5.4.1 also applied to this clause. The Hunter Water website³⁴⁴ includes information on payment assistance which partly satisfies the 'free of charge' provision.

Hunter Water stated that the March-June 2016 version of 'Making Waves', its customer newsletter, contained information on Account Assistance and Debt and Disconnection. The version provided as evidence³⁴⁵ had only the first page, which did not have the stated information attached. We checked the website for a copy of the newsletter and were able to confirm that the Code of Practice – Debt and Disconnection was covered on the second page of the newsletter.³⁴⁶



³³⁶ 5.4.1 Copy of monthly report for September 2015 of all payment plans and extensions in billing system.XLSX.

³³⁷ Section 6.8.4, p18.

³³⁸ 5.4.1 Credit Management - Business Rules.pdf, May 2014, TRIM HW2012-821/1/5.

³³⁹ 5.4.1 Example - Restricted property - process from bill issue to collection including system screenshots.DOCX. Bill issued 4 February 2016, due 25 February 2016; reminder notice issued 3 March 2016 and final notice issued 10 March 2016.

³⁴⁰ 5.4.1 Example of Payment Extension and Payment Plans including screenshots from billing system.DOCX. Screenshot of Payment Extension – 9 Chorley CI Dudley - created 22 September 2015 for 25 September 2015 (cancelled 1 October as payment not received); Screenshot of Payment on 6 October 2015.

³⁴¹ 5.4.1 Framework & Policies Register - Reservoir (Intranet).docx.

^{342 5.4.1} List of properties restricted 2015-16 extracted from billing system.XLSX.

³⁴³ Section 5.16 Difficult to Collect Accounts, p22.

³⁴⁴ 5.4.3 Payment Assistance - Website Page docx. Website was checked, see evidence for Clause 5.4.1.

^{345 5.4.1} Making Waves - March - June 2016 - includes notification of Account Assistance and Debt and Disconnection.PDF

³⁴⁶ http://www.hunterwater.com.au/Resources/Documents/Newsletters/Customer/MakingWaves_March-June2016_Web.pdf, checked 1 September 2016.

To facilitate targeting and identification of financial hardship customers, Hunter Water holds a half-day Payment Assistance Scheme Annual Forum with key stakeholders including its partner welfare agencies. A Powerpoint presentation was provided as evidence³⁴⁷. The outcomes from this forum are used to improve customer outcomes. Hunter Water also liaises with Sydney Water in this area, again to optimize business processes around management of financial hardship customers.

Recommendations

There are no recommendations for this licence clause.

Opportunities for improvement

There are no opportunities for improvement for this licence clause.

³⁴⁷ PAS FORUM 2016.pptx.

Table A5.3: Internal Dispute Resolution Process (Clause 5.6)

Sub-clause	Requirement		Compliance grade
(5) Customers and Consumers (5.6) Customer Contract		onding to and resolving Complaints, which is consistent with the ction - Guidelines for complaints handling in organizations (ISO e).	
(Clause 5.6.1, 5.6.2 & 5.6.3)	Clause 5.6.2:		
5.0.5)	Hunter Water must ensure that the Internal Complaints Han are carried out in accordance with the procedure.	dling Procedure is fully implemented and that all relevant activities	FULL COMPLIANCE
	Clause 5.6.3:		
		vith their Bills information concerning the Internal Complaints nt and how the Internal Complaints Handling Procedure works.	
Risk		Target for full compliance	
customer service. If the	handling processes are important elements of managing ese processes are not in place, complaints may remain ally lead to amplified consequences overall.	That Hunter Water has appropriate procedures and processes customer requests. That Hunter Water's processes and procedures meet the requ 2006. That Hunter Water's Internal Complaints Handling Procedure i That Hunter Water demonstrates that it has provided information in condition 5.6.3 to Customers at least once each year.	irements of ISO 10002- s fully implemented.
Evidence sighted			
 Interviews 28 Septer Manager Billing a Manager Custom General Counsel Property Officer 	and Collections er Care and Complaints		
	questionnaire questions.		
5.6.3 Complaints_Ha	andling DL Flyer 14-15.pdf		



- 5.6.3 ComplaintsHandlingEWON_4pageNew Bill Insert.PDF
- 5.6.3 Customer_Contract_Summary_DL_Flyer_May15_web.pdf
- C5.6.1 Complaint Acknowledgement Letters (Aug-16).DOCX
- C5.6.1 Complaints Portal Extract 2015-16 AD.xlsx
- C5.6.1 Complaints Portal Extract 2015-16.XLSX
- C5.6.1 Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF
- C5.6.1 Customer Complaints Handling (Version Update August 2015).PDF
- C5.6.1 ISO 10002-2006 Checklist Complaint Procedures (19Aug16).DOCX
- C5.6.2 Case Handler Refresher Training Invitation (6Oct15).DOCX
- C5.6.2 Case Handler Training Agenda.DOC
- C5.6.2 Complaints Portal Extract 2015-16.XLSX
- C5.6.2 Guideline Case (Hunter Water) HW2008-235 3.088.DOC
- C5.6.2 How to Log a Customer Complaint or Enquiry (1Oct14).DOCX
- Post interview evidence:
- Extract from bill print contractor (Making Waves, Internal Complaints Handling).docx
- PAS FORUM 2016.pptx

Summary of reasons for grade

Hunter Water has processes and procedures in place which satisfy the requirement of this licence component. Hunter Water reviews and assesses trends in customer complaints and these are reported annually to IPART³⁴⁸. This item fulfils the requirement to analyse and evaluate complaints. The overall procedures, databases, systems and processes in place at Hunter Water fulfil the requirement to have a customer focused environment that is open to resolving complaints. The recognition and obligation to address the needs and expectations of customers is covered in the Customer Complaints Handling procedure³⁴⁹ and the accompanying checklist³⁵⁰ and database³⁵¹. Annually, Hunter Water includes a brochure with its bills outlining the complaint handling procedure³⁵². Contact information is provided on the flyer. Inventory evidence was provided to show that the flyer had been requested from the bill print contractor and that the contractor had received the information in question for distribution with Hunter Water bills³⁵³. This licence clause is therefore considered fully compliant.



³⁴⁸ C5.6.1 - Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF, Section 5, p37.

³⁴⁹ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF. TRIM HW2013-1079.023, 29.9.15.

³⁵⁰ C5.6.1 - ISO 10002-2006 Checklist Complaint Procedures (19Aug16).DOCX.

³⁵¹ C5.6.1 - Complaints Portal Extract 2015-16.XLSX.

³⁵² 5.6.3 Complaints_Handling DL Flyer 14-15.pdf.

³⁵³ Inventory extract showing the bill print contractor's internal component number and the description. Screen shots of the inventory transactions showing receipt of the stocks for the items listed in the inventory extract. Extract from bill print contractor (Making Waves, Internal Complaints Handling).docx.

