

Independent Pricing and Regulatory Tribunal
New South Wales

Hunter Water Corporation Operational Audit 2018

Report to the Minister

© Independent Pricing and Regulatory Tribunal (2019)

With the exception of any:

- (a) coat of arms, logo, trade mark or other branding;
- (b) third party intellectual property; and
- (c) personal information such as photos of people,

this publication is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia Licence.



The licence terms are available at the Creative Commons website:
<https://creativecommons.org/licenses/by-nc-nd/3.0/au/legalcode>

IPART requires that it be attributed as creator of the licensed material in the following manner: © Independent Pricing and Regulatory Tribunal ([Year of Publication]).

The use of any material from this publication in a way not permitted by the above licence or otherwise allowed under the *Copyright Act 1968* (Cth) may be an infringement of copyright. Where you wish to use the material in a way that is not permitted, you must lodge a request for further authorisation with IPART.

Disclaimer

IPART does not guarantee or warrant, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this publication.

Information in this publication is provided as general information only and is not intended as a substitute for advice from a qualified professional. IPART recommends that users exercise care and use their own skill and judgment in using information from this publication and that users carefully evaluate the accuracy, currency, completeness and relevance of such information. Users should take steps to independently verify the information in this publication and, where appropriate, seek professional advice.

Nothing in this publication should be taken to indicate IPART's or the NSW Government's commitment to a particular course of action.

ISBN 978-1-76049-287-8

The Independent Pricing and Regulatory Tribunal (IPART)

IPART provides independent regulatory decisions and advice to protect the ongoing interests of the consumers, taxpayers and citizens of NSW. IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website: <https://www.ipart.nsw.gov.au/Home>.

Tribunal Members

The Tribunal members for this review are:

Dr Paul Paterson, Chair

Mr Ed Willett

Ms Deborah Cope

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

Erin Cini (02) 9113 7778

Robert Aposhian (02) 9290 8406

Matthew van Uffelen (02) 9113 7789



Contents

Summary	1
1 Introduction and scope	7
1.1 Purpose and structure of this report	7
1.2 Audit scope	8
1.3 The audit process	9
2 Audit findings and recommendations	12
2.1 Licence context and authorisation	12
2.2 Water conservation	14
2.3 Supply services and performance standards	15
2.4 Organisational systems management	22
2.5 Customer and stakeholder relations	25
3 Progress on previous audit recommendations	29
Appendices	35
A Compliance grades	37
B 2018 audit scope	39
C Operational audit report 2018 – Hunter Water	41
D Hunter Water’s Statement of Compliance	43



Summary

Customers in NSW rely on safe and reliable water and wastewater services. Operating licences outline the NSW Government's expectations of publicly owned monopoly suppliers of essential services such as Hunter Water Corporation (Hunter Water). The Independent Pricing and Regulatory Tribunal of NSW (IPART) conducts annual licence audits to ensure Hunter Water meets these expectations.

IPART has completed the first operational audit (the 2018 audit) of Hunter Water's compliance with the requirements of the Hunter Water Operating Licence 2017-2022 (the licence). This audit covers the period from 1 July 2017 to 31 October 2018. We engaged specialist auditing firm Cobbitty Consulting Pty Ltd (Cobbitty), in partnership with Viridis Consulting Pty Ltd (Viridis), to undertake the audit. We have prepared this report to summarise the audit findings for the Minister for Energy and Utilities, the Hon. Don Harwin, MLC.

Our findings

Hunter Water has shown an overall high level of compliance with its licence, as demonstrated by the 2018 audit findings (see below).

The quality of water produced by Hunter Water continues to be of a high standard and meets public health requirements. Our auditor identified minor shortcomings for drinking water quality, recycled water quality, the environmental management system, and customer and stakeholder relations that require attention from Hunter Water to ensure compliance is maintained. We made two recommendations for Hunter Water to address the non-compliance for pricing.

Hunter Water has made progress towards implementing the recommendations from previous audits. In areas where we assigned less than full compliance, we have made recommendations on how Hunter Water can improve and maintain compliance with its licence.

Our recommendations

There were five clauses for which our auditor did not assign a Compliant grade.¹ One clause was assigned as Non-compliant (non-material) and four clauses Compliant (minor shortcomings). Our auditor prepared a final report detailing its findings and recommendations (Appendix C). We endorse all of our auditor's findings.

¹ Compliant grade does not include Compliant (minor shortcomings) grade.

Recommendations to Hunter Water

Licence context and authorisation

- 1 Hunter Water should take action to ensure that tankering charges are correctly applied, including by: 14
 - a) 31 March 2019, the use of paper tanker delivery dockets is replaced by a digital capture (mobility) arrangement
 - b) 30 June 2019, draft bill validation processes are implemented for tankered waste bills
 - c) 31 December 2019, automated billing for the receipt of tankered waste is implemented as part of Hunter Water's proposed billing system upgrade. 14
- 2 By 1 September 2019, Hunter Water must report to IPART on the further progress made in contacting owners affected by the incorrect charging of the Environment Improvement Charge and notify the total of the refunds made, and any further actions to rectify this non-compliance. 14

Supply services and performance standards

- 3 By 30 June 2019, Hunter Water should have a clear and transparent risk assessment process. Hunter Water should review the current risk process to ensure that the risk process is clearly mapped out and documented so that all stakeholders are able to follow the process easily. Documentation of the risk process should include all relevant data that is used to inform the risk assessment. 17
- 4 By 30 June 2019, Hunter Water should clearly identify as a hazard event 'receiving water from Central Coast Council' in the risk assessment and preventive/control measures must be documented and implemented. 17
- 5 By 30 June 2019, Hunter Water should prioritise the improvement actions identified in the 2018 risk assessment to ensure maintenance hygiene procedures are reviewed so that consistent hygiene practices are implemented and are auditable. These hygiene practices should include the disinfection of tools, personal hygiene (in relation to workwear), disinfection and storage of parts/pipes, working clearances to prevent contamination, flushing, reinstating a service and acceptance criteria. 17

- 6 By 30 June 2019, Hunter Water should:
- a) Add reservoir inspection training to the training needs matrix for all positions undertaking reservoir inspections, to ensure training is current.
 - b) Revise the Reservoir Inspection form to provide more specific guidance and refer to specific and measureable assessment criteria, where possible. For example, under Roof Hatches and Roof Sheeting, the inspection item:

"P1 – evidence of bird/vermin in reservoir or vent/opening not bird/vermin proof" could be revised to include a specific measurable assessment criterion:

"P1 – evidence of bird/vermin in reservoir or vent/opening greater than "X"mm." 18
- 7 By 30 June 2019, Hunter Water should ensure that critical limits are documented accurately in the RWQMP, including any time delays; ensure that the location of where the critical limit applies is accurately documented; and ensure that the critical limits are consistently documented across Hunter Water and Veolia documentation. 19
- 8 By 30 June 2019, Hunter Water should:
- a) Include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection
 - b) Confirm that critical limits (for example UVT) are set in accordance with the available validation information
 - c) For schemes that have online monitoring of UVT, implement an alarm and or shut down for when UVT falls outside the validated operational range for the UV system (e.g. 45% at Morpeth WWTW)
 - d) For schemes that do not have online monitoring of UVT, establish appropriate monitoring processes, such as regular grab samples with identified corrective actions for when UVT falls outside the validated operational range specified by the manufacturer. 19
- 9 By 30 June 2020, Hunter Water should investigate the establishment of online monitoring of UVT with alarms and or shutdowns at all sites that rely on UV disinfection for primary disinfection of recycled water. 19

Organisational Systems Management

- 10 By 30 June 2019, Hunter Water should ensure high risk issues in the Environmental Compliance Tracking Register are addressed within the allocated timeframe. 25

Customer and Stakeholder relations





- 11 By 30 June 2019, Hunter Water should use its best endeavours to develop and enter into a Memorandum of Understanding with Fire and Rescue NSW. 27

The Hunter Water Reporting Manual (Reporting Manual) requires Hunter Water to provide a report on its progress in implementing our recommendations within 12 weeks of the Minister receiving this report (24 May 2019).





Overview of audit findings

The 2018 audit found that Hunter Water had a high level of compliance. This is the first audit in the 5-year term of the licence. The audit identified one non-compliance.

In 2018, we audited 22 clauses of the Hunter Water licence and assigned:






- ▼ Fifteen clauses  Compliant grades
- ▼ Four clauses  Compliant (minor shortcomings) grades
- ▼ One clause  Non-compliant (non-material) grades
- ▼ Two clauses  No Requirement grades.






The compliance grades are explained in Appendix A. In summary we assigned:

- ▼ **Compliant**  with all auditable requirements relating to:
 - Licence context and authorisation (clauses 1.5.1 and 1.5.2)
 - Water conservation (clauses 2.1.1 and 2.2.1)
 - Supply services and performance standards (clauses 3.1.2, 3.2.2, 3.3.1, 3.3.2 and 3.3.3)
 - Organisational systems management (clauses 4.1.1, 4.1.2, 4.1.3 and 4.2.1)
 - Customer and stakeholder relations (clauses 5.8.1 and 5.10.1).
- ▼ **Compliant (minor shortcomings)**  with requirements for:
 - Supply services and performance standards relating to drinking water quality (clause 3.1.1)
 - Supply services and performance standards relating to recycled water quality (clause 3.2.1)
 - Organisational systems management relating to the environmental management system (clauses 4.2.2)
 - Customer and stakeholder relations relating to memorandum of understanding (MoU) with Fire and Rescue NSW (clauses 5.11.1).
- ▼ **Non-compliant (non-material)**  with requirements for:
 - Licence context and authorisation relating to pricing (clause 1.8.1). This non-compliance was self-reported by Hunter Water and confirmed by the audit.
- ▼ **No Requirement**  for Customer and stakeholder relations relating to implementing the MoU with Fire and Rescue NSW (5.11.2 and 5.11.3).

Hunter Water's compliance is summarised in Table 1.

Table 1 Hunter Water's compliance in 2018, the first year of its 2017-22 Operating Licence

Licence part	Number of audited clauses	Compliance grade assigned				
						
Part 1 - Licence context and authorisation	3	2	-	1	-	-
Part 2 - Water Conservation	2	2	-	-	-	-
Part 3 - Supply services and performance standards	7	5	2	-	-	-
Part 4 - Organisational systems management	5	4	1	-	-	-
Part 5 - Customer and stakeholder relations	5	2	1	-	-	2
Total	22	15	4	1	-	2

Note:  = Compliant;  = Compliant (minor shortcomings);  = Non-Compliant (non-material);  = Non-Compliant (material);  = No Requirement.

Source: Cobbitty Consulting, 2018 Operational Audit of Hunter Water Corporation – Final Audit Report, February 2019.

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 report² certified by the Managing Director and the Chairman of the Board of Directors of Hunter Water. It lists any licence non-compliances that occurred during the year. Any remedial action taken, or in the process of being taken, by Hunter Water is also reported. This year Hunter Water reported one non-compliance with its licence in relation to the pricing clause.

Progress with previous recommendations

Finally, we note that Hunter Water completed 11 out of 15 outstanding recommendations from previous operating audits. Four recommendations are continuing:

- ▼ Recommendation 2013-14-03/04/06/13 (regarding the drinking water clauses) was partially completed. Parts (b) to (f) are complete. Part (a) (review of CCP critical limits) is being finalised in consultation between Hunter Water and NSW Health.
- ▼ Recommendation 2013-14-03/04/06/13 (regarding the recycled water clauses) was partially completed. Parts (b), (d) and (f) are complete. Part (a) requires NSW Health approval; parts (c) and (e) require amendment of minor discrepancies between site specific documentation and SCADA settings.
- ▼ Recommendation 2016-17-06 is continuing as Hunter Water is waiting for feedback from NSW Health on the validation report for its recycled water plants.

² This means reporting only on those clauses where Hunter Water considers it is non-compliant.

- 
- ▼ Recommendation 2016-17-08 is continuing as this recommendation is due by 30 June 2019. We will monitor and report on progress against each of these continuing recommendations during future audits.

We also note that the auditor recommended two new recommendations that relate to two completed recommendations (2016-17-04 and 2015-16-06). Recommendation 6 replaces Recommendation 2016-17-04. We considered the auditor's recommendation to replace Recommendation 2015-15-06 with a new recommendation unnecessary and have instead added one opportunity for improvement for Hunter Water. These are further explained in Chapter 2, and Chapter 3, Table 3.1.

Our audit approach

We do not audit each licence clause each year, instead we adopt a risk-based audit approach. This means, we audit 'high risk' clauses more frequently and 'low risk' clauses less frequently. Audits are conducted in accordance with our *Audit Guideline – Public Water Utilities* (Audit Guideline) which is available on our website. In our 2018 review of the Audit Guideline we changed the audit grades.

1 Introduction and scope

Hunter Water Corporation (Hunter Water) is owned by the NSW Government. Hunter Water's principal functions are to provide water, sewerage and stormwater services and dispose of wastewater in its area of operations.

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 licence issued to Hunter Water under Section 12 of the Act.

We have completed the 2018 audit of Hunter Water's compliance with the obligations imposed on it by its licence for the period 1 July 2017 to 31 October 2018. We do this by receiving and reviewing reports, undertaking and attending audit interviews with Hunter Water staff, and undertaking field verification to investigate how effectively the requirements of the licence are met in practice. We report our findings to the Minister for Energy and Utilities (the Minister).