Discussion and notes

5.6.1 Procedure for receiving, responding to and resolving Complaints, which is consistent with the Australian Standard AS ISO 10002-2006

Hunter Water has Complaint Handling Guidelines in place.³⁵⁴ The filename states that the update is August 2015 but the document history and questionnaire both note a September update. The discrepancy is not considered to be material as the document history is clear and it is this information that will be used by personnel accessing the document, to check currency. The TRIM number provided in the questionnaire did not match the TRIM number³⁵⁵ on the guideline document. At interview, it was explained that the TRIM number provided on the evidence document was to denote that it was evidence whereas the number on the document, is because it is a working Hunter Water document. This explanation was satisfactory.

Hunter Water notes that it is compliant with:

"AS/ NZS ISO 10002-2014 - Guidelines for Complaint Management and Complaints Management Plan"356

This is the current standard, therefore Hunter Water is actually going beyond its licence condition³⁵⁷. However, the wording in the Hunter Water guidelines does not match that of the actual standard:

Customer satisfaction - Guidelines for complaints handling in organizations

Hunter Water has introduced a checklist³⁵⁸ which maps the content of the Hunter Water guidelines against elements of ISO 10002-2006 for complaint handling. While the document complies with the requirement to meet 10002-2006, for completeness, Hunter Water should consider undertaking a review to ensure that the checklist matches 10002-2014 on which the Hunter Water guidelines is based. There was no TRIM reference or document history on the checklist document, therefore while it was not possible to verify that the checklist was within the audit period, its currency was confirmed at interview. Avenues for making complaints did not include social media. Other elements of the standard were included. The process flowchart³⁵⁹, which summarises the complaints handling process, is a valuable inclusion in the guidelines. The section "Appendix A – Operational Procedures for Dealing with Complaints" was missing from the guidelines. However, it was confirmed at interview that the heading should have been before the process flowcharts and was simply a formatting issue. This answer was considered satisfactory.

Hunter Water has a Complaint Management Portal in place for logging complaint cases. An extract³⁶⁰ of the 2015-2016 complaints was provided as evidence (747 records in total). The portal extract clearly shows links to records relating to the complaint including their TRIM (HPRM) reference number. Three were chosen randomly (date logged 7/04/2016, 15/02/2016 and 17/11/2015) for further scrutiny at interview. All records chosen could be accessed and a history of the complaints, and their resolution, was reviewed and found to be satisfactory.

- Recognising and addressing the needs and expectations of complainants
- Providing complainants with an open, effective and easy-to-use complaints process
- Analysing and evaluating complaints in order to improve the product and customer service quality
- Assessment of the complaints management process
- Reviewing the effectiveness and efficiency of the complaints handling process.

³⁵⁴ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF. TRIM HW2013-1079.023, 29.9.15.

³⁵⁵ Complaint Handling Guidelines (Sep-15) – HW2016-702/6/3.001.

³⁵⁶ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF, Section 3, p6.

³⁵⁷ The overarching components of AS ISO 10002-2006 are largely included in AS/NZS 10002:2014, these being:

[•] Enhancing customer satisfaction by creating a customer focused environment that is open to feedback (including complaints), resolving any complaints received, and enhancing the organisation's ability to improve its product and customer service

Top management involvement and commitment through adequate acquisition and deployment of resources, including personnel training

³⁵⁸ C5.6.1 - ISO 10002-2006 Checklist Complaint Procedures (19Aug16).DOCX

³⁵⁹ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF. TRIM HW2013-1079.023, 29.9.15., pp11-12.

³⁶⁰ C5.6.1 - Complaints Portal Extract 2015-16.XLSX.

A complaint acknowledgement letter template was provided as evidence.³⁶¹ The location of the template was confirmed at interview as being on a shared drive, accessible by personnel with the appropriate login access authority.

Hunter Water notes that it has adopted the Australian Standard (10002-2014) definition of complaint, this being:

expression of dissatisfaction made to an organisation, related to its products, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected³⁶²

We note that the definition is not exactly as stated in the 2014 standard³⁶³ but matches that of the ISO 10002-2006 standard and the 2013-2014 National Performance Framework.³⁶⁴ It would be prudent to reference the definition against the relevant standard to avoid confusion.

Hunter Water reviews and assesses trends in customer complaints and these are reported annually to IPART³⁶⁵. This item fulfils the requirement to analyse and evaluate complaints. The overall procedures, databases, systems and processes in place at Hunter Water fulfil the requirement to have a customer focussed environment that is open to resolving complaints. The recognition and obligation to address the needs and expectations of customers is covered in the Customer Complaints Handling procedure³⁶⁶ and the accompanying checklist³⁶⁷ and database³⁶⁸.

5.6.2 Ensure that the Internal Complaints Handling Procedure is fully implemented and that all relevant activities are carried out in accordance with the procedure

Complaints are logged through the Complaints Management Portal. Through the portal, complaints can be assigned a number, tagged with the type of complaint and records of actions taken noted – including whether the complaint has been closed out. A data extract from the portal was provided as evidence³⁶⁹ of implementation of procedures as noted above. Cases are assigned a 'Case Handler' as stated in the Customer Complaints Handling guidelines³⁷⁰ when they cannot be completed during the first contact and further investigation is required.³⁷¹ Information was provided on how to log a customer complaint or enquiry but there was no document history or document identifier on the material other than a date of October 2014.³⁷²

A Case Learner Resource was provided³⁷³ that is used in implementation training. The TRIM number appears to be included in the filename but there was no document history information or procedure number on the document. The date of the document is 2011 and could probably benefit from a review. There was no review cycle associated with the document. The document did appear to be comprehensive and match the information in the supporting documentation, databases and procedures in use by Hunter Water for managing this licence area.

Training evidence was provided including an email invitation for refresher training³⁷⁴, training material example and a Case Handler Training Agenda³⁷⁵.

5.6.3 Provide to Customers at least annually with their Bills information concerning the Internal Complaints Handling Procedure which explains how to make a Complaint and how the Internal Complaints Handling Procedure works



³⁶¹ C5.6.1 - Complaint Acknowledgement Letters (Aug-16).DOCX

³⁶² C5.6.1 - Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF, Section 5.4, p39.

³⁶³ AS NZS 10002-2014, Clause 4.2 "Expression of dissatisfaction made to or about an organization, related to its products, services, staff or the handling of a complaint, where a response or resolution is explicitly or implicitly expected or legally required."

³⁶⁴ National Water Commission (2014) 2013 - 14 National Performance Framework: Urban performance reporting indicators and definitions handbook ISBN: 978-1-922136-20-6, p40.

³⁶⁵ C5.6.1 - Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF, Section 5, p37.

³⁶⁶ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF. TRIM HW2013-1079.023, 29.9.15.

³⁶⁷ C5.6.1 - ISO 10002-2006 Checklist Complaint Procedures (19Aug16).DOCX.

³⁶⁸ C5.6.1 - Complaints Portal Extract 2015-16.XLSX.

³⁶⁹ C5.6.1 - Complaints Portal Extract 2015-16.XLSX.

³⁷⁰ C5.6.1 - Customer Complaints Handling (Version Update August 2015).PDF.