We took a risk-based audit approach to determine the scope of the Hunter Water audit, and an evidence-based approach to the audit. We also assessed compliance by reviewing an annual Statement of Compliance prepared and certified by Hunter Water (Appendix D). This is an exception-based report listing any licence non-compliances and what remedial action has been taken, or is being taken, to resolve any reported non-compliances.

1.1 Purpose and structure of this report

This report informs the Minister of Hunter Water's performance against its audited licence obligations for the audit period and sets out recommendations in response to these findings.

- ▼ This chapter (Chapter 1) explains the scope of the audit review and the process followed in undertaking the audit
- ▼ Chapter 2 presents the audit findings and recommendations
- ▼ Chapter 3 summarises the progress by Hunter Water to address and implement recommendations from previous audits
- ▼ Appendix A explains the compliance grades used for the audit
- ▼ Appendix B explains the scope of the audit in detail
- ▼ Appendix C contains our auditor's detailed audit report
- ▼ Appendix D contains Hunter Water's annual Statement of Compliance.

1.2 Audit scope

This audit covers the period from 1 July 2017 to 31 October 2018.

The audit scope for this year included obligations relating to:

- ▼ Licence context and authorisation (Part 1) – requirements relating to authorised services, supply obligations and pricing
- ▼ Water conservation (Part 2) – requirements relating to calculating system yield and the water conservation target
- ▼ Supply services and performance standards (Part 3) - requirements relating to drinking water, recycled water and system performance standards
- ▼ Organisational systems management (Part 4) – requirements relating to the asset management system and environmental management system
- ▼ Customer and stakeholder relations (Part 5) – requirements relating to a code of conduct with *Water Industry Competition Act 2006* (WIC Act) licensees, the Memorandum of Understanding (MoU) with Department of Primary Industries - Water (DoI-Water) the MoU with Fire and Rescue NSW (FRNSW).

No clauses from Part 6 (Performance monitoring and reporting) and Part 7 (Definitions and interpretation) were audited this year, following the risk-based approach used in the auditing program.

We consulted with NSW Health, DoI-Water and FRNSW and sought public submissions in determining the scope of the audit. The audit scope is provided in Appendix B. All submissions from stakeholder agencies indicated stakeholders were generally satisfied that Hunter Water had met its obligations under the licence relevant to their portfolio.

This year, NSW Health identified the following areas of interest³ and we included specific instructions to our auditor to assess these issues during the audit:

- ▼ Changes to the drinking water quality management systems (DWQMS) without consulting with NSW Health (considered in the audit of licence clause 3.1.2).
- ▼ Rectification of defects to reservoirs and completion of training for personnel undertaking inspections (considered in the audit of licence clause 4.1.2).
- ▼ Review of data concerning the per- and poly-fluorinated alkyl substances (PFAS) contamination issue, and its impact on the Tomago borefield (considered in the audit of licence clause 3.1.2).⁴

The submissions from DoI-Water and FRNSW both stated they were satisfied with the progress being made on their respective MoUs.

³ Letter to IPART, Director – Health Protection (Hunter New England Population Health), NSW Health, 16 August 2018.

⁴ The public health risk arising through contamination of bulk water supply is covered under the licence (drinking water clause 3.1.2) and the *Public Health Act 2010*. We reviewed the ongoing monitoring of the contamination issue in the audit. The environmental impact of the contamination issue is regulated by the NSW Environment Protection Authority and Commonwealth environment agency.

We sought submissions from the public on matters related to the licence prior to the audit interviews. We advertised for public submissions in the *Sydney Morning Herald*, *Daily Telegraph*, and *Newcastle Herald* on 25 July 2018 and *The Land* on 26 July 2018. We received no public submissions.

1.3 The audit process

We assess the risk of non-compliance with a licence obligation to determine an appropriate audit frequency for that requirement. We audit all requirements of the licence at least once during the 5-year term of the licence.

In developing our 5-year audit programs and annual audit scopes we apply IPART's *Compliance and Enforcement Policy, December 2017*.⁵ This policy sets out our risk-based regulatory model. Under this policy, we could:

- ▼ Focus on allocating resources to areas of higher risk
- ▼ Increase our efficiency
- ▼ Tailor our enforcement response.

We base our risk-based approach on evaluating the risk that each part of our regulatory function aims to reduce. We evaluate the risk by considering the likelihood of harm occurring in the absence of our regulatory controls and the potential consequence of that harm. We then consider how likely it is that a regulated entity will not properly implement a regulatory control.

We identify and document historical, current and emerging risks. This allows allocation of resources in proportion to the risk and complexity of regulated entities and behaviours.

We engaged Cobbitty, in partnership with Viridis, to undertake the 2018 audit of Hunter Water. We required our auditor to undertake the following 10 tasks:

1. Receive stakeholder submissions and comments for inclusion in the audit scope
2. Prepare an information request (questionnaire) setting out all the requirements for information and evidence, 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 interviews with Hunter Water staff at its offices
5. Conduct field verification and assess the implementation of Hunter Water's systems and procedures

⁵ IPART, *IPART Compliance and Enforcement Policy, December 2017*, <https://www.ipart.nsw.gov.au/Home/Industries/Special-Reviews/Reviews/IPART-Regulation/Compliance-and-Enforcement-Policy/19-Dec-2017-Final-Policy/IPART-Compliance-and-Enforcement-Policy-December-2017>

-
6. Assess the level of compliance (according to our compliance grades (Appendix A)) Hunter Water achieved for each of the identified obligations of the licence and provide supporting evidence for this assessment
 7. Assess and report on progress by Hunter Water in addressing any comments made by the relevant Minister and/or our recommendations from previous audits, providing supporting evidence for these assessments
 8. Verify the calculation of performance indicators associated with requirements of the relevant licence and assess 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 (Appendix C).

Our auditor adopted a methodology consistent with ISO 19011:2018 *Guidelines for auditing management systems*. This guideline defines the requirements of an audit, ensuring that it is conducted in accordance with an established and recognised audit protocol. Where appropriate, our auditor also sought guidance from ASAE 3100 (2008) *Compliance Engagements*⁶ (issued by the Auditing and Assurance Standards Board), Auditing and Assurance Standard AUS 110 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, and *International Standard on Quality Control ISQC 2009*.

Our auditor also carried out the audit according to our *Audit Guideline - Public Water Utilities, June 2018*.⁷ Under this guideline, our auditor can make recommendations or suggest opportunities for improvement.

Where we support an auditor's recommendation, we make our recommendations based on our auditor's recommendation. Where our auditor suggested opportunities for improvement, Hunter Water can decide whether to implement these suggestions. This approach should balance improved performance with the investment required to achieve it. That is, we want Hunter Water to first consider the pricing implications and value for money of continued improvement. As a consequence, while we encourage Hunter Water to consider our auditor's suggestions, we do not follow these up.

We held a project start-up meeting with our auditor on 30 July 2018 to agree on the project milestones, audit timing, and outline our expectations. We also held an audit inception meeting with Hunter Water and our auditor on the first day of the audit interviews, on 6 November 2018. At this meeting, expectations and protocols for the conduct of the audit were agreed. All parties adhered to the agreed protocols throughout the audit.

⁶ We note that this standard was re-issued in 2017.

⁷ Available on our website (www.ipart.nsw.gov.au). The latest version of the Audit Guidelines was released in September 2018.

Our auditor conducted audit interviews from 6 to 8 November 2018 at Hunter Water's office in Newcastle. On 7 November, our auditor also undertook a site visit to the following locations:

- ▼ Maintenance planning and scheduling team (located at Hunter Water's office in Newcastle)
- ▼ North Lambton Maintenance Depot
- ▼ North Lambton Reservoir
- ▼ Planned maintenance activity (replacement of a faulty valve in Lambton)
- ▼ Morpeth Wastewater Treatment Works (including recycled water use at golf club)
- ▼ Dungog Water Treatment Plant.

Our auditor assessed the Hunter Water's compliance with the relevant requirements of the licence as per the compliance grades outlined in Appendix A.

2 Audit findings and recommendations

This chapter provides a summary of our auditor's findings and recommendations for each of the audited clauses of the licence. The 2018 audit is the first audit of the licence.

Each section below details Hunter Water's audit performance against the audited licence clauses during the licence period.




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

2.1 Licence context and authorisation

Our auditor assigned Hunter Water Compliant grades for clauses 1.5.1 and 1.5.2, and a Non-Compliant (non-material) grade for clause 1.8.1. We agree with these audit grades.

Part 1 of the licence (Licence context and authorisation) outlines what Hunter Water is authorised to do under the licence, its obligations to make its regulated services available, the term of the licence, its obligations regarding the connection of services and pricing matters.

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

Clause	Requirement	Compliance grading				
1	Licence context and authorisation	2017-18	2018-19	2019-20	2020-21	2021-22
1.5.1	Connection of services to any Property situated in the Area of Operations					
1.5.2	Connection of services to any WIC Act licensee connected to Hunter Water's systems in the Area of Operations					
1.8.1	Pricing – fees set in accordance with IPART's determination					

Source: Cobbitty Consulting Pty Ltd, *2018 Operational Audit of Hunter Water – Final Report, February 2019*.

Note: Please note the change in audit grades and definitions when comparing this year's audit grades with the audit grades of previous years.

Compliant (clause 1.5.1) with connection of services within area of operations

Our auditor assigned Hunter Water a Compliant grade for clause 1.5.1, which required Hunter Water to ensure services are available on request for connection to any property situated within the area of operations. We agree with this audit grade.

Our auditor noted that Hunter Water demonstrated that it has processes in place to assess applications and provide Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to, the Water Supply System or Sewerage System. The provision of services is dependent upon compliance with a Notice of Requirements (issued under section 49 of the Act) which details the actions that must be taken before the service can be provided, as evidenced by the issue of a Certificate of Compliance (issued under section 50 of the Act).

On this basis, our auditor assessed that Hunter Water has demonstrated compliance with this obligation, to provide services to any property within its area of operations.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (clause 1.5.2) with provision of services to any WIC Act licensee within its area of operations

Our auditor assigned Hunter Water a Compliant grade for clause 1.5.2, which required Hunter Water to provide services on request to any WIC Act licensee where the WIC Act licensee is connected to Hunter Water's water supply or sewerage systems within Hunter Water's area of operations. We agree with this audit grade.

Hunter Water advised our auditor that it had not received any requests for the provision of services from WIC Act licensees during the audit period. However, Hunter Water demonstrated that it has previously entered into agreements for the supply of such services by providing a copy of a Utility Service Agreement with a WIC Act licensee. Hunter Water also entered into an agreement for the supply of services to a WIC Act licensee as part of the Kooragang Industrial Water Scheme (KIWS) sale (by Hunter Water). Hunter Water has provided Services to WIC Act Licensees upon request.

On this basis, our auditor assessed that Hunter Water has demonstrated compliance with this obligation.

Our auditor identified no recommendation or opportunities for improvement.

Non-compliant (non-material) (clause 1.8.1) with setting fees and charges

Our auditor assigned Hunter Water a Non-compliant (non-material) grade for clause 1.8.1, which required Hunter Water to set the level of fees, charges, and other amounts payable for its services subject to the terms of the licence, the Act and the maximum prices and methodologies for fixing maximum prices determined from time to time by IPART under the IPART Act. We agree with this audit grade.

Our auditor noted that Hunter Water self-reported a non-compliance with this clause in its Statement of Compliance in respect of the application of its Environmental Improvement Charge (EIC).⁸ Hunter Water subsequently advised our auditor of another non-compliance in relation to incorrectly applying charges for the receipt of tankered high strength waste. The

⁸ Hunter Water Corporation, Statement of Compliance 2017-18, 30 August 2018.

EIC was incorrectly applied to vacant land affecting 17,760 properties (\$1.4 million in total charges levied on vacant land since 1 July 2013), and the tankering charges resulted in a small undercharge to the affected customer (a total of \$22.54 over the period from July 2014 to June 2018). Corrective action has been taken for the EIC issue. Hunter Water anticipates to address the incorrect application of tankering charges after March 2019.

Hunter Water's declared non-compliance with this obligation has been confirmed by the evidence provided to our auditor. For the application of its EIC, Hunter Water has issued refunds to affected property owners who still own the properties, and is making concerted efforts to contact property owners who have sold the affected properties. Hunter Water estimates that there are approximately 4,900 customers who are still owed refunds, totalling \$350,000.⁹ The tankering issue is being addressed through the implementation of a new paperless billing system that is likely to be in place by the end of March 2019. Our auditor considers that the EIC issue has been substantially addressed with minimal further correction anticipated, and the incorrectly applied tankering charges have had a relatively minor impact. For these reasons our auditor considers the non-compliance not to be material.

We make two recommendations in relation to clause 1.8.1, based on our auditor's recommendation and our assessment.

Recommendation

- 1 Hunter Water should take action to ensure that tankering charges are correctly applied, including by:
 - a) 31 March 2019, the use of paper tanker delivery dockets is replaced by a digital capture (mobility) arrangement
 - b) 30 June 2019, draft bill validation processes are implemented for tankered waste bills
 - c) 31 December 2019, automated billing for the receipt of tankered waste is implemented as part of Hunter Water's proposed billing system upgrade.
- 2 By 1 September 2019, Hunter Water must report to IPART on the further progress made in contacting owners affected by the incorrect charging of the Environment Improvement Charge and notify the total of the refunds made, and any further actions to rectify this non-compliance.

Our auditor identified one opportunity for improvement for clause 1.8.1. This opportunity relates to developing a comprehensive end-to-end procedure to detail its annual price updating process. Further details of the opportunity for improvement are available in our auditor's report in Appendix C.



2.2 Water conservation

Our auditor assigned Hunter Water Compliant grades for clauses 2.1.1 and 2.2.1. We agree with these audit grades.

Part 2 of the licence (Water conservation) outlines the obligation for Hunter Water to calculate system yield and the water conservation target.

⁹ Letter to IPART, Hunter Water Corporation Statement of Compliance 2017-18, 30 August 2018.

Table 2.2 Compliance with Part 2 of the licence – Water conservation

Clause	Requirement	Compliance grading			
		2017-18	2018-19	2019-20b	2020-21
2	Water conservation				
2.1.1	Calculate system yield				
2.2.1	Water conservation target				

Source: Cobbitty Consulting Pty Ltd, 2018 Operational Audit of Hunter Water – Final Report, February 2019.

Compliant (clause 2.1.1) with calculating system yield

Our auditor assigned Hunter Water a Compliant grade for clause 2.1.1, which required Hunter Water to calculate system yield. We agree with this audit grade.

Our auditor noted that Hunter Water demonstrated that it has calculated the system yield as required pursuant to its obligations under the Roles and Responsibilities Protocol (the MoU referred to in clause 5.10.1(a)). The system yield has been calculated and assessed and the supply-demand balance determined. This information is documented each year in the MERI (*monitoring, evaluation, reporting and improvement*) report on implementation of the Lower Hunter Water Plan prepared by DoI-Water.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (clause 2.2.1) with Water treatment plants to taps

Our auditor assigned Hunter Water a Compliant grade for clause 2.2.1, which required Hunter Water to maintain the Water Conservation Target while the Economic Level of Water Conservation Methodology is being approved and applied. We agree with this audit grade.

Our auditor noted that Hunter Water's 5-year rolling average annual residential water consumption for the 2017-18 financial year was 173.7 kL/property which is less than the 215 kL/property Water Conservation Target. Our auditor also noted that Hunter Water has demonstrated that it has developed and implemented a procedure for calculating this performance characteristic which is consistent with the Urban National Performance Report framework published by the Bureau of Meteorology.

Our auditor identified no recommendation or opportunities for improvement.

2.3 Supply services and performance standards








Our auditor assigned Hunter Water Compliant grades for clauses 3.1.2, 3.2.2, 3.3.1, 3.3.2 and 3.3.3, and Compliant (minor shortcomings) grades for clause 3.1.1 and 3.2.1. We agree with these audit grades.

Part 3 of the licence (Supply services and performance standards) requires Hunter Water to maintain and implement water quality management systems that are consistent with the

Australian Drinking Water Guidelines (ADWG) and Australian Guidelines for Water Recycling (AGWR), to the satisfaction of NSW Health. It also requires Hunter Water to comply with the system performance standard for water pressure, water continuity and wastewater overflow.

We note that Veolia is engaged under contract to operate and maintain Hunter Water's water and wastewater treatment plants, therefore Veolia's activities under the contract were included in our audit.¹⁰

Table 2.3 Compliance with Part 3 of the licence – Supply services and performance standards

Clause	Requirement	Compliance grading				
		2017-18	2018-19	2019-20b	2020-21	2021-22
3	Supply services and performance standards					
3.1.1	Drinking water quality management system – consistent with ADWG					
3.1.2	Drinking water quality management system - implementation					
3.2.1	Recycled water quality management system consistent with AGWR					
3.2.2	Recycled water quality management system - implementation					
3.3.1	Water Pressure Standard					
3.3.2	Water Continuity Standard					
3.3.3	Wastewater Overflow Standard					

Source: Cobbitty Consulting Pty Ltd, 2018 Operational Audit of Hunter Water – Final Report, February 2019.

Compliant (minor-shortcomings) (clause 3.1.1) with maintaining a drinking water quality management system

Our auditor assigned Hunter Water a Compliant (minor shortcomings) grade for clause 3.1.1, which required Hunter Water to maintain a drinking water quality management system that is consistent with the ADWG, except to the extent that NSW Health specifies otherwise. We agree with this audit grade.

¹⁰ The operation and maintenance of water and wastewater treatment operations has been outsourced to Veolia Water Australia, under contract

Our auditor noted that whilst the DWQMS and the associated documents are generally good, there were some omissions in the system:

- ▼ Element 2: The supply of water from Central Coast Council is missing from risk assessments. Other system documents capture this supply and the Disinfection Optimisation Strategy manages the risk of maintaining a chlorine residual in the system. However, the risk assessment process would benefit from a review and additional documentation.
- ▼ Element 4: Hygiene procedures for network repairs are not detailed enough for minor repairs and there was insufficient governance around the process.

Our auditor also reviewed a previous recommendation (2016-17-04) in relation to having all personnel involved in reservoir inspections undertake training to accurately complete inspection forms. The recommendation has been completed. However, our auditor noted that the training needs to be expanded to enable operators to provide specific guidance on maintenance and other issues, and there was insufficient evidence to support claims that the training had taken full effect. Accordingly, we make a new recommendation to ensure the issue is addressed by Hunter Water.

We make four recommendations in relation to clause 3.1.1, based on our auditor's recommendations.

Recommendations

- 3 By 30 June 2019, Hunter Water should have a clear and transparent risk assessment process. Hunter Water should review the current risk process to ensure that the risk process is clearly mapped out and documented so that all stakeholders are able to follow the process easily. Documentation of the risk process should include all relevant data that is used to inform the risk assessment.
- 4 By 30 June 2019, Hunter Water should clearly identify as a hazard event 'receiving water from Central Coast Council' in the risk assessment and preventive/control measures must be documented and implemented.
- 5 By 30 June 2019, Hunter Water should prioritise the improvement actions identified in the 2018 risk assessment to ensure maintenance hygiene procedures are reviewed so that consistent hygiene practices are implemented and are auditable. These hygiene practices should include the disinfection of tools, personal hygiene (in relation to workwear), disinfection and storage of parts/pipes, working clearances to prevent contamination, flushing, reinstating a service and acceptance criteria.
- 6 By 30 June 2019, Hunter Water should:
 - a) Add reservoir inspection training to the training needs matrix for all positions undertaking reservoir inspections, to ensure training is current.
 - b) Revise the Reservoir Inspection form to provide more specific guidance and refer to specific and measureable assessment criteria, where possible. For example, under Roof Hatches and Roof Sheeting, the inspection item:
"P1 – evidence of bird/vermin in reservoir or vent/opening not bird/vermin proof" could be revised to include a specific measurable assessment criterion:

“P1 – evidence of bird/vermin in reservoir or vent/opening greater than “X”mm.”

Our auditor identified seven opportunities for improvement for clause 3.1.1. These opportunities relate to improving the DWQMS documentation, including stakeholder registers, risk registers, develop a register of control measures from catchment to consumer, including implementation and responsibility, and documenting internal reporting requirements to include frequency and any supporting information required for preparation. Further details of the opportunities for improvement are available in our auditor’s report in Appendix C.

Compliant (clause 3.1.2) with implementing a drinking water quality management system

Our auditor assigned Hunter Water a Compliant grade for clause 3.1.2, which required Hunter Water to fully implement and carry out all relevant activities in accordance with the drinking water quality management system, and to the satisfaction of NSW Health. We agree with this audit grade.

Our auditor noted that Hunter Water implements the DWQMS well, and that Veolia were very capable and implemented the water treatment plant operations component of the plan well. Our auditor observed that since the contract has started Hunter Water and Veolia have developed a strong working relationship and both parties are working to maintain it.

Our auditor identified eight opportunities for improvement for clauses 3.1.2. These opportunities include improving the administrative aspects of document review, engaging with NSW Health during the planning and development stages of significant changes to the DWQMS rather than presenting finished articles for review, and assessing hazardous events systematically following the process flowchart. Further details of the opportunities for improvement are available in our auditor’s report in Appendix C.

Compliant (minor shortcomings) (clause 3.2.1) with maintaining a recycled water quality management system

Our auditor assigned Hunter Water a Compliant (minor shortcomings) grade for clause 3.2.1, which required Hunter Water to maintain a management system that is consistent with the AGWR, except to the extent that NSW Health specifies otherwise. We agree with this audit grade.

Our auditor noted that whilst Hunter Water and Veolia have established a recycled water quality management system (RWQMS) that is compliant with the AGWR, there is opportunity to improve the documentation of the critical limits (Element 3) and operational monitoring (Element 4) in relation to UV disinfection, resulting in a Compliant (with minor shortcomings) grade for this sub-clause. Our auditor considered that these shortcomings did not impact on product delivery or public health.

The monitoring of UV Transmissivity (UVT) is identified in the risk assessment as a preventive measure for UV disinfection failure, and the UV disinfection units are validated to a minimum UVT. However, the Hunter Water site specific recycled water quality

management plan (RWQMP) for Morpeth does not mention UVT and the Veolia RWQMS identifies a critical limit for UVT which is marginally below the validated range and operational monitoring of UVT is not mentioned. The Morpeth RWQMP and Veolia RWQMS do not align with risk assessment and this is a shortcoming in the documentation for the operational monitoring in relation to UV disinfection.

We make three recommendations in relation to clause 3.2.1, based on our auditor's recommendations.

Recommendations

- 7 By 30 June 2019, Hunter Water should ensure that critical limits are documented accurately in the RWQMP, including any time delays; ensure that the location of where the critical limit applies is accurately documented; and ensure that the critical limits are consistently documented across Hunter Water and Veolia documentation.
- 8 By 30 June 2019, Hunter Water should:
 - a) Include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection
 - b) Confirm that critical limits (for example UVT) are set in accordance with the available validation information
 - c) For schemes that have online monitoring of UVT, implement an alarm and or shut down for when UVT falls outside the validated operational range for the UV system (e.g. 45% at Morpeth WWTW)
 - d) For schemes that do not have online monitoring of UVT, establish appropriate monitoring processes, such as regular grab samples with identified corrective actions for when UVT falls outside the validated operational range specified by the manufacturer.
- 9 By 30 June 2020, Hunter Water should investigate the establishment of online monitoring of UVT with alarms and or shutdowns at all sites that rely on UV disinfection for primary disinfection of recycled water.

Our auditor identified one opportunity for improvement for clause 3.2.1. This opportunity relates to Hunter Water documenting the process for the assessment of uncertainty and includes documentation to confirm that it has been assessed for example, notations in the risk assessment. Further detail of the opportunity for improvement is available in our auditor's report in Appendix C.

Compliant (clause 3.2.2) with implementing a recycled water quality management system

Our auditor assigned Hunter Water a Compliant grade for clause 3.2.2, which required Hunter Water to ensure the RWQMS is fully implemented and that all relevant activities are carried out in accordance with the RWQMS, and to the satisfaction of NSW Health. We agree with this audit grade.

Our auditor noted that Hunter Water has demonstrated full compliance with the requirement to ensure that the RWQMS is fully implemented and that all relevant activities are carried out in accordance with the RWQMS, and to the satisfaction of NSW Health. Hunter Water has demonstrated that it has established processes for implementing the RWQMS and provided evidence to prove that it is implementing those processes. Veolia, as the operator of Hunter Water's wastewater treatment plants, also provided evidence that it is implementing the RWQMS. The audit noted that there is good integration between the two organisations, and there are processes to ensure that the implementation of the RWQMS is 'business as usual'.

As noted in the discussion on licence clause 3.2.1, documentation of the monitoring of UVT and establishment of a critical limit for UVT is an area for improvement, and the implementation of processes for monitoring UVT can also be improved. At present Hunter Water is monitoring UVT, but it is not used as a trigger to cease operation when the UVT varies outside the validated range.

Our auditor identified three opportunities for improvement for clause 3.2.2. These opportunities relate to modifying Hunter Water's recycled water customer contracts to require users to stop using spray fountains in windy conditions, improve the documenting of on-site monitoring data to highlight results that are outside the validated range for critical limits and alarms, and improving action plans to ensure high risks items are prioritised. Further details of the opportunities for improvement are available in our auditor's report in Appendix C.

Compliant (clause 3.3.1) with meeting the Water Pressure Standard

Our auditor assigned Hunter Water a Compliant grade for clause 3.3.1, which required Hunter Water to ensure that it met the system performance standard for water pressure, as set out in its licence, in any financial year. We agree with this audit grade.

Our auditor noted that Hunter Water reported that 1,975 properties had experienced a Water Pressure Failure¹¹ during the 2017-18 financial year and demonstrated that the process used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence.¹² As the number of properties that had experienced a water pressure failure was less than the specified limit of 4,800 properties, Hunter Water is assessed to have been fully compliant with this obligation.

Our auditor identified one opportunity for improvement for clause 3.3.1. This opportunity relates to documenting its procedure for determining the number of properties that have experienced water pressure failures. Further details of the opportunity for improvement are available in our auditor's report in Appendix C.