³⁷¹ Example p4 and p5 and Roles and Responsibilities commencing p7.

³⁷² C5.6.2 - How to Log a Customer Complaint or Enquiry (10ct14).DOCX.

³⁷³ C5.6.2 - Guideline - Case (Hunter Water) - HW2008-235 3.088.DOC.

³⁷⁴ C5.6.2 - Case Handler Refresher Training Invitation (60ct15).DOCX, email sent Tuesday, 6 October 2015 for training conducted 13 October 2015.

³⁷⁵ C5.6.2 - Case Handler Training Agenda DOC, Training Session Plan Case for Case Handlers.

Annually, Hunter Water includes a brochure with its bills outlining the complaint handling procedure³⁷⁶. It is a condition of the licence that Hunter Water is a member of EWON. We checked membership on the EWON website and were able to confirm membership³⁷⁷. Hunter Water and EWON's relation to complaints is covered in a flyer.³⁷⁸ Financial hardship is one area in which complaints may be raised. Hunter Water's Customer Contract Summary³⁷⁹ is available on the website and explains issues associated with financial hardship and conditions under which Hunter Water will provide a rebate. Contact information is provided on the flyer.

Inventory evidence was provided to show that the flyer had been requested from the bill print contractor and that the contractor had received the information in question for distribution with Hunter Water bills ³⁸⁰.

Recommendations

There are no recommendations for this licence clause.

Opportunities for improvement

OFI 5.6.1-1: Ensure that the Complaint Handling Guidelines are reviewed for correctness of referencing of standards and other legal and formal inclusions in the document as appropriate.

OFI 5.6.1-2: Hunter Water should consider undertaking a review of the ISO 10002-2006 Checklist Complaint Procedures to ensure that the checklist matches 10002-2014 on which the Hunter Water guidelines is based.

OFI 5.6.1-3: Hunter Water should review its complaint handling procedures to ensure that complaints arising from social media are considered.

OFI 5.6.1-4: Review the definition of 'complaint' as stated in IPART 2014-2015 Compliance Report (C5.6.1 - Compliance-and-Performance-Report-2014-15---submitted-to-IPART.PDF, Section 5.4, p39) to ensure accuracy of definition vs stated reference (the current definition matches the 2006 standard and 2013-2014 National Performance Framework (p40) but not the 2014 standard as stated).

OFI 5.6.2-1: Ensure that the Case Learner Resource (C5.6.2 - Guideline - Case (Hunter Water) - HW2008-235 3.088.DOC.) is reviewed (version provided was from 2011).

September

2016

http://www.hunterwater.com.au/Resources/Documents/Fact-



³⁷⁶ 5.6.3 Complaints_Handling DL Flyer 14-15.pdf.

³⁷⁷ http://www.ewon.com.au/index.cfm/about-us/our-members/, checked 13 September 2016.

 ³⁷⁸ 5.6.3 ComplaintsHandlingEWON_4page2015.pdf, 5.6.3 ComplaintsHandlingEWON_4pageNew - Bill Insert.PDF.
 ³⁷⁹ 5.6.3 Customer_Contract_Summary_DL_Flyer_May15_web.pdf, checked 13
 Sheets/Customers/Customer Contract Summary DL_Flyer 2014.pdf.

³⁸⁰ Inventory extract showing the bill print contractor's internal component number and the description. Screen shots of the inventory transactions showing receipt of the stocks for the items listed in the inventory extract. Extract from bill print contractor (Making Waves, Internal Complaints Handling).docx.

Appendix A8 – Performance Monitoring

Table A8.1: Reporting (Clause 8.2.1)

Sub-clause	Requirement		Compliance grade
(8) Performance monitoring(8.2) Reporting(Clause 8.2.1)	Hunter Water must comply with its reporting obligations set ou a) reporting to IPART and NSW Health in accordance with the b) making reports and other information publicly available, in th	Reporting Manual, and	FULL COMPLIANCE
Risk		Target for full compliance	
Water's operational	th this clause poses a moderate level of risk in respect of Hunter performance. Accurate measurement against performance ool in assessing the effectiveness of a utility's operations.	Provision of all reports and notifications required under the H manual to IPART and NSW Health. Provision of all information required to be publicly available, i requirements of the reporting manual.	
Evidence sighted			
 Manager Wate Treatment Op Engineer – Wa Group Manage Manager Regi Response to press 8.2.1 - Hunter Wate 	ptember 2016 with: er Network Operations erations Engineer ater Treatment Operations er Environment, Risk and Quality ulatory Policy -audit questionnaires ater Reporting Manual RM-Hunter Water-V2.pdf (HW2010-2072/13, -1 Hunter Water Reporting Manual Overview of reporting triggered 2		
Section 2 – Water	Quality		
2.1.1 Public report - Monthly water qu Cl 2.1.1 Monthly-	•		



- Cl 2.1.1 Key Physical, Chemical and Microbiological Parameters per hyperlink in monthly report.pdf
- Cl 2.1.1 Water-Quality-Zones map per hyperlink in monthly report.pdf

2.1.2 NSW Health report - monthly and quarterly

- CI 2.1.2 Records of Monthly Fluoridation Report to NSW Health showing latest filing date
- Cl 2.1.2 Email to NSW Health Hunter Water Fluoride Report November 2015.pdf
- Cl 2.1.2 Email to NSW Health Quarterly DWQ and RWQ Exceptions April to June 2016.pdf
- Cl 2.1.2 Email to NSW Health Attachment Data Hunter Water Fluoride November 2015.xls
- CI 2.1.2 Report Quarterly to NSW Health Drinking Water and Recycled Water Quality Exceptions April to June 2016.DOC

2.3.1 Incident and emergency reporting

- CL 2.3.1 Procedure Water Quality Notification to NSW Health.doc
- Cl 2.3.1 MOU Hunter Water and NSW Health pages 2 and 6.pdf
- Cl 2.3.1 Guideline Criteria for Notification to NSW Health Drinking Water Quality.XLS
- Cl 2.3.1 Example DWQ incident report to NSW Health Grahamstown WTP raw water algae Email 1.pdf
- CI 2.3.1 Example DWQ incident report to NSW Health Grahamstown WTP raw water algae Email 2.pdf

2.2 Compliance and Performance Report

- CI 2.2.1 Compliance and Performance Report 2015-16
- CI 2.2.1 Email to IPART Submitting Compliance and Performance Report 2015-16
- 2.2.1 Email from IPART Acknowledging receipt of Compliance and Performance Report 2015-16

Section 9 - Other

9.1 Audit recommendations

- Cl 9.1 Letter IPART to Hunter Water Deferral of audit recommendations report.PDF
- CI 9.1 Letter Hunter Water to IPART Status of audit recommendations 16 May 2016.PDF
- CI 9.1 Email from IPART Acknowledgement of receipt Audit recommendations status report 2015-16.pdf
- Cl 9.1 Email to IPART Audit recommendations status report 2015-16.pdf

9.3 Significant changes

- CI 9.3 Letter and Report Bath (ICEO) to Harmstorf Significant Changes Report 31 March 2016.PDF
- Cl 9.3 Email to IPART Significant changes report 2015-16.pdf



CI 9.3 Email from IPART - Acknowledgement of receipt - Significant changes report 2015-16.pdf

9.4 Statement of Compliance

- CI 9.4 Email to IPART Statement of compliance 2015-16.pdf
- CI 9.4 Email from IPART Acknowledgement of receipt Statement of compliance 2015-16.pdf

Ensuring compliance with reporting obligations

- Register Summary of Corporate Reporting Requirements.xlsx
- Procedure Standard Compliance Calendar.DOCX
- Form Compliance Calendar Update Form Nov 2014.DOCX
- Data Compliance Calendar June 2016 Filtered by OL Reporting Manual.xlsx
- Example email to employees requesting update of task status in Compliance Calendar.pdf
- Email inputs to Statement of Compliance.pdf
- Presentation Annual Regulatory Report Prep 2016 pages 4 and 8.PPTX (link in 8.2.1 Email inputs to Statement of Compliance)
- Example Template Statement of Compliance Finance 2015-16.DOCX
- Example approval of Divisional input to Statement of Compliance.docx

See also hyperlinked website documents in Hunter Water's response column.

Summary of reasons for grade

Hunter Water demonstrated that it met all relevant requirements of its reporting manual and that it has implemented effective systems to ensure reporting requirements are met.

Discussion and notes

The Hunter Water Reporting Manual was developed by IPART and is maintained on the IPART website³⁸¹. The manual outlines all of Hunter Water's reporting requirements as required under its operational licence. The manual specifies when Hunter Water should report, what information its reports must contain and how reports should be submitted.

Hunter Water maintains a corporate reporting register³⁸² which is managed by a risk analyst. This register provides details of responsibilities for developing reports (including contributors) and network links or TRIM details for relevant input data. Regulatory reporting requirements are also tracked using Hunter Water's corporate compliance calendar which was reviewed by the auditors³⁸³. Hunter Water maintains its corporate compliance calendar using a compliance calendar standard.



³⁸¹ http://www.ipart.nsw.gov.au/Home/Industries/Water/Public_Water_Licensing

³⁸² Summary of Corporate Reporting Requirements (excel spreadsheet)

³⁸³ Data – Compliance Calendar – June 2016 (excel spreadsheet)

Hunter Water advised that as part of its annual regulatory reporting process, an email is provided to all employees responsible for ensuring that Hunter Water is compliant with Operating Licence requirements, including those requirements in the Reporting Manual. The email provides guidance on inputs to the annual Statement of Compliance and its significance. Each Division is provided with a template that includes the full suite of Operating Licence requirements and highlighting those relevant to the Division, so that compliance can be checked. The completed template is reviewed and endorsed by the Executive Manager of each Division. An example email from Hunter Water's regulatory compliance team to relevant staff that addresses regulatory reporting was sighted by the auditors³⁸⁴. This email outlined relevant reporting requirements and responsibilities and provided links to a presentation and compliance and performance report guideline that were also sighted by the audit team.

During audit interviews, Hunter Water staff reported that they were investigating the implementation of an integrated management system to provide an automated system for tracking reporting requirements (and other responsibilities such as quality and risk assessment processes). Hunter Water's current aim is to implement this system in June 2017.

Hunter Water's compliance with the requirements of the Reporting Manual is discussed below:

Section 2 - Water Quality

2.1.1 Public report - monthly

Hunter Water must prepare a report that summarises the results of routine drinking water quality monitoring each month. This report must be made publicly available by the second week of the following month.

2.1.2 NSW Health report - monthly and quarterly

Hunter Water is required to submit a monthly fluoride monitoring report to NSW Health within the first week of each month. An example report sighted during the audit was found to comply with these requirements³⁸⁵

Hunter Water is required to submit a quarterly report on drinking water and recycled water quality to NSW Health on an exception basis. This means the report is only required to include test results for drinking and recycled water quality if relevant guideline values are exceeded. An example report sighted during the audit was found to comply with these requirements³⁸⁶.

2.2.1 Annual compliance report

Hunter Water is required to submit a compliance and performance report to IPART for each final year. This report must follow the template provided in the manual and be submitted by 1 September after the end of each year, or as otherwise agreed to by IPART.

Hunter Water's *Compliance and Performance Report 2015-16* was a key document examined for the audit and evidence was sighted to show it was submitted to IPART prior to its due date ³⁸⁷. This report was found to be available under the Regulatory Reporting part of Hunter Water's website ³⁸⁸.

Clause 1.6.1 of the reporting manual states "Where this Reporting Manual requires information on more than one area (e.g., water quality and environment) at the same time, Hunter Water is encouraged to provide the information in a single report. However, Hunter Water may choose to report the information in separate reports." Hunter Water has



³⁸⁴ Internal email (12 July 2016) Regulatory Reports

³⁸⁵ Email to NSW Health - HWC Fluoride Report - November 2015

³⁸⁶ Email to NSW Health – Quarterly DWQ and RWQ Exceptions April to June 2016

³⁸⁷ Email to IPART – Submitted Compliance and Performance Report 2015-16.

³⁸⁸ <u>http://www.hunterwater.com.au/About-Us/Our-Organisation/Governance/Regulatory-Reporting.aspx</u>

chosen to provide a single report covering all compliance and performance reporting sub-clauses (i.e. 2.2.1, 3.2.1, 4.2.1, 5.2.1, 6.2.2, 7.2.1 and 8.2.1). This is the first year in which the annual reporting requirement in relation to the quality management system (clause 7.2.1) has been triggered.

2.3.1 Incident and emergency reporting

The reporting manual specifies that Hunter Water must immediately report to NSW Health of any incident in the delivery of its services that may adversely affect public health. Hunter Water provided an example incident report relating to algal bloom at Grahamstown Dam in July 2015 that showed the issue was reported immediately and resolved to NSW Health's satisfaction³⁸⁹.

Hunter Water has developed a procedure to ensure that appropriate Hunter Water staff are aware of, and undertake, the appropriate actions of notifications to NSW Health of water quality events of public health significance³⁹⁰. The types of adverse water quality events requiring notification was agreed under the Memorandum of Understanding between Hunter Water and NSW Health which was sighted by the auditors. A guideline containing the criteria for notification to NSW Health is also kept in Hunter Water's records management system and includes links to proforma reports and guidelines for dealing with specific incidents³⁹¹.

The auditors questioned whether recent identification of groundwater contamination at RAAF Airbase Williamtown (covering part of the Tomago Sandbeds) constituted an incident under the reporting manual. Hunter Water responded that when both Hunter Water and NSW Health became aware of the issue, there was no evidence of contamination of drinking water. Hunter Water and NSW Health discussed this issue at their regular liaison meeting. Hunter Water wrote to NSW Health in September 2014³⁹² to confirm the precautionary measures put into place to manage potential risks associated with this issue. Audit interviews found that Hunter Water has committed staff at very senior levels to manage potential risks associated with other agencies such as NSW Health, Environment Protection Authority and the NSW Government regarding this issue.