¹¹ A Water Pressure Failure means a situation in which a property experiences water pressure of less than 20 metres head for a continuous period of 30 minutes or more, but excludes situations where peak day demand exceeds 370 megalitres per day.

¹² Cobbitty Consulting Pty Ltd, *2018 Operational Audit of Hunter Water – Final Report*, February 2019, p 107.

Compliant (clause 3.3.2) with meeting the Water Continuity Standard

Our auditor assigned Hunter Water a Compliant grade for clause 3.3.2, which required Hunter Water to ensure that it met the system performance standard for water continuity, as set out in its licence, in any financial year. We agree with this audit grade.

Our auditor noted that Hunter Water reported that 4,284 properties had experienced an Unplanned Water Interruption¹³ for more than five continuous hours and that 3,228 properties had experienced three or more Unplanned Water Interruptions of more than one hour during the 2017-18 financial year.¹⁴ Hunter Water demonstrated that the process used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence.

As the number of properties that had experienced an Unplanned Water Interruption was less than the specified limits of 10,000 properties for a single event and 5,000 properties for multiple events respectively, Hunter Water is assessed to have been fully compliant with this obligation.

Our auditor identified one opportunity for improvement for clause 3.3.2. This opportunity relates to Hunter Water fully documenting the end-to-end process for identifying, recording, investigating and reporting of Unplanned Water Interruptions and for reporting against the Water Continuity Standard. Further details of the opportunity for improvement are available in our auditor's report in Appendix C.

Compliant (clause 3.3.3) with meeting the Wastewater Overflow Standard

Our auditor assigned Hunter Water a Compliant grade for clause 3.3.3, which required Hunter Water to ensure that it met the system performance standard for wastewater overflows as set out in its licence in any financial year. We agree with this audit grade.

Our auditor noted that Hunter Water reported that during the 2017-18 financial year 3,347 properties had experienced an Uncontrolled Wastewater Overflow¹⁵ in dry weather and that 22 properties had experienced three or more Uncontrolled Wastewater Overflows in dry weather.¹⁶ Hunter Water has demonstrated that the processes used to determine the number of properties was both robust and consistent with the definitions and exclusions set out in the licence. As the number of properties that had experienced an Uncontrolled Wastewater Overflow(s) was less than the specified limits of 5,000 properties for a single event and 45 properties for multiple events respectively, Hunter Water is assessed to have been fully compliant with this obligation. Our auditor noted that the process used to determine the number of affected properties was not always fully/correctly implemented, although the error did not impact compliance.

¹³ An Unplanned Water Interruption means an event that commences when supply of drinking water is interrupted without the customer receiving prior notice of that interruption from Hunter Water, and ceases when normal supply is restored.

¹⁴ Cobbitty Consulting Pty Ltd, *2018 Operational Audit of Hunter Water – Final Report*, February 2019, p 111.

¹⁵ Uncontrolled Wastewater Overflow is a wastewater overflow that is not a controlled wastewater overflow (overflow that is directed via a designed structure to a predetermined location).

¹⁶ Cobbitty Consulting Pty Ltd, *2018 Operational Audit of Hunter Water – Final Report*, February 2019, p 113.

Our auditor identified one opportunity for improvement for clause 3.3.3. This opportunity relates to Hunter Water reviewing and fully documenting the procedure for determining the number of properties that have experienced Uncontrolled Wastewater Overflows. Further details of the opportunity for improvement are available in our auditor's report in Appendix C.

2.4 Organisational systems management






Our auditor assigned Hunter Water Compliant grades for clauses 4.1.1, 4.1.2, 4.1.3 and 4.2.1 and a Compliant (minor shortcomings) grade for clause 4.2.2. We agree with these audit grades.

Part 4 of the licence (Organisational systems management) outlines the obligation for Hunter Water to develop an Asset Management System (AMS) that is consistent with the *Australian Standard ISO 55001:2014 Asset Management System – Requirements* (ISO 55001) or another standard approved by IPART by 31 December 2017. By 1 July 2018, Hunter Water's AMS must be fully implemented. Until the AMS has been developed and certified, Hunter Water must continue to maintain and implement the AMS required under its previous licence.

Part 4 of the licence also outlines the obligation to maintain an Environmental Management System (EMS) and carry out all relevant activities that is consistent with the *Australian/New Zealand Standard AS/NZS ISO 14001:2016 Environmental management systems – Requirements* (ISO (14001)) or another standard approved by IPART.

We note that Veolia is engaged under contract to operate and maintain Hunter Water's water and wastewater treatment plants, therefore Veolia's activities under the contract were included in our audit.

Table 2.4 Compliance with Part 1 of the licence – Organisational systems management

Clause	Requirement	Compliance grading				
		2017-18	2018-19	2019-20b	2020-21	2021-22
4	Organisational systems management					
4.1.1	Develop an AMS					
4.1.2	Implement AMS					
4.1.3	Maintenance of current AMS					
4.2.1	Maintenance of EMS					
4.2.1	Implement EMS					

Source: Cobbitty Consulting Pty Ltd, 2018 Operational Audit of Hunter Water – Final Report, February 2019.

Compliant (clause 4.1.1) with development of an asset management system

Our auditor assigned Hunter Water a Compliant grade for clause 4.1.1, which required Hunter Water to develop an AMS that is consistent with ISO 55001 by 31 December 2017. We agree with this audit grade.

Hunter Water provided a portfolio of documentation, including a *Conformity Assessment Review* by an independent consultant to demonstrate that the AMS had been developed by 31 December 2017. Our auditor noted that Hunter Water had developed its AMS and that the AMS was audited in June 2018 and certified as being consistent with ISO 55001 on 11 July 2018.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (clause 4.1.2) with implementation of an asset management system

Our auditor assigned Hunter Water a Compliant grade for clause 4.1.2, which required Hunter Water to fully implement the AMS and carry out all relevant activities in accordance with the AMS by 1 July 2018. We agree with this audit grade.

Our auditor found that Hunter Water has implemented appropriate asset management practices, and has also implemented improvement initiatives to further develop the system. Accordingly, our auditor assessed that Hunter Water had demonstrated compliance with this licence clause.

Hunter Water advised that, in the process of reviewing and updating its Asset Class Management Plans as part of its transition to ISO 55001, it had reviewed the structure of the plans, including the Asset Management Plans, Asset Strategies, Fatal Asset Management Plans and Facility Plans (and its asset management documentation from a broader perspective) to ensure that they are adding value to the business. We consider these changes are part of Hunter Water's process of continual improvement to its Asset Management

System, which supports its recent certification to ISO 55001, and not a shortcoming in the implementation of the AMS (as required under clause 4.1.2). We agree with our auditor's view.

Our auditor noted, and we agree, that priority documentation (Asset Management Plans, Asset Strategies and Fatal Asset Strategies) should be completed by 30 June 2021, and the Facility Plans substantially in place by that date. We consider the intent of this recommendation from the auditor is better-suited as an opportunity for improvement.

Our auditor identified two other opportunities for improvement. The first area for improvement related to ensuring all assets are tagged or labelled to clearly identify their asset numbers. The second area of improvement considers the interface between Hunter Water's and Veolia's maintenance systems. Our auditor also suggested that Hunter Water and Veolia consider implementing a mechanism for automated upload of treatment plant maintenance data into Hunter Water's maintenance management systems (Ellipse).

Compliant (clause 4.1.3) with maintenance and implementation of current asset management framework

Our auditor assigned Hunter Water a Compliant grade for clause 4.1.3, which required Hunter Water to ensure that all relevant activities are carried out in accordance with the current asset management framework while transitioning to the AMS. We agree with this audit grade.

Our auditor noted that during the audit period, using continual improvement to enhance specific aspects of the system, Hunter Water completed the transition from the Aquamark system to a system consistent with ISO 55001. Our auditor considered that Hunter Water carried out all relevant activities in accordance with the Aquamark system while transitioning to the ISO 55001-consistent AMS.

We consider that the evidence provided for clause 4.1.2 indicates that the ISO 55001-consistent AMS was in effect for the entire audit period.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (clause 4.2.1) with maintenance of environmental management system

Our auditor assigned Hunter Water a Compliant grade for clause 4.2.1, which required Hunter Water to maintain a management system for carrying out the functions authorised under the licence that is consistent with ISO 14001. We agree with this audit grade.

Our auditor noted that Hunter Water's EMS was re-certified in September 2018, demonstrating the system was compliant with ISO 14001: 2015 throughout the audit period. The scope of the recertification audit covered all of Hunter Water's area of operations and for the services it provides, including supply of drinking and recycled water, providing sewerage and stormwater services and the disposal of wastewater.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (minor shortcomings) (clause 4.2.2) with implementation of environmental management system

Our auditor assigned Hunter Water a Compliant (minor shortcomings) grade for clause 4.2.2, which required Hunter Water to implement, and carry out all relevant activities in accordance with the EMS. We agree with this audit grade.

Our auditor noted that the EMS was well managed and, in general, implemented as defined. However our auditor noted that some high-risk improvement items were not closed out within the agreed timeframes. Our auditor noted that these non-compliances were minor and did not affect Hunter Water's overall performance.

We make one recommendation in relation to clause 4.2.2, based on our auditor's recommendation.

Recommendation

- 10 By 30 June 2019, Hunter Water should ensure high risk issues in the Environmental Compliance Tracking Register are addressed within the allocated timeframe.






Our auditor identified one opportunity for improvement for clause 4.2.2. This opportunity relates to ensuring that all documents within the EMS are reviewed by the due date. Further details of the opportunity for improvement are available in our auditor's report in Appendix C.

2.5 Customer and stakeholder relations

Our auditor assigned Hunter Water Compliant grades for clauses 5.8.1 and 5.10.1, a Compliant (minor shortcomings grade) for clause 5.11.1 and No Requirement grades for 5.11.2 and 5.11.3. We agree with these audit grades.

Part 5 of the licence (Customer and stakeholder relations) outlines the obligation for Hunter Water relating to customer and consumer protection, customer engagement and cooperative relationships with stakeholders.

Table 2.5 Compliance with Part 1 of the licence – Customer and stakeholder relations

Clause	Requirement	Compliance grading				
		2017-18	2018-19	2019-20b	2020-21	2021-22
5	Customer and stakeholder relations					
5.8.1	Code of conduct					
5.10.1	Use best endeavours to Develop and enter MoU with DoI-Water					
5.11.1	Use best endeavours to develop and enter MoU with F&RNSW					
5.11.2	comply with MoU with F&RNSW					
5.11.3	comply with MoU with F&RNSW					

Source: Cobbitty Consulting Pty Ltd, 2018 Operational Audit of Hunter Water – Final Report, February 2019.

Compliant (clause 5.8.1) with establishing a code of conduct with licensees

Our auditor assigned Hunter Water a Compliant grade for clause 5.8.1, which required Hunter Water to use reasonable endeavours to cooperate with any WIC Act licensee that seeks to establish with Hunter Water a code of conduct.¹⁷ We agree with this audit grade.

Our auditor noted that Hunter Water had entered into agreements with WIC Act licensees that have sought to do so:

- ▼ A supply agreement with KIWS to supply treated wastewater and potable water in 2017
- ▼ Utility Service Agreements with Huntlee Water and Cooranbong Water in 2016.

Our auditor noted these agreements address the requirements of a code of conduct under a WIC Act licence. In our auditor's opinion, Hunter Water cooperated with WIC Act Licensees that sought to establish a code of conduct, demonstrating compliance with clause 5.8.1.

Our auditor identified no recommendation or opportunities for improvement.

Compliant (clause 5.10.1) with MoU with Department of Primary Industries Water

Our auditor assigned Hunter Water a Compliant grade for clause 5.10.1, which required Hunter Water to maintain an MoU (referred to as a roles and responsibilities protocol) with DoI-Water.¹⁸ We agree with this audit grade.

¹⁷ A WIC Act licence requires licensees to establish a code of conduct with each utility that is connected to its water industry infrastructure. *Water Industry Competition (General) Regulation 2008*, clause 25.

¹⁸ The Department of Primary Industries is referred to in clause 5.10.1 of the licence, however the current agency is DoI-Water.

Our auditor noted that Hunter Water had continued to fulfil its roles and responsibilities under the protocol, including annual update of the supply-demand water balance and participation in the forums related to the Lower Hunter Water Plan.

DoI-Water noted in its submission that the protocol is under review to reflect the involvement of Central Coast Council, and that it is satisfied that Hunter Water has used its best endeavours to comply with the protocol during the audit period.¹⁹

Our auditor identified no recommendation or opportunities for improvement.

Compliant (minor shortcomings) (clause 5.11.1) with MoU with Fire and Rescue New South Wales

Our auditor assigned Hunter Water a Compliant (minor shortcomings) grade for clause 5.11.1, which required Hunter Water to develop and enter into an MoU with FRNSW. We agree with this audit grade.

Our auditor noted that Hunter Water demonstrated that it has been working with FRNSW to establish an MoU between the parties, however it had not entered into an MoU by 31 December 2017 as required by this licence clause.

Our auditor noted that Hunter Water had used its best endeavours to develop and enter into an MoU based on correspondence with FRNSW and the provision of draft MoUs as evidence. FRNSW noted in its submission that it was satisfied with the progress made to date in relation to the development of the MoU and the relationship between the two organisations.²⁰ Consequently our auditor considered that Hunter Water has complied with this obligation, with minor shortcomings.

We make one recommendation in relation to clause 5.11.1, based on our auditor's recommendation.

Recommendation

- 11 By 30 June 2019, Hunter Water should use its best endeavours to develop and enter into a Memorandum of Understanding with Fire and Rescue NSW.

Our auditor identified no opportunities for improvement for clause 5.11.1.


No requirement (clause 5.11.2) with MoU with Fire and Rescue NSW

Our auditor assigned Hunter Water a No requirement grade for clause 5.11.2, which outlined the purpose and requirements for Hunter Water to form the basis of a cooperative relationship in the MoU with FRNSW. We agree with this audit grade.

Our auditor noted that until such time as Hunter Water enters into an MoU with FRNSW, there is no requirement with this obligation. Our auditor noted that the statement of

¹⁹ Submission, DoI-Water to IPART, 31 August 2018.

²⁰ Submission Fire and Rescue NSW to IPART, 31 August 2018.



objectives of the proposed MoU (in draft form) reflects the requirements of the licence obligation.

Our auditor identified no recommendation or opportunities for improvement.

No requirement (clause 5.11.3) with MoU with Fire and Rescue NSW

Our auditor assigned Hunter Water a No requirement grade for clause 5.11.3, which outlined the requirements and the arrangements for the working group to be established between Hunter Water and FRNSW. We agree with this audit grade.

Our auditor noted that until Hunter Water enters into an MoU with FRNSW there is no requirement with this obligation. Our auditor noted Hunter Water demonstrated that the proposed MoU (in draft form) requires the establishment of a Fire Fighting Working Group and identifies the matters that it must consider (at a minimum) consistent with the requirements of the licence obligation.

Our auditor identified no recommendation or opportunities for improvement.

3 Progress on previous audit recommendations

The previous audits in 2014, 2015, 2016 and 2017 identified areas where Hunter Water's performance with its licence obligations did not receive Full Compliance. We made recommendations to the Minister to address these issues.²¹ The following table outlines Hunter Water's progress in implementing these recommended actions.

Hunter Water demonstrated reasonable effort in completing the previous audit recommendations. Of the 15 previous recommendations, 11 have been completed and four recommendations are continuing. The previous recommendations are shown in Table 3.1.

Where a recommendation is partially complete or continuing (Table 3.1), we will follow it up in our next annual operational audit, together with the recommendations from this year's audit.

We note that we have made two new recommendations (recommendations 6 and 10) that relate to the two previous recommendations that have been completed and closed out. These two recommendations are addressed in Chapter 2.

Table 3.1 Hunter Water's progress in 2018 to address our recommendations from the previous audits

Rec Number and licence clause	Recommendation	Progress
2013-14-03, 04, 06 and 13 Water Quality; Drinking Water (clauses 2.1.1 & 2.1.2) ^a	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.	Continuing Hunter Water has closed out parts (b) to (f) by reviewing its CCPs and CCP tables, which completes the process started in 2015. Hunter Water is consulting with NSW Health to finalise the amended critical limits and monitoring points under part (a).

²¹ IPART, *Hunter Water Corporation Operational Audit 2016-17 Report to the Minister – Compliance Report*, March 2018.

Rec Number and licence clause	Recommendation	Progress
	<p>To assist in the identification of any aspect still outstanding the auditor made a further recommendation following the 2016-17 operational audit:</p> <p>(f) For the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system.²²</p>	
2013-14-03, 04, 06 and 13 Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2) ^a	<p>Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including:</p> <p>a) Review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health</p> <p>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</p> <p>c) Revise and review CCP documentation to clearly state location, parameters, target criteria, monitoring frequency, critical limits, corrective actions and responsibilities for each CCP</p> <p>d) Develop a process to record and document corrective actions, and preventive measures to reduce risks</p> <p>e) Operational and critical limits must be set in SCADA as alarms, including delay times where appropriate.</p> <p>To assist in the identification of any aspect still outstanding in the 2017-18 audit the auditor makes a further recommendation:</p> <p>(f) For the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system.</p>	<p>Continuing</p> <p>Hunter Water has closed out parts (b), (d) and (f), and is continuing towards completion of (a), (c) and (e). Hunter Water has completed its review of its CCPs and site specific RWQMPs, which began in 2015. Hunter Water is waiting on NSW Health to agree to the updated CCPs and management plans under part (a). Our auditor noted some discrepancies in the establishment and implementation of CCPs that affect the completion of parts (c) and (e).</p>
2015-16-05 Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)	<p>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</p>	<p>Complete</p> <p>Our auditor noted Hunter Water provided a spreadsheet that documented the results of the recycled water gap analysis undertaken which resulted in a number of recommendations that have been actioned.</p>
2015-16-06 Assets; Asset Management System (clause 4.1.2)	<p>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.</p>	<p>Complete (after due date)</p> <p>Our auditor noted that Hunter Water updated its Asset Standards Management Plan and a number of Asset Class Management Plans over the last four years, and has a program for updating the remaining plans.</p>

²² IPART, *Hunter Water Corporation Operational Audit 2016-17 – Report to the Minister*, March 2018, p 26.

Rec Number and licence clause	Recommendation	Progress
		<p>Although Hunter Water has not updated all Asset Class Management Plans that were due for review, our auditor noted the adopted new arrangement for documentation of its approach to the management of its assets means the requirement is not necessary in some cases.</p> <p>Our auditor noted, and we agree, that priority documentation (Asset Management Plans, Asset Strategies and Fatal Asset Strategies) should be completed by 30 June 2021, and the Facility Plans substantially in place by that date. We consider the intent of this recommendation from the auditor is better-suited as an opportunity for improvement.</p>
2016-17-01 Water Quality; Drinking Water (clause 2.1.1)	By 30 September 2018, Hunter Water should ensure that a process is in place to identify and address repeat water quality incidents and trends.	<p>Complete</p> <p>A process has been developed to capture water quality incidents and trends, including repeat incidents. The process is outlined in the water quality committee's terms of reference and is managed through the water quality committee meetings and regular reporting to the Executive Management Team (EMT).</p> <p>This process allows the Water Quality Committee to review repeated incidents and also give EMT oversight of the process.</p>
2016-17-02 Water Quality; Drinking Water (clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all emergency and incident management procedures are reviewed, and revised if necessary, based on the Four Mile Creek Critical Control Point reporting breaches (July 2016 and June 2017).	<p>Complete</p> <p>In response to the Four Mile Creek reporting breaches, several emergency and incident management procedures have been reviewed and revised, as required. The documents now provide clear directions if incidents that should be reported were to happen in the future.</p>
2016-17-03 Water Quality; Drinking Water (clause 2.1.2)	For the next scheduled emergency scenario training exercise, Hunter Water should include a Critical Control Point breach as the scenario.	<p>Complete</p> <p>Hunter Water completed an emergency training exercise in September 2018. The scope of the emergency training exercise included testing of Hunter Water's Incident Management Plan, Dam Safety Emergency Plan, a CCP breach, and the Pollution Incident Response Management Plan.</p>
2016-17-04 Water Quality; Drinking Water (clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all personnel involved in undertaking reservoir inspections undertake training in the importance of accurately completing the reservoir inspection forms, including the records associated with the inspection	<p>Complete</p> <p>Hunter Water has developed and implemented a training program for reservoir inspections, which is delivered through on-site toolbox talks, to all staff undertaking inspections.</p> <p>The recommendation was completed within the time period.</p>

Rec Number and licence clause	Recommendation	Progress
		We note Recommendation 6 of the 2018 Operational Audit is related to this recommendation 2016-17-04 (and applies to clause 3.1.1 of the Hunter Water Corporation Operating Licence 2017-2022).
2016-17-05 Water Quality; Recycled Water (clause 2.2.1)	By 30 December 2018, Hunter Water should update the Corporate Recycled Water Quality Management Plan to document current activities and processes. This should include filling any gaps identified as part of Recommendation 15/16-05.	Complete Hunter Water updated its Corporate RWQMP in the audit period based on the gap analysis undertaken to address Recommendation 2015/16-05.
2016-17-06 Water Quality; Recycled Water (clause 2.2.1)	By 30 September 2018, Hunter Water should: <ul style="list-style-type: none"> ▼ Develop a table in each scheme Recycled Water Quality Management Plan that documents the evidence for the selection of the Critical Control Point, its associated monitoring parameter(s) and limits. This should include sufficient document control to capture when changes are made and the basis of those changes. ▼ Consult with NSW Health on the validation testing program for the water recycling schemes. ▼ Specify the performance required of the ultraviolet (UV) units in their operating context and determine whether they are achieving this performance. Any failure in the performance of pre-validated UV units should be further investigated. 	Continuing Our auditor noted that Hunter Water is awaiting feedback from NSW Health on the Validation Report, which contains the list of CCPs, and the rationale for their selection, associated monitoring parameter(s) and limits.
2016-17-07 Water Quality; Recycled Water (clause 2.2.2)	By 30 September 2018, Hunter Water should ensure the preventive measures for helminth control for agricultural sites (Karuah, Morpeth and Farley) achieve the required log reduction values as per the Australian Guidelines for Water Recycling 2006.	Complete Our auditor noted the preventive measures for helminth control were assessed and detailed in Hunter Water's recycled water schemes report. The validation testing program for water recycling schemes report and the scheme specific RWQMPs were updated based on the recommendations for helminth control.
2016-17-08 Assets; Asset Management System (clause 4.1.2)	By 30 June 2019, Hunter Water should fully implement an asset criticality and risk assessment approach that is consistent across all asset classes and consistent with the enterprise risk management framework.	Continuing Our auditor noted Hunter Water has progressed implementation of an asset criticality and risk assessment approach that addresses all asset classes and is consistent with the enterprise risk management framework. The basis and methodology appears to have been developed and it now remains for the process to be implemented across the asset portfolio.

Rec Number and licence clause	Recommendation	Progress
2016-17-09 Assets; Asset Management System (clause 4.1.2)	Hunter Water should review the currency of all planned maintenance work instructions (for all assets) and prepare a program to update these as required over a period in accordance with its document control standard. The program should be prepared by 31 December 2018.	Complete Our Auditor noted Hunter Water has prepared a program review of all planned maintenance work instructions ("standard jobs") setting target dates for reviewing work instructions, prioritised on the basis of use. Hunter Water also has demonstrated that it is in the process of undertaking the reviews and an achievable timetable is in evidence.
2016-17-10 Environment; Environment Management (clause 6.1.3)	By 30 September 2018, Hunter Water should conduct refresher training of operations and maintenance staff for annual inspections and maintenance activities. In particular, there should be focus on identifying environmental impacts and ensuring mitigation of any impacts noted.	Complete Our auditor noted Hunter Water undertook refresher training for staff with responsibilities under the EMS in May 2018 that covered a range of relevant environmental awareness topics.
2016-17-11 Environment; Environment Management (clause 6.1.3)	By 30 September 2018, Hunter Water should complete a review of its schedule of environmental inspections, and expand the schedule where relevant to include the following: <ul style="list-style-type: none"> ▼ If inspecting a high risk site (eg, chlorinator or water treatment plant) that is in close proximity to a lower risk site (eg, reservoir or water pumping station) the lower risk site should also be included in the inspection ▼ An approach for those sites that are not near high risk sites. 	Complete Our auditor noted Hunter Water reviewed and updated its site inspection schedule to include the inspection of lower risk sites when inspecting adjacent high-risk sites. . The site description in the schedule has identified additional areas that must be inspected when inspecting the high-risk components of the site.

^a This clause has been open since 2015 as Hunter water has completed its CCP review, amended its preventive and corrective actions processes, and updated its water quality plans for both drinking water and recycled water for each of its treatment plants. NSW Health will review and approve/require amendments once all of the outstanding items are completed. Item (f) was added in last year's audit.

Source: IPART, Hunter Water Corporation Operational Audit 2016-17 – Report to the Minister – Compliance Report, March 2018.










Appendices



A Compliance grades

Table A1: Current compliance grades

Grades of compliance	Description
 Compliant	Sufficient evidence is available to confirm that the requirements have been met.
 Compliant (minor shortcomings)	Sufficient evidence is available to confirm that the requirements have been met apart from minor shortcomings which to date have not compromised the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 Non-compliant (non-material)	Sufficient evidence is not available to confirm that the requirements have been met and the deficiency does not adversely impact the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 Non-compliant (material)	Sufficient evidence is not available to confirm the requirements have been met and the deficiency does adversely impact the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 No Requirement	There is no requirement for the utility to meet this criterion within the audit period.

Source: IPART Audit Guideline Public Water Utilities, September 2018, Figure 2.1.



B 2018 audit scope



2018 operational audit scope Hunter Water Corporation

2018 audit scope

This document sets out the 2018 operational audit scope for Hunter Water Corporation (Hunter Water).

This scope is based on IPART's 5-year audit program for Hunter Water's 2017-2022 Operating Licence. Auditors should note any directions in the comments column of Table 2.

Audit period

The audit period is 1 July 2017 to 31 October 2018. In 2018, we are transitioning Hunter Water to a new audit period (previous audit periods aligned to the financial year). Interviews for the audit will be held in November 2018.