The audit found that the contamination issue at RAAF Airbase Williamtown did not constitute a reportable incident under the reporting manual. The guidelines applicable to the contaminant (ADWG) do not provide a criteria for the relevant contaminant and in cases where a trigger level is not specified for a contaminant, the US EPA guideline limits are used for reporting purposes. In this case, the levels detected in groundwater were below the US EPA guideline limits and therefore the requirement for an 'incident report' was not triggered.

Section 9 - Other reporting

9.1 Audit recommendations

Hunter Water must report annually on the status of any audit recommendations and opportunities for improvement identified in the most recent operational licence audit and outlined in IPART's audit report to the Minister. Hunter Water's report must be submitted by 31 March each year. IPART instructed Hunter Water to defer the submission date for Hunter Water's audit response report for the 2014/15 operational audit to 16 May 2016³⁹³. The 2014-15 operational audit was delayed due to issues beyond Hunter Water's control. Hunter Water provided evidence to show it complied with the revised date³⁹⁴

9.3 Significant changes

Hunter Water is required to submit a report to IPART detailing any significant changes that have occurred to:



³⁸⁹ DWQ incident report to NSW Health – Grahamstown WTP raw water algae (3 emails)

³⁹⁰ Notification of Water Quality Events of Potential Public Health Significance to NSW Health – Version 1 (September 2016)

³⁹¹ Guideline – Criteria for Notification to NSW Health – Drinking Water Quality (excel spreadsheet)

³⁹² Letter – Hunter Water to NSW Health – RE: OPERATION OF TOMAGO BOREFIELD HW2007-1003/10.062

³⁸³ Letter – IPART to Hunter Water, 27 November 2015 (IPART ref: D15/288683) Deferral of Audit Recommendation Status (31 March) Reporting

³⁹⁴ Letter – Hunter Water to IPART, 16 May 2016 (Hunter Water Ref: HW2009-1194/11/3) Status of Recommendations – 2014/15 Operational Audit

- Drinking Water Quality Management System
- Recycled Water Quality Management System
- Asset Management System
- Customer Contract
- Programs outlined under Clause 6.1.4 of the operational licence
- Environmental Management System
- Quality Management System.

Hunter Water provided a report to IPART on 31 March 2016 outlining changes made to its Drinking Water Quality Management System and Quality Management System during the reporting period³⁹⁵.

9.4 Statement of Compliance

Hunter Water submitted the statement of compliance for 2015-16 to IPART on 25 August 2016, as required under the Reporting Manual ³⁹⁶.

Public accessibility of reports

A review of Hunter Water's website found that all required reports were publicly available, and that the appropriate version of each report was provided.

Recommendations

The audit identified no recommendations relevant to this clause.

Opportunities for improvement

The audit identified no opportunities for improvement relevant to this clause.

³⁹⁵ Letter and Report – Hunter Water to IPART – Significant Changes Report 31 March 2016
³⁹⁶ Email from Hunter Water to IPART (25 August 2016) Report – Statement of Compliance

Table A8.2: Reporting (Clause 8.2.2)

Sub-clause	Requirement		Compl	iance grade
(8) Performance monitoring(8.2) Reporting(Clause 8.2.2)	Hunter Water must maintain sufficient record systems that ena 8.2.1.	able it to report accurately in accordance with condition	HIGH	COMPLIANCE
Risk		Target for full compliance		
Water's operational per	nis clause poses a moderate level of risk in respect of Hunter rformance. Accurate measurement against performance in assessing the effectiveness of a utility's operations.	Demonstration that Hunter Water has effectively implemente system.	ed a comprehe	ensive records
Evidence sighted				
 Treatment Opera Engineer Group Manager E Manager Regulat Response to pre-au 8.2.2 - Register - AL 8.2.2 - Email - inputs 8.2.2 - Presentation 8.2.2 - Guideline - C 8.2.2 - Example end 8.2.2 - Email to Exec 8.2.2 - Email to CFC 	Vetwork Operations tions Engineer Environment, Risk and Quality cory Policy dit questionnaires .S Lab Contract Audit Inspection Register.xls is to Compliance and Performance Report.pdf - Annual Regulatory Report Prep 2016 pages 2 3 6 7.PPTX compliance and Performance Report 2016 - Process and Respo forsement of Compliance and Performance Report Chapter.doc: cutive Management Team - review of draft Compliance and Performance o - MD review of draft Compliance and Performance Report.pdf.	x formance Report.pdf		
Summary of reasons	for grade			



Hunter Water was found to have implemented a comprehensive records management system (TRIM) and document control system (Integrum), which most documents reviewed for the audit adhered to. Several documents were identified that did not fully comply with these systems and therefore full compliance with this clause was not demonstrated.

Discussion and notes

Records management

Hunter Water uses a record management system referred to as Total Records and Information Management (TRIM). The auditors observed Hunter Water staff using the TRIM system at a number of points during the audit and Hunter Water stated that 'generally, draft reports and correspondence are recorded, reviewed, endorsed and approved in TRIM'. Hunter water uses the Integrum system to manage controlled documents as it has an electronic approvals process and provides notifications when reviews are required, Hunter Water has created an information resource for records management on its intranet site³⁹⁷, a procedure for document control³⁹⁸ that covers both the TRIM and Integrum systems.

Several documents provided as evidence for the audit did not display any records management system details, such as a TRIM number³⁹⁹. This is required under Hunter Water's document control procedure³⁹⁸. Further to this, some documents were observed that had records management details that appear to be inconsistent with the TRIM or Integrum systems⁴⁰⁰.

Accuracy of compliance reporting

Hunter Water's regulatory policy team is responsible for coordinating the annual compliance and performance report. The report is subject to the following review process.

- An email is provided to chapter coordinators (Business Owners) along with guidance material and templates.
- Business Owners compile report data and write a draft version of the relevant chapter.
- The draft is reviewed by supervisors and changes made as appropriate for submission to the Group Manager.
- The Group Manager reviews and endorses the draft chapter through the TRIM system⁴⁰¹. The draft chapter is submitted to the Regulatory Policy team.
- The Regulatory Policy team combine the chapters into a consolidated report, check that all requirements set out in the Reporting Manual are addressed, and check for accuracy and consistency across chapters.
- Changes are made in consultation with the chapter coordinators and Group Managers as appropriate.
- The report is provided to the Executive Management Team for review⁴⁰².
- Any changes arising from the Executive Management Team review are incorporated prior to final review by the Managing Director and submission to IPART. *Water Quality*

Australian Laboratory Services (ALS) provides laboratory services to Hunter Water Corporation under Contract CS0509 Laboratory Services. ALS uses a commercial-off-the-shelf system developed by LabWare to record and report samples and test results. In 2015-16, updated data from LabWare was provided daily to update Hunter Water's in-house