In 2019 we expect the audit period to be 1 November 2018 to 31 October 2019.

Outstanding audit recommendations

Table 3 outlines outstanding audit recommendations. The auditor is required to review these recommendations to determine progress. We report on outstanding audit recommendations separately within IPART's operational audit report to the Minister.

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 clauses 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 clauses 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.

Interpretation

In the case of any discrepancies between the Hunter Water Operating Licence 2017-2022 (licence) and the audit scope, the licence will prevail.

Table 1 Key

Requirement	Meaning
Audit/Review	Audit/review clause in 2018 audit.
SC	We will rely on the utility's Statement of Compliance. All clauses require a Statement of Compliance unless there is a "no requirement" designation.
NR	No requirement (for audit or statement of compliance).

Table 2 2018 Audit scope for Hunter Water Corporation

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1	Licence Context and authorisation		
1.1	Objectives of this Licence		
1.1.1	<p>This licence aims to:</p> <ul style="list-style-type: none"> (a) provide transparent and auditable terms and conditions for Hunter Water to lawfully undertake its activities at industry good-practice; (b) recognise the interests of stakeholders within its Area of Operations; and (c) impose the minimum regulatory burden on Hunter Water by avoiding duplication or conflict with other regulatory instruments. (d) 	NR	
1.2	Licence authorisation		
1.2.1	This Licence authorises and requires 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 within its Area of Operations.	NR	
1.2.2	This Licence authorises Hunter Water to do all things necessary or convenient to achieve, and to promote the capability to achieve, the transfer of water between its Area of Operations and the local government area of the Central Coast Council in accordance with the Hunter/Central Coast Pipeline Agreement.	NR	
1.2.3	This Licence authorises and requires Hunter Water to provide, operate, manage and maintain a drainage service as described in section 13(1)(b) of the Act.	SC	
1.2.4	This Licence authorises (but does not require) Hunter Water to provide, construct, operate, manage and maintain a drainage service within the Area of Operations in excess of the drainage service it is required to provide, operate, manage and maintain under clause 1.2.3. For the avoidance of any doubt, this clause authorises (but does not require) Hunter Water to enhance, expand and add capacity to the drainage service described in section 13(1)(b) of the Act.	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1.3	Term of this Licence		
1.3.1	The term of this Licence is 5 years from the Commencement Date. [Note: This Licence starts on 1 July 2017, which means that it will end on 30 June 2022.]	NR	
1.4	Licence amendment		
1.4.1	Subject to the Act and clause 1.4.2, this Licence may be amended by the Governor by notice in the New South Wales Government Gazette. The amendment takes effect on the date the notice is published in the New South Wales Government Gazette, or on such other date specified in the notice.	NR	
1.4.2	Before any notice of an amendment to this Licence is published in the New South Wales Government Gazette, the Minister must give Hunter Water reasonable notice of the proposed amendment to enable it to comply with the amended Licence (if relevant) upon its commencement.	NR	
1.5	Obligation to make Services available		
1.5.1	Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to: (a) in the case of supplying water, the Water Supply System; and (b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.	Audit	New licence clause.
1.5.2	Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any WIC Act Licensee for ultimate end-use within the Area of Operations, where that WIC Act Licensee is connected to, or where a connection is available in respect of that WIC Act Licensee to: (a) in the case of supplying water, the Water Supply System; and (b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.	Audit	New licence clause.
1.5.3	Hunter Water may impose any lawful conditions it sees fit on the making available of Services under clause 1.5.1 or clause 1.5.2, to ensure the safe, reliable and financially viable supply of the Services in accordance with this Licence.	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1.6	Non-exclusive Licence		
1.6.1	This Licence does not prohibit another person from providing Services in the Area of Operations that are the same as, or similar to, the Services, if the person is lawfully entitled to do so.	NR	
1.7	Making copies of this Licence available		
1.7.1	Hunter Water must make this Licence available to any person, free of charge: <ul style="list-style-type: none"> (a) on its website for downloading; and (b) upon request made through the General Enquiry Process. 	SC	
1.8	Pricing		
1.8.1	Subject to the terms of this Licence, the Act and the IPART Act, Hunter Water must set the level of fees, charges and other amounts payable for its Services in accordance with any applicable determination or determinations under the IPART Act.	Audit	<p>In April 2018, Hunter Water verbally informed the IPART Secretariat that it has charged the Environmental Improvement Charge (EIC) to customers that should not be charged.</p> <p>Hunter Water's Statement of Compliance notes that Hunter Water considers it did not have the legal authority to levy the EIC on vacant land for the period since 1 July 2013. Hunter Water ceased levying the EIC on vacant land in April 2018. Hunter Water is taking steps to locate and pay a refund to affected customers.</p> <p>On 4 September 2017, Hunter Water sought advice from IPART on inconsistencies between the 2016 Determination and its current pricing practices for tankered trade waste. In March 2018, Hunter Water advised that it intends to maintain its current approach to pricing tankered trade waste.</p> <p>The auditor should audit this clause by considering five fees or charges under the current Hunter Water Determination including the Environmental Improvement Charge and pricing for tankered trade waste.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments				
1.9	End of term review						
1.9.1	<p>It is anticipated that a review of this Licence will commence in the first quarter of 2021 to investigate:</p> <p>(a) whether this Licence is fulfilling its objectives; and</p> <p>(b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence,</p> <p>(End of Term Review)</p>	NR					
1.9.2	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 Review.	NR					
1.10	Notices						
1.10.1	<p>Any notice or other communication given under this Licence must be made in writing addressed to the intended recipient at the address shown below or the last address notified by the recipient.</p> <table><tr><th>Hunter Water</th><th>IPART</th></tr><tr><td>The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302</td><td>The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000</td></tr></table>	Hunter Water	IPART	The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000	SC	
Hunter Water	IPART						
The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000						