³⁹⁷ Hunter Water Intranet / Home / Our Sites / RM (TRIM)

³⁹⁸ TRIM HW2012-441/9/1.002 Procedure Manage Document Control

³⁹⁹ e.g. Asset Class Management Plan – Drive Controllers, Portfolio Management Guide, Current (May 2012), Chichester Trunk Gravity Main Asset Management Plan (Hunter H20), Economic Level of Leakage Program Review and Report (May 2014), Recycled Water Quality Management Plan Karuah WWTW (June 2016)

⁴⁰⁰ e.g. QP 0521 - Licence Reporting

⁴⁰¹ The audit team reviewed a screen shot of the endorsements for the 2014/15 Compliance and Performance Report

⁴⁰² The audit team sighted an email to the Executive Management Team requesting review of the 2014/15 Compliance and Performance Report (15 August 2016)

	a system which provides the ability to analyse and report on water quality and other regulatory requirements and perform queries to manage operations and ad-
	ory Services Contract (Schedule 1 Clauses 23 & 24), ALS is required to establish and maintain NATA accreditation during the contract Term. Hunter Water
currently undertake	es monthly audits of ALS's laboratory sampling and testing procedures ⁴⁰³ . ALS also regularly undertakes its own audits.
Recommendation	
2015-2016 4.1.1 R	 Ensure all compliance related documents meet the requirements of Hunter Water's document control system.
Opportunities	for improvement
OFI 8.2 1-1	Consider reviewing duplication of records management functions across Hunter Water's various systems, with a view to establishing one records system used by all parts of the business. This could form part of the integrated management system under investigation by Hunter Water (refer to Clause 8.1.1).



⁴⁰³ ALS Lab Contract Audit Inspection Register (excel spreadsheet)

Table A8.3: Performance Indicators (Clause 8.4.1)

Sub-clause	Requirement		Compliance grade
(8) Performance Monitoring(8.4) Performance indicators(Clause 8.4.1)	performance indicators specified in the Reporting M b) In the case of any ambiguity in the interpretation Manual, IPART's interpretation or assessment of the	or application of any performance indicators specified in the Reporting e indicators will prevail. ch year and compliance with clause 8.4.1(a) is assessed for the selected	FULL COMPLIANCE
Risk		Target for full compliance	
of Hunter Water's ope	this clause poses a moderate level of risk in respect erational performance. Accurate measurement against is a key tool in assessing the effectiveness of a	Demonstration of accurate reporting and implementation of records managereporting against the specified environmental indicators.	gement systems for
Evidence sighted			
 Environmental F Manager Water Network Engine Energy Manage Response to pre-a 8.4.1 (all) - Complia 8.4.1 E1 - au_case 8.4.1 E2 - Example 8.4.1 E3/4 - Enviro 8.4.1 E5 - Example 	nment and Sustainability Planner Operational Projects Network Operations er r udit questionnaires ance and Performance Report 2015-16 p108-116 es_nsw_NSWLEC_2016_76 e contractor monthly report nment_ 2015_16 Annual Electricity Data Collate		



- 8.4.1 E5/6 Veolia Biosolid Data
- 8.4.1 E7 Contractor Waste Data for 2015_16
- 8.4.1 E7 Screenings_Grit_Extract
- 8.4.1 E7 Spreadsheet solid waste recycle
- 8.4.1 E7 Water Residual Disposal 201516.msg
- 8.4.1 E7 2015-2016 Landfill Report
- 8.4.1 E8 Tarro to Beresfield WPS CTGM Replacement REF_Section 4.4.2_page 44
- 8.4.1 E8 Overhead Transmission Veg Clearing Ecological Assessment_Section 7.0_page 41
- 8.4.1 E8 Belmont RM 6 Southern REF_Section 5.5.2_page 44
- 8.4.1 E8 NativeVegetationAreaLoss-Gain_2015-16
- 8.4.1 E8 Teralba Mains -REF-Page 20
- 8.4.1 E8 Medowie mains REF Appendix D_page 21
- 8.4.1 E8 NativeVegetationAreaLoss-Gain_2015-1
- 8.4.1 E9 Lambton Ker Rai Creek REF_Section 2._Page 4
- 8.4.1 E9 Shortland WWTW Rehabilitation Report
- 8.4.1 E9 Restoration plan_Lochinvar PS
- 8.4.1 E9 Windale_Site Rehab Plan_20131106
- 8.4.1 E9 NativeVegetationAreaLoss-Gain_2015-16
- 8.4.1 E10 NativeVegetationAreaLoss-Gain_2015-16
- 8.4.1 E11 utilities_hunter_water_licences_and_approvals_november2011_Pg33

Summary of reasons for grade

Hunter Water demonstrated that it has an effectively implemented environmental management system, which is reflected by the continuation or improvement of good performance against the environmental indicators specified by IPART.

Discussion and notes

E1 - Total number of proceedings and Penalty Notices under the Protection of the Environment Operations (POEO) Act 1997 issued to the water utility



Hunter Water received one proceeding under the POEO Act during the audit period (Land and Environment Court Case number NSWLEC76 17/6/2016). This proceeding related to a 2014 incident in which fluoride leaked from a broken pump at Dungog Water Treatment Plant over a period of about 4 months. The prosecution also related to the use of treated water (containing chlorine) for flushing of the local creek which had been affected with fluoride, when raw water (without chlorine) could have been used⁴⁰⁴. The Land and Environment Court ordered Hunter Water to:

- pay an amount of \$150,000 to Hunter Local Land Services to carry out a project to manage sediment export and grazing on the Dungog Common Recreation Reserve
- pay a total amount of \$37,5000 to the NSW Environmental Trust for general environmental purposes
- pay the EPA's legal costs of the prosecution
- place and pay for a publication notice

Since the incident occurred, Hunter Water has replaced the fluoride storage and dosing facility at Dungog Water Treatment Plant⁴⁰⁵. Hunter Water has also developed a procedure for removing chlorine from treated water to be discharge to the environment⁴⁰⁶.

In the previous 5 years Hunter Water received three other prosecution under the POEO Act with the most being received in 2012-13 (during which two were received). Hunter Water's performance against this is therefore considered to have remained constant for the audit period.

E2 - Total number of proceedings and Penalty Notices under the Protection of the Environment Operations (POEO) Act 1997 issued to contractors engaged by the water utility.

Hunter Water reported that no penalties or proceedings were issued to contractors undertaking work for Hunter Water. Hunter Water requires contractors to complete a monthly environment report for each contract, which details reportable environmental incidents, prosecutions and penalty notices, complaints, staff complaints, energy use and waste use⁴⁰⁷.

In the previous 5 years contractors undertaking work for Hunter Water received one prosecution under the POEO Act (in 2013/14). Hunter Water's performance against this is therefore considered to have remained constant for the audit period.

E3 - Total electricity consumption by water assets (KWh/ML of water supplied to be included).