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
2	Water Conservation		
2.1	Catchment to water treatment plants		
2.1.1	<p>Hunter Water must calculate the System Yield either:</p> <ul style="list-style-type: none"> (a) in accordance with the memorandum of understanding with the Department of Primary Industries Water referred to in clause 5.10.1(a); or (b) if no such memorandum of understanding is in effect, in accordance with a reasonable methodology that Hunter Water considers suitable. 	Audit	Department of Industry - Water (formerly Department of Primary Industries Water) will be contacted by IPART to comment on Hunter Water's performance against this clause.
2.1.2	By 1 November 2018, or by a later date as approved by IPART, Hunter Water must submit to IPART a report outlining Hunter Water's water conservation strategy in relation to its system operating arrangements for Water Storage and Transmission (Water Conservation Strategy).	NR	
2.1.3	<p>The Water Conservation Strategy must include:</p> <ul style="list-style-type: none"> (a) identification and documentation of the existing water conservation activities; (b) a process for identifying additional options for conserving water; (c) a process for comparing these options; and (d) a process for selecting options for implementation 	NR	
2.1.4	By 1 September 2019, or by a later date as approved by IPART, Hunter Water must develop and submit to IPART a water conservation work program using the process set out in the Water Conservation Strategy.	NR	
2.2	Water treatment plants to tap		
2.2.1	<p>Hunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year is equal to or less than 215 kilolitres for each Property used for residential purposes which is connected to the Water Supply System (Water Conservation Target), until Hunter Water has obtained IPART's approval for the Economic Level of Water Conservation Methodology (in accordance with clauses 2.2.2 and 2.2.3), and developed a program of water conservation activities using the approved Economic Level of Water Conservation Methodology (in accordance with 2.2.4).</p> <p>[Note: Clause 2.2.1 requires Hunter Water to maintain the Water Conservation Target that was in the immediate predecessor to this Licence while the Economic Level of Water Conservation Methodology is being approved and applied.]</p>	Audit	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
2.2.2	By 1 November 2017, Hunter Water must submit to IPART for IPART's approval a report outlining Hunter Water's proposed approach to, and principles for, developing a methodology for determining its economic level of water conservation in relation to (at a minimum) the following elements: (a) water leakage (within and downstream of its water treatment plants); (b) water recycling; and (c) water efficiency (including demand management)	Audit	Not included in auditor's scope. IPART will undertake audit.
2.2.3	By 1 November 2018, or by a later date as approved by IPART, Hunter Water must submit to IPART for IPART's approval the proposed methodology for determining its economic level of water conservation in accordance with the approach and principles approved by IPART (Economic Level of Water Conservation Methodology). IPART may refuse approval of the methodology and require Hunter Water to resubmit it by a specified date after making changes requested by IPART, or approve the methodology unconditionally, or approve the methodology subject to conditions. Hunter Water must comply with any such conditions.	NR	
2.2.4	By 1 September 2019, or by a later date as approved by IPART, Hunter Water must develop and submit a water conservation work program using the Economic Level of Water Conservation Methodology.	NR	
2.2.5	Hunter Water must obtain IPART's written consent to make any changes to the Economic Level of Water Conservation Methodology (other than changes to correct minor grammatical or typographical errors).	SC	
3	Supply services and performance standards		
3.1	Drinking Water		
3.1.1	Hunter Water must maintain a Management System for Drinking Water that is consistent with the Australian Drinking Water Guidelines, except to the extent that NSW Health specifies otherwise in writing (the Drinking Water Quality Management System). [Note: It is expected that the Drinking Water Quality Management System will be consistent with the Framework for Management of Drinking Water Quality. However, where NSW Health considers it appropriate, the application of Australian Drinking Water 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. The Australian Drinking Water Guidelines has provisions relating to the prevention of use of non-potable water for potable purposes.]	Audit	This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit. NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.1.2	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 Drinking Water Quality Management System, and to the satisfaction of NSW Health.	Audit	<p>This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit.</p> <p>NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.</p> <p>NSW Health notes that Hunter Water made a significant change to its Drinking Water Quality Management System (DWQMS) by amending its Corporate Risk Management Framework, without consulting with NSW Health. NSW Health's concerns were addressed by an interim amendment to the Framework, but NSW Health expects to see a revised Framework in the coming weeks. Auditor to review the changes made to the DWQMS, and check for correspondence with NSW Health to determine its satisfaction with the amendments made.</p>
3.2	Recycled Water		
3.2.1	<p>Hunter Water must maintain a Management System for Recycled Water that is consistent with the Australian Guidelines for Water Recycling, except to the extent that NSW Health specifies otherwise in writing (the Recycled Water Quality Management System).</p> <p>[Note: It is expected that the Recycled Water Quality Management System will be consistent with the Australian Guidelines for Water Recycling, including the Framework for Management of Recycled Water Quality and Use. However, where NSW Health considers it appropriate, the application of the Australian Guidelines for Water Recycling 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.].</p>	Audit	<p>This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit.</p> <p>NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.2.2	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 Recycled Water Quality Management System, and to the satisfaction of NSW Health.	Audit	This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit. NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
3.3	System Performance Standards		
3.3.1	Water Pressure Standard	Audit	
	<p>(a) Hunter Water must ensure that no more than 4,800 Properties experience a Water Pressure Failure in a financial year (Water Pressure Standard).</p> <p>(b) A Property is taken to have experienced a Water Pressure Failure at each of the following times:</p> <ul style="list-style-type: none"> 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. <p>(c) Despite clause 3.3.1(b), a Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of:</p> <ul style="list-style-type: none"> i. a Planned Water Interruption or Unplanned Water Interruption; ii. water usage by authorised fire 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 four days of its occurrence. 		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.3.2	<p>Water Continuity Standard</p> <p>(a) Hunter Water must ensure that in a financial year:</p> <ul style="list-style-type: none"> i. no more than 10,000 Properties experience an Unplanned Water Interruption that lasts more than five continuous hours; and ii. no more than 5,000 Properties experience three or more Unplanned Water Interruptions that each last more than one hour, <p>(Water Continuity Standard).</p> <p>(b) For the purposes of clause 3.3.2(a), Hunter Water must use the best available data (taking account of water pressure data where that data is available) to determine of:</p> <ul style="list-style-type: none"> i. whether a Property has experienced an Unplanned Water Interruption; and ii. the duration of the Unplanned Water <p>(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 clause 3.3.2(a).</p> 	Audit	
3.3.3	<p>Wastewater Overflow Standard</p> <p>a) Hunter Water must ensure that in a financial year:</p> <ul style="list-style-type: none"> i) no more than 5,000 Properties experience an Uncontrolled Wastewater Overflow in dry weather; and ii) no more than 45 Properties experience three or more Uncontrolled Wastewater Overflow in dry weather, <p>(Wastewater overflow Standard).</p> 	Audit	
3.3.4	<p>Hunter Water must survey its Customers by 30 June 2020 for the purpose of informing a review of System Performance Standards and rebates.</p> <p>[Note: Clause 3.3.4 is not intended to prevent Hunter Water:</p> <p>(a) surveying its Customers and Consumers for any lawful purpose at such times as it sees fit; or</p> <p>(b) b)using the survey required by that clause to survey its Customers and Consumers on topics additional to the topic referred to in that clause.]</p>	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.3.5	<p>Interpretation of standards</p> <p>(a) For the purposes of the Water Pressure Standard and Water Continuity Standard, each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property.</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate bill from Hunter Water is to be counted as five separate Properties. However, a block of flats that only receives one bill from Hunter Water is to be counted as one Property.]</p> <p>(b) For the purposes of the Wastewater Overflow Standard, a Multiple Occupancy Property is considered to be one Property.</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate bill from Hunter Water is to be counted as one Property.]</p> <p>(c) the case of any ambiguity in the interpretation or application of any of the standards set out in this clause 3.3, IPART's interpretation of the relevant standard or assessment of its application will prevail.</p>	NR	
4	Organisational Systems Management		
4.1	Asset Management System		
4.1.1	By 31 December 2017, Hunter Water must develop a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian Standard AS ISO 55001:2014 Asset management - Management systems - Requirements, or other standard approved by IPART on request by Hunter Water (the Asset Management System).	Audit	This clause was last audited in 2017 and was awarded Full Compliance in that audit. Audit in 2018 to determine if AMS requirements have been completed by the due date.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
4.1.2	By 1 July 2018, Hunter Water must ensure that the Asset Management System is fully implemented and must, from that date, ensure that all relevant activities are carried out in accordance with the Asset Management System.	Audit	NSW Health notes that defects to a reservoir had not been rectified when an incident was notified in April 2018. It notes a previous audit recommendation regarding training of personnel undertaking inspections to understand the importance of completing reservoir inspections accurately. Auditor to review and assess training records for reservoir inspection staff and progress on Recommendation 2016-17-04.
4.1.3	<p>Until the Asset Management System has been implemented in accordance with clause 4.1.2, Hunter Water must ensure that all relevant activities are carried out in accordance with the previous asset management system that was required under the operating licence held by Hunter Water which commenced in 2012.</p> <p>[Note: This clause permits Hunter Water to transition its previous asset management system based on the Water Services Association of Australia's Aquamark benchmarking tool to the Australian Standard AS ISO 55001:2014 Asset management - Management systems – Requirements.].</p>	Audit	Audit for period prior to the Asset Management System being implemented in accordance with clause 4.1.2.
4.2	Environmental management system		
4.2.1	Hunter Water must at all times maintain a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian/New Zealand Standard AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use, or other standard approved by IPART on request by Hunter Water (the Environmental Management System).	Audit	
4.2.2	Hunter Water must fully implement, and carry out all relevant activities in accordance with, the Environmental Management System.	Audit	
4.3	Quality Management System		
4.3.1	Hunter Water must at all times maintain a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian/New Zealand Standard AS/NZS ISO 9001:2016 Quality management systems – Requirements, or other standard as approved by IPART on request by Hunter Water (the Quality Management System).	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
4.3.2	Hunter Water must fully implement, and carry out all relevant activities in accordance with, the Quality Management System.	SC	
5	Customers and stakeholder relations		
5.1	Customer Contract		
5.1.1	The terms and conditions of the Customer Contract are as set out in Schedule B of this Licence. [Note: Section 38 of the Act makes provision for the amendment of the Customer Contract.].	NR	
5.1.2	Before publishing a notice under section 38 of the Act for the purpose of varying the terms and conditions of the Customer Contract, Hunter Water must provide IPART with a copy of the notice.	SC	
5.2	Consumers		
5.2.1	Hunter Water's obligations under the Customer Contract relating to: (a) Complaint handling and Complaint resolution procedures; and (b) redress (clause 16.3 of the Customer Contract) and claims for damages (clause 16.4 of the Customer Contract), are extended to those Consumers who are not parties to the Customer Contract.	SC	
5.3	Payment difficulties and actions for non-payment		
5.3.1	Hunter Water must maintain and fully implement the following: (a) a financial hardship policy that assists residential Customers and Consumers experiencing financial hardship to better manage their current and future bills; (b) procedures relating to a payment plan for residential Customers and Consumers who are responsible for paying their bills and who are, in Hunter Water's opinion, experiencing financial hardship; (c) procedures for identifying the circumstances under which Hunter Water may disconnect or restrict a supply of water in a manner that will affect a Customer or Consumer; and (d) provisions for self-identification, identification by community welfare organisations and identification by Hunter Water of residential Customers and Consumers experiencing financial hardship, (the Procedure for Payment Difficulties and Actions for Non-payment).	SC	
5.4	Customer advisory group		
5.4.1	Hunter Water must maintain and regularly consult with its Customers through a customer advisory group.	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.4.2	Hunter Water must utilise the customer advisory group to, among other things, obtain advice on the interests of Hunter Water's Customers, the Customer Contract and such other key issues related to Hunter Water's planning and operations as Hunter Water may determine, including the matters set out in section 12(1) of the Act, consistent with the Customer Advisory Group Charter.	SC	
5.4.3	<p>Hunter Water:</p> <ul style="list-style-type: none"> (a) must ensure that, at all times, the membership of the customer advisory group is appointed and determined by Hunter Water in accordance with the Customer Advisory Group Charter; (b) must use its best endeavours to include, as members of the customer advisory group, at least one Customer representing each of the following categories: <ul style="list-style-type: none"> i) business; ii) organisations representing low income; iii) Customers living in rural and urban fringe areas; iv) residential; v) local government; vi) pensioners; vii) Customers with disabilities; viii) Indigenous Australians; and ix) Customers from culturally and linguistically diverse backgrounds; and (c) may include, as members of the customer advisory group, at least one person representing each of the following categories: <ul style="list-style-type: none"> i) business Consumers; ii) residential Consumers; and iii) environmental groups 	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.4.4	<p>Hunter Water and members of the customer advisory group must, for the term of this Licence, maintain a charter that addresses all of the following issues.</p> <ul style="list-style-type: none"> (a) the role of the customer advisory group; (b) how members and the Chair of the customer advisory group will be appointed (c) the term for which members are appointed (d) information on how the customer advisory group will operate; (e) a description of the type of matters that will be referred to the customer advisory group and how those matters may be referred; (f) procedures for communicating the outcomes of the customer advisory group's work to the public; (g) procedures for monitoring issues raised at meetings of the customer advisory group and ensuring appropriate follow-up of those issues; (h) procedures for amending the charter; and (i) funding and resourcing of the customer advisory group by Hunter Water, (Customer Advisory Group Charter). 	SC	
5.4.5	Hunter Water must provide the customer advisory group with information in Hunter Water's possession or under its control necessary to enable the customer advisory group to discharge the tasks assigned to it, other than information or documents that are confidential.	SC	
5.5	Internal complaints handling		
5.5.1	Hunter Water must maintain a procedure for receiving, responding to and resolving Complaints, which is consistent with the Australian/New Zealand Standard AS/NZS 10002:2014 – Guidelines for complaint management in organizations (the Internal Complaints Handling Procedure).	SC	
5.5.2	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 Internal Complaints Handling Procedure.	SC	
5.6	External Dispute Resolution scheme		
5.6.1	Hunter Water must be a member of the Energy and Water Ombudsman NSW to facilitate the resolution, by a dispute resolution body, of disputes between Hunter Water and its Customers or Consumers.	SC	
5.7	Provision of information to Customers and the general public		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.7.1	<p>Hunter Water must prepare a pamphlet or pamphlets with the following information to Customers at least annually with their bills:</p> <ul style="list-style-type: none"> (a) a brief explanation of the Customer Contract and a summary of the key rights and obligations of Customers under the Customer Contract; (b) a brief explanation of the Procedure for Payment Difficulties and Actions for Non-payment; (c) a brief explanation of rights of Customers to claim a rebate and the conditions that apply to those rights; (d) information about the General Enquiry Process; (e) information about how to make a Complaint under the Internal Complaints Handling Procedure; and (f) a brief explanation of the external dispute resolution service, how to access that service, and Customers rights to have a Complaint or dispute referred to Energy and Water Ombudsman NSW. 	SC	
5.7.2	<p>Hunter Water must make a copy of the following documents available to any person, free of charge on its website for downloading and upon request through the General Enquiry Process:</p> <ul style="list-style-type: none"> (a) the Customer Contract; (b) a pamphlet or pamphlets (as referred to in clause 5.7.1); (c) the Procedure for Payment Difficulties and Actions for Non-payment; (d) the Customer Advisory Group Charter; (e) customer advisory group minutes; (f) the Internal Complaints Handling Procedure; (g) information about the dispute resolution scheme provided by Energy and Water Ombudsman NSW; and (h) a map of the Area of Operations. 	SC	
5.7.3	<p>Hunter Water must update the pamphlet or pamphlets prepared under clause 5.7.1 and documents on its website under clause 5.7.2 to reflect any variations made to the information within 60 days of the commencement of the variations.</p>	SC	
5.8	Code of Conduct with WIC Act Licensee		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.8.1	Hunter Water must use reasonable endeavours to cooperate with any WIC Act Licensee that seeks to establish with Hunter Water a code of conduct required under a licence under the WIC Act.	Audit	New licence clause. Audit to determine if Hunter Water is using 'best endeavours' where a code of conduct is sought to be established with a WIC Act licensee. IPART is aware of Utility Service Agreements in place between WIC Act licensees and Hunter Water which fulfil the requirements of a Code of Conduct under clause 25 of the WIC Regulation.
5.8.2	Where the Minister administering the WIC Act has established a code of conduct under clause 25 of the WIC Regulation, Hunter Water will be taken to have satisfied its obligation under clause 5.8.1 by applying the water industry code of conduct established by the Minister to the relevant WIC Act Licensee.	NR	
5.9	Memorandum of Understanding with NSW Health		
5.9.1	<p>Hunter Water must use its best endeavours to:</p> <ul style="list-style-type: none"> (a) maintain a memorandum of understanding with NSW Health; and (b) comply with the memorandum of understanding maintained under clause 5.9.1(a). <p>[Note: Clause 5.9.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding.]</p>	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.9.2	The purpose of the memorandum of understanding referred to in clause 5.9.1(a) is to form the basis for co-operative relationships between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 5.9.1(a) is to recognise the role of NSW Health in providing advice to the NSW Government in relation to Drinking Water quality standards and the supply of water that is safe to drink.	NR	
5.9.3	The memorandum of understanding referred to in clause 5.9.1(a) must include arrangements for Hunter Water to report to NSW Health information on any events in relation to Hunter Water's systems or Services that might pose a risk to public health.	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.9.4	<p>Hunter Water must provide NSW Health with information relating to water quality in the manner and form specified by NSW Health within a reasonable period of time of receiving NSW Health's request.</p> <p>[Note: The obligation in clause 5.9.4 is in addition to Hunter Water's obligation to comply with any information requests made under section 19 of the Public Health Act 2010 (NSW) by the Secretary of the NSW Ministry of Health.]</p>	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.10	Memorandum of Understanding with Department of Primary Industries - Water		
5.10.1	<p>Hunter Water must use its best endeavours to:</p> <p>a) maintain a memorandum of understanding (which may be referred to as a roles and responsibilities protocol) with the Department of Primary Industries Water in relation to:</p> <p>i. the roles and responsibilities for the Department of Primary Industries Water and Hunter Water in respect of the review and implementation of the Lower Hunter Water Plan; and</p> <p>ii. calculation and reporting of System Yield; and</p> <p>b) comply with the memorandum of understanding maintained under clause 5.10.1(a).</p> <p>[Note: Clause 5.10.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding or a roles and responsibilities protocol.]</p>	Audit	<p>New licence clause.</p> <p>This role/function is now with Department of Industry – Water.</p> <p>Department of Industry - Water will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>
5.10.2	The purpose of the memorandum of understanding referred to in clause 5.10.1(a) is to form the basis for a co-operative relationship between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 5.10.1(a) is to recognise the role of Department of Primary Industries Water in assessing options to address water supply security in the lower Hunter region.	NR	
5.11	Memorandum of understanding with Fire and Rescue NSW		
5.11.1	<p>Hunter Water must use its best endeavours to:</p> <p>a) develop and enter into a memorandum of understanding with FRNSW by 31 December 2017; and</p> <p>b) once the memorandum of understanding referred to in clause 5.11.1(a) is developed and entered into, comply with the memorandum of understanding.</p> <p>[Note: Clause 5.11.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding.]</p>	Audit	<p>New licence clause.</p> <p>Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.11.2	<p>The purpose of the memorandum of understanding referred to in clause 5.11.1 is to form the basis for co-operative relationships between the parties to the memorandum of understanding. In particular, the purpose of clause 5.11.1 is to:</p> <ul style="list-style-type: none"> (a) develop the roles and responsibilities of the parties to the memorandum of understanding as they relate to each other; (b) identify the needs and constraints of the parties to the memorandum of understanding as they relate to each other; and (c) identify and develop strategies for efficient and effective provision of firefighting water consistent with the goals of each party to the memorandum of understanding. 	Audit	Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.11.3	<p>The memorandum of understanding referred to in clause 5.11.1 must require:</p> <ul style="list-style-type: none"> (a) the establishment of a working group, comprised of representatives from Hunter Water and FRNSW; and (b) the working group to consider the following matters (at a minimum): <ul style="list-style-type: none"> i) arrangements regarding information sharing between Hunter Water and FRNSW; ii) agreed timelines and a format for Hunter Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network); iii) arrangements for Hunter Water to consult with FRNSW in the design of new assets and planning of system maintenance, where modelling indicates that minimum available flow and pressure may unduly affect firefighting in the network section under consideration; and iv) other matters as agreed by both parties to the memorandum of understanding. 	Audit	New licence clause. Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.
6	Performance monitoring and reporting		
6.1	Operational audits		
6.1.1	<p>IPART may annually, or from time to time as occasion requires, undertake, or may appoint an Auditor to undertake, an audit on Hunter Water's compliance with:</p> <ul style="list-style-type: none"> (a) this Licence; (b) the Reporting Manual; and (c) any matters required by the Minister, <p>(Operational Audit).</p>	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
6.1.2	Hunter Water must provide to IPART or the Auditor all information in Hunter Water's possession, or under Hunter Water's custody or control, which is necessary or convenient for the conduct of the Operational Audit.	SC	
6.1.3	Without limiting clause 6.1.2, Hunter Water must provide to IPART or the Auditor any information necessary or convenient for the conduct of the Operational Audit which IPART or the Auditor requests in writing, within any reasonable period of time specified by IPART or the Auditor in writing.	SC	
6.1.4	<p>For the purposes of any Operational Audit or verifying a report on an Operational Audit, Hunter Water must, within a reasonable period of time from receiving a request from IPART or an Auditor, permit IPART or the Auditor to:</p> <ul style="list-style-type: none"> (a) access 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 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 (including obligations under the Reporting Manual); and (e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Hunter Water, including Hunter Water's officers and employees. 	SC	
6.2	Reporting Manual		
6.2.1	<p>Hunter Water must comply with all of its reporting obligations set out in the Reporting Manual, including in relation to:</p> <ul style="list-style-type: none"> (a) water conservation; (b) supply services and performance standards; (c) organisational systems management; (d) customer and stakeholder relations; and (e) performance monitoring and reporting, including: <ul style="list-style-type: none"> i) IPART performance indicators; and ii) the National Water Initiative Performance Indicators 	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
6.2.2	Hunter Water must maintain sufficient record systems to enable Hunter Water to report accurately in accordance with clause 6.2.1.	SC	
6.2.3	<p>In the case of any ambiguity in the interpretation or application of any requirements in the Reporting Manual, IPART's interpretation or assessment will prevail.</p> <p>[Note: The Reporting Manual identifies the details of when, what, to whom and how Hunter Water must report to IPART and NSW Health. The Reporting Manual also specifies what and how reports and other information must be made publicly available.]</p>	NR	
6.3	Provision of Information to IPART and Auditor		
6.3.1	Hunter Water must provide IPART or an Auditor with information relating to the performance of any of Hunter Water's obligations under clause 6.2 (including providing IPART with physical and electronic access to the records required to be kept under clause 6.2) within a reasonable period of time from Hunter Water receiving a request from IPART or an Auditor for that information	SC	
6.3.2	Hunter Water must provide IPART or an Auditor with such information as is reasonably required to enable IPART or an Auditor to conduct any review or investigation of Hunter Water's obligations under this Licence within a reasonable period of time from Hunter Water receiving a request from IPART or an Auditor for that information.	SC	
6.3.3	If Hunter Water contracts out any of its activities to any person (including a subsidiary) it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such persons provide information and do the things specified in this clause 6 as if that person were Hunter Water.	SC	
6.3.4	<p>Where this Licence requires Hunter Water to provide information to IPART or an Auditor that is information to which:</p> <p>(a) Section 24FF of the IPART Act applies; or</p> <p>(b) Section 24FF of the IPART Act does not apply but IPART or the Auditor has agreed to treat the information as though section 24FF of the IPART Act applies to that information,</p> <p>Hunter Water must, to the maximum extent permitted by the law, provide that information even if it is confidential.</p>	SC	