Hunter Water's *Compliance and Performance Report 2015-16* shows that electricity consumption per ML of water treated slightly improved over last year's level, despite the volume of water treated being higher in 2015-16. During staff interviews it was reported that overall energy consumption is falling and this is considered to be the effect of several energy efficiency initiatives being undertaken. Energy use is also generally lower during wetter years due to lower water consumption.

Hunter Water employs two energy specialists to review electricity use and identify and implement energy efficiency actions on a full-time basis. Electricity and energy use by both Hunter Water and Veolia is tracked by this team⁴⁰⁸. Hunter Water staff reported that a number of energy efficiency measures were implemented during the audit period, including variable speed drives at two major pump stations (Schroder and Ferrodale 1A) and active management of demand loads and several treatment plants.

Hunter Water uses a spreadsheet to collate electricity use data⁴⁰⁹, which contains details of electricity use per major site (e.g. treatment plants) and provides totals for the water network, wastewater network, Veolia, Hunter Water etc.



⁴⁰⁴ Land and Environment Report – (2016)NSWLEC 76

⁴⁰⁵ Compliance and Performance Report 2015-16 page 108

⁴⁰⁶ Procedure EP0112 – Dechlorination of discharge water (HW2012-738/4/16.001)

⁴⁰⁷ An example monthly environmental report for Chisholm 1 WWPS Upgrade was sighted by the auditors.

⁴⁰⁸ Energy use by site and type is tracked on the 'Annual Electricity Data' spreadsheet

⁴⁰⁹ Annual Electricity Data Collated (excel spreadsheet)

Compared to the past 5 years, energy use per ML of water treated in 2015-16 remained relatively constant.

E4 - Total electricity consumption by sewer assets (KWh/ML of sewage collected)

Hunter Water's *Compliance and Performance Report 2015-16* shows that electricity consumption per ML of sewage treated increased in 2015-16, although this figure was higher in 2013-14. Hunter Water reported that the higher energy consumption is thought to be attributed to higher wet weather events in 21015-16 and 2013-14.

Compared to the past 5 years, energy use in 2015-16 remained relatively constant, with higher energy use recorded in 2012-13.

E5 - Electricity consumption from renewable sources or generated by the water utility expressed as a percentage of total electricity consumption.

Hunter Water has established the following renewable energy generation systems:

- Cessnock Wastewater Treatment Works (WWTW) digester biogas cogeneration unit
- Hunter Water Head Office (Honeysuckle) photovoltaic solar panels
- Chichester Dam hydro-electric power generator
- CTGM pipeline hydro-electric power generator.

Hunter Water reported that renewable energy generation in 2015-16 was lower due the planned decommissioning of a hydrogenation unit at Chichester dam and failure of the biogas unit at Cessnock WWTW⁴¹⁰.

When compared to the last 5 years, Hunter Water's renewable electricity generation levels are 45 percent lower than 2014-15, but still higher than the period from 2001-2014. As explained above, this reduction is due to faulty equipment and decommissioning of existing systems. Hunter Water states that it expects its renewable energy generation levels to be higher in 2016-17 due to increased functioning of Cessnock WWTW.

Hunter Water's performance against this element has fallen in the audit period, although when compared with the period prior to 2013 it represents a significant increase, rising from 0 to 0.33 percent of overall electricity generation. Hunter Water's overall performance against this element is therefore considered to remain constant for the audit period.

E6 - Total mass of biosolids produced by the water utility.

Hunter Water produced 23 per cent more biosolids during 2015-16 compared to the year before. Hunter Water stated⁴¹¹ that increased biosolid production was 'due to growth in wastewater catchments, improved solids capture at WWTW's, the change of the biosolids production method at Shortland WWTW and intermittent plant dewatering undertaken'.

This increase in biosolids production does not appear to be linked to increases in volumes of sewage collected or treated, with approximately 2 percent less sewage being collected in 2015-16 when compared to 2014-15⁴¹². During audit interviews Hunter Water staff stated that the increased biosolid production level was mainly caused by increased frequency of sludge lagoon pump outs and improvements to biosolid capture and dewatering processes at several WWTW's. It is the auditor's view that increased biosolid production levels represent an improved environmental outcome, as it results in reduced solids being discharged to the environment or being stored in lagoons at WWTW's for later retrieval or processing. Hunter Water's performance against this indicator is therefore considered to have improved during the audit period.

Hunter Water aims to beneficially reuse 100 percent of the biosolids it produces and a biosolids tracking sheet maintained by Veolia⁴¹³ shows that this was achieved in 2014-15. During the audit period, 88 percent of biosolids were used for land improvement works with the remaining 12 percent being stockpiled for future use.



⁴¹⁰ Compliance and Performance Report 2015-16 page 109

⁴¹¹ Compliance and Performance Report 2015-16 page 110

⁴¹² Refer to lines W18 and W18.5 on page 121 of the Compliance and Performance Report 2015-16

⁴¹³ Veolia_Biosolid_Data (excel spreadsheet)

During the site inspection, it was noted by Veolia staff that biosolid production is tracked via measurements taken through biosolid processing and transport off-site for re-use.

E7 - Percent of solid waste recycled or reused expressed as a percentage of solid waste generated.

Hunter Water records bulk waste quantities from construction and major maintenance activities and some office waste products to determine its performance against this element. Data sources include:

- Contractors for construction wastes
- Veolia for water residuals and grit and screenings data
- Hunter Water's civil maintenance group for solids waste generation/disposal records.

Hunter Water provided the auditors with a waste tracking spreadsheet⁴¹⁴ showing that the major component of the waste stream recorded being spoil (72 percent of total waste), with other major components being ferrous metal, grit and screenings and residuals. Total office paper is also recorded, but only represents a small portion of the overall total (0.2 per cent).

The percentage of waste collected that has been recycled is 8 percent lower than the previous year⁴¹⁵ and Hunter Water states that '*In 2015-16, recycling and reuse was slightly below Hunter Water's target of 80 percent. In 2015-16 water treatment plant residuals were disposed to landfill. Whereas, there was no disposal of residuals in 2014-15. There was a larger volume of weeds taken to landfill (and hence not recycled) than in 2014-15⁴¹³. This is supported by the waste tracking spreadsheet provided by Hunter Water⁴¹¹ which shows that, without disposal of water treatment residuals, the overall recycling figure for 2015-16 would be around 85 percent.*

The auditors note the following issues with this element:

- It requires the aggregation of data from a wide variety of waste streams that in-turn come from a wide variety of sites and/or processes. The accuracy of data collection from such a base would be difficult to verify without undertaking a specific waste stream audit.
- Calculating total waste generated and total waste recycled places a large emphasis on bulk wastes and this negates efforts put into recycling of smaller waste streams. For instance, 100% of office paper was recycled in 2015-16 but due to its low overall quantity, if no office paper had been recycled the overall recycling figure provided in the compliance report⁴¹² would have reduced by 0.1 percent. Conversely, if no soil/spoil had been recycled, this would have reduced the overall figure reported by 68 percent.
- Due to the heavy emphasis on bulk wastes such as spoil, performance against this element is highly affected by construction activities undertaken during the audit period. The ability to recycle spoil from construction activities can be affected by a range of factors such as construction program, what is being constructed and site conditions. It is therefore difficult to determine performance against this element without an examination of spoil handling processes at construction sites.

E8 - Total area of clearing of native vegetation.

Hunter Water clears native vegetation where required during construction activities in bushland areas and to maintain easements for its powerlines (Hunter Water owns about 110 kilometres of transmission lines which are mostly located in bushland areas). As such, annual clearing figures are not consistent and this is reflected in Hunter Water's results for 2015-16 which show 19.8 hectares of native vegetation were cleared⁴¹³. Hunter Water stated that *'the main project contributing to this result involved clearing vegetation adjacent to overhead powerlines owned by Hunter Water, in order to reduce the risk of bushfire'⁴¹³.*

Hunter Water calculates its native vegetation clearing areas through the environmental impact assessment process. This requires Hunter Water staff or contractors to prepare a Review of Environmental Factors (REF) or other type of environmental assessment to determine environmental impacts such as how much native vegetation would be cleared for



⁴¹⁴ NativeVegetatioAreaLoss-Gain (excel spreadsheet)

⁴¹⁵ Compliance and Performance Report 2015-16 page 110

a project. Hunter Water provided the auditors with example REFs prepared for native vegetation clearing activities during the audit period, including water main works⁴¹⁶. Clearing estimates in these REFs were made by qualified and experienced ecologists, based on field surveys and are considered by the auditors to be highly accurate.

Hunter Water implements an internal 'greenslip' process for reviewing and approving all native vegetation clearing activities. This involves a review of the project REF by appropriate staff including the project manager, environmental planner, project controller and group manager or chief operating officer. For projects with a capital expenditure value of over \$5M or those that require external planning approval, approval is also required from the chief operating officer.

A greenslip sighted by the auditors for clearance of native vegetation for around Hunter Water's transmission lines⁴¹⁷ was found to have been endorsed and approved by all required staff⁴¹⁸.

Hunter Water cleared 19.8 hectares of native vegetation in 2015-16 which is significantly more than any of the past 5 years⁴¹³. The auditors do not consider this to be a sign of decreasing environmental performance by Hunter Water as this is linked to construction and maintenance activities and Hunter Water demonstrated that it appropriately assesses all clearing activities prior to clearing being undertaken.

E9 - Total area of native vegetation rehabilitated

Hunter Water undertakes rehabilitation of native vegetation where required to rehabilitate construction sites or as part of environmental improvement projects. In 2015-16, Hunter Water provided 8 hectares of unused land at Shortland WWTW for rehabilitation to native vegetation under the National Landcare Program⁴¹⁹. A large rehabilitation program was also undertaken in 2013-14 which saw 160 hectares of rehabilitation being established for carbon sequestration benefits. Rehabilitated areas are estimated from EIA documents or rehabilitation plans where appropriate.

E10 - Total area of native vegetation gain due to rehabilitation, replanting and protection by the water utility.

Hunter Water reported a net loss of native vegetation of 11.2 hectares during the audit period⁴¹⁷. This is the balance of the clearing and rehabilitation activities discussed above.

E11 - Total number and nature of proceedings or Penalty Notices of conditions under licences issued to the water utility by NOW for water management.

Hunter Water reported that no proceedings or penalty notices relating to Water Management Licence conditions have been issued to Hunter Water by the Department of Primary Industries – Water during the audit period⁴¹⁷.

Recommendations

There are no recommendations relating to this clause.

Opportunities for improvement

OFI 8.4 1-1

IPART should consider revising Environmental Indicator 7 to provide better clarity between different waste streams. This could be achieved by requiring reporting of recycling of key waste streams that effectively display Hunter Water's efforts with recycling.



⁴¹⁶ REFs sighted included: REF for Teralba Stage 3 Sewer and Future Water Main (Firebird ecoSultans November 2015), Belmont 6 Rising Main Replacement 3rd Stage REF (Hunter Water Australia, August 2015); and, REF for Sewer and Water Services for a Residential Subdivision at Medowie (Firebird ecoSultans, January 2016)

⁴¹⁷ HW2013-927 8 2.003 Form – Overhead Transmission Line Network Clearing (word doc)

⁴¹⁸ Hunter Water provided a screenshot from the TRIM system showing the approval process had been followed appropriately prior to clearing taking place.

⁴¹⁹ Refer to Compliance and Performance Report 2015-16 page 111

Appendix A9 – Memorandum of Understanding

Table A9.1: NSW Health (Clause 9.1.1)

Sub-clause	Requirement	Compliance grade
(9) Memorandum of Understanding (9.1) NSW Health (Clause 9.1.1)	Hunter Water must: a) use its best endeavours to maintain a Memorandum of Unde b) comply with any Memorandum of Understanding maintained	
Risk		Target for full compliance
	of any changes to the MOU with NSW Health so that it can any risks associated with Hunter Water's operations and public	Hunter Water must report any changes or departures from its MOU with NSW Health to IPART.
Evidence sighted		
Not applicable		
Summary of reasons	for grade	
Hunter Water has prev	iously established an MOU with NSW Health, to the satisfaction o	of IPART and there were no changes to this during the audit period.
Discussion and notes	5	
Hunter Water has an e	stablished MOU with NSW Health and there were no changes to	this, or departures from it in 2015-16.
Recommendations		
The audit did not ident	ify any recommendations for this clause.	



Opportunities for improvement

The audit did not identify any opportunities for improvement for this clause.



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D Hunter Water's statement of compliance



Statement of compliance

For 2015-16

Submitted by Hunter Water

To: The Chief Executive Officer Independent Pricing and Regulatory Tribunal of NSW PO Box K35 Haymarket Post Shop NSW 1240

Hunter Water reports as follows:

- 1. This statement documents compliance during 2015-16 with all obligations to which Hunter Water is subject by virtue of its operating licence.
- 2. This report has been prepared by Hunter Water with all due care and skill to the best of its knowledge of conditions to which it is subject under the *Hunter Water Act 1991*.
- 3. Schedule A provides information on all obligations with which Hunter Water did not comply during 2015-16.
- 4. Other than the information provided in Schedule A, Hunter Water has complied with all conditions to which it is subject.
- 5. This compliance report has been approved by the Chief Executive Officer (or equivalent) and the Chairman of the Board of Directors of Hunter Water/ Duly authorised Board Member of Hunter Water.

DATE:

Signed:

Name:

25/8/16 Millenten

DATE: Signed:

Name:

TERRY LAWLER

Designation:

Managing Director

JIM BENTLEY

Designation:

Chairman

Table #	List clauses breached,	Describe:
	including a brief description of each licence clause	 i Date or period of non-compliance ii Nature and extent of non-compliance (including whether and how many customers have been affected) iii Results of any monitoring (where applicable) iv Reasons for non-compliance v Remedial action taken
		vi Actual/anticipated date of full compliance
	Nil	Nil

Schedule A Non Compliances identified during the reporting period