Table 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2013-14-03 2013-14-04 2013-14-06 2013-14-13	Water Quality Management Systems Clauses 2.1.1, 2.1.2, 2.2.1 & 2.2.2	<p>Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including:</p> <ul style="list-style-type: none"> 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. <p>To assist in the identification of any aspect still outstanding in the 2017-18 audit the auditor makes a further recommendation:</p> <p>(f) for the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system.</p>	<p><u>Drinking Water CCPs:</u> NSW Health is reviewing revised CCP documentation prepared by Hunter Water incorporating previous feedback by NSW Health. This part of the recommendation remains open.</p> <p><u>Recycled Water CCPs:</u> NSW Health has expressed satisfaction with the status of the review and updated program for the RWQMPs. Some work is still to be completed. This part of the recommendation remains open.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2015-16 -05	Water Quality – Recycled Water Quality Management System (Clauses 2.2.1, 2.2.2)	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.	Limited high level progress has been made, and the auditor has recommended updating the recommendation to: ▼ By 30 September 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 and 2016-17 (this) report.	Audit for completion.
2015-16 -06	Assets – Asset Management System implementation (Clause 4.1.2)	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.	Hunter Water provided a schedule detailing the status of revisions of the Asset Class management Plans which showed that 17 of 52 plans are yet to be updated.	Audit for completion.
2016-17-01	Water Quality Drinking Water (Clause 2.1.1)	By 30 September 2018, Hunter Water should ensure that a process is in place to identify and address repeat water quality incidents and trends	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-02	Water Quality Drinking Water (Clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all emergency and incident management procedures are reviewed, and revised if necessary, based on the Four Mile Creek Critical Control Point reporting breaches (July 2016 and June 2017).	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-03	Water Quality Drinking Water (Clause 2.1.2)	For the next scheduled emergency scenario training exercise, Hunter Water should include a Critical Control Point breach as the scenario.	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-04	Water Quality Drinking Water (Clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all personnel involved in undertaking reservoir inspections undertake training in the importance of accurately completing the reservoir inspection forms, including the records associated with the inspection.	New recommendation from 2016-17 audit.	Audit for completion. See also comments to the auditor for clause 4.1.2.
2016-17-05	Water Quality Recycled Water (Clause 2.2.1)	By 30 December 2018, Hunter Water should update the Corporate Recycled Water Quality Management Plan to document current activities and processes. This should include filling any gaps identified as part of Recommendation 15/16-05.	New recommendation from 2016-17 audit.	Auditor to check progress.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-06	Water Quality Recycled Water (Clause 2.2.1)	<p>By 30 September 2018, Hunter Water should:</p> <ul style="list-style-type: none"> – Develop a table in each scheme Recycled Water Quality Management Plan that documents the evidence for the selection of the Critical Control Point, its associated monitoring parameter(s) and limits. This should include sufficient document control to capture when changes are made and the basis of those changes. – Consult with NSW Health on the validation testing program for the water recycling schemes. – Specify the performance required of the ultraviolet (UV) units in their operating context and determine whether they are achieving this performance. Any failure in the performance of pre-validated UV units should be further investigated. 	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-07	Water Quality Recycled Water (Clause 2.2.2)	By 30 September 2018, Hunter Water should ensure the preventive measures for helminth control for agricultural sites (Karuah, Morpeth and Farley) achieve the required log reduction values as per the <i>Australian Guidelines for Water Recycling 2006</i> .	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-08	Assets (Clause 4.1.2)	By 30 June 2019, Hunter Water should fully implement an asset criticality and risk assessment approach that is consistent across all asset classes and consistent with the enterprise risk management framework.	New recommendation from 2016-17 audit.	Auditor to check progress.
2016-17-09	Assets Implementation (Clause 4.1.2)	Hunter Water should review the currency of all planned maintenance work instructions (for all assets) and prepare a program to update these as required over a period in accordance with its document control standard. The program should be prepared by 31 December 2018	New recommendation from 2016-17 audit.	Auditor to check progress.
2016-17-10	Environment Implementation (Clause 6.1.3)	By 30 September 2018, Hunter Water should conduct refresher training of operations and maintenance staff for annual inspections and maintenance activities. In particular, there should be focus on identifying environmental impacts and ensuring mitigation of any impacts noted.	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-11	Environment (Clause 6.1.3)	<p>By 30 September 2018, Hunter Water should complete a review of its schedule of environmental inspections, and expand the schedule where relevant to include the following:</p> <ul style="list-style-type: none"> – if inspecting a high risk site (eg, chlorinator or water treatment plant) that is in close proximity to a lower risk site (eg, reservoir or water pumping station) the lower risk site should also be included in the inspection, and – an approach for those sites that are not near high risk sites 	New recommendation from 2016-17 audit.	Audit for completion.

Source: Hunter Water - Atom Consulting, Hunter Water Corporation Operational Audit 2016-17, January 2018.

^a Hunter Water's *Status Report on Recommendations- 2016-17 Operating Licence Audit* is not due until 31 May 2018.

Table 4 Previous field verification locations for Hunter Water Corporation

Audit year	Location	Facility
2017	Kurri Kurri	Wastewater Treatment Plant
	Gresford	Water Treatment Plant and Water Pump Station
	North Lambton	Maintenance Depot and Planned Maintenance repair
	Wallsend	Water Pump Station
	Elernmore Vale	Reservoir
2016	Tomago Sandbeds	Borefields
	Lemon Tree Passage	Water Treatment Plant
	Karuah	Wastewater Treatment Plant and the reuse enterprise
	Boulder Bay	Wastewater Treatment Plant
2015	Edgeworth	Wastewater Treatment works
	KIWS (Kooragang Industrial Water Scheme), incl. Mayfield West plant	Advanced Water Treatment Plant (recycled water)
	Grahamstown	Spillway
		Water Treatment Plant
	Campvale	Pumping station
2014	Chichester	Dam
	Dungog	Water Treatment Plant
	Clarence	Sewage Treatment Plant
	Boags Hill	Inlet
	Seaham	Weir
2013	Branxton	Recycled Water Treatment Plant
	Grahamstown	Water treatment plant
2012	Port Stephens	Lemon Tree Passage Water Treatment Plant
	Grahamstown	Dam
	Campvale	Pumping station
	Between Newcastle and Port Stephens	Tomago Sandbeds
	Karuah	Sewage Treatment Plant
2011	Dungog	Water Treatment Plant
	Grahamstown	Water Treatment Plant
	n/a	Service reservoirs and storages
	n/a	Work sites – mains replacement and burst mains repair

C Operational audit report 2018 – Hunter Water





2018 Operational Audit of Hunter Water Corporation

Final Audit Report

#14074-10-001 Version 3.0

Independent Pricing and Regulatory Tribunal

February 2019

Document History

2018 Operational Audit of Hunter Water Corporation

Final Audit Report

Independent Pricing and Regulatory Tribunal

This document has been issued and amended as follows:

Version	Date	Description	Created by	Checked by	Approved by
1.0	5 December 2018	Draft	Jim Sly, James Howey and Karen Pither	Bob Burford	Jim Sly
2.0	18 January 2019	Revised Draft	Jim Sly, James Howey and Karen Pither	Bob Burford	Jim Sly
3.0	1 February 2019	Final	Jim Sly and James Howey	Bob Burford	Jim Sly

Cobbitty Consulting Pty Ltd
ABN: 45 164 692 488

PO Box 561, Bayswater VIC 3153
Telephone: +61 (0) 423 326 693
Email: jim.sly@cobbittyconsulting.com.au

Cobbitty Consulting has prepared this document in accordance with the instructions of *Independent Pricing and Regulatory Tribunal* for its sole and specific use. Any other persons who use the information contained herein do so at their own risk.

© Cobbitty Consulting Pty Ltd, 2019

Contents

Glossary	iii
Executive Summary	1
1. Introduction	9
1.1 Objectives	9
1.2 Audit Method	9
1.2.1 Audit Scope	9
1.2.2 Audit Standard	11
1.2.3 Audit Steps	11
1.2.4 Audit Team	12
1.2.5 Audit Grades	13
1.3 Regulatory Regime	13
1.4 Quality Assurance Process	14
2. Site Visit Report	15
2.1 Overview	15
2.2 Maintenance Planning and Scheduling Team	15
2.3 North Lambton Maintenance Depot	16
2.4 North Lambton Reservoir	17
2.5 Planned Maintenance Activity	19
2.6 Morpeth Wastewater Treatment Works (including recycled water use at golf club)	20
2.6.1 Facility description	20
2.6.2 Inspection overview	20
2.6.3 Asset management	20
2.6.4 Water quality	21
2.6.5 Easts Golf Course Recycled Water Scheme	21
2.7 Dungog Water Treatment Plant	22
2.7.1 Facility description	22
2.7.2 Inspection overview	22
2.7.3 Asset management	22
2.7.4 Water quality	23
3. Detailed Audit Findings	25
3.1 Overview	25
3.2 Licence context and authorisation	26
3.2.1 Obligation to make Services available	26
Table 3.1 Obligation to make Services available (sub-clause 1.5.1)	26
Table 3.2 Obligation to make Services available (sub-clause 1.5.2)	29
3.2.2 Pricing	31
Table 3.3 Pricing (sub-clause 1.8.1)	31
3.3 Water Conservation	38
3.3.1 Catchment to water treatment plants	38
Table 3.4 Catchment to water treatment plants (sub-clause 2.1.1)	38
3.3.2 Water treatment plants to taps	41
Table 3.5 Water treatment plants to taps (sub-clause 2.2.1)	41
3.4 Supply services and performance standards	44
3.4.1 Drinking Water	44
Table 3.6 Drinking Water (sub-clause 3.1.1)	44
Table 3.7 Drinking Water (sub-clause 3.1.2)	61
3.4.2 Recycled Water	77
Table 3.8 Recycled Water (sub-clause 3.2.1)	77
Table 3.9 Recycled Water (sub-clause 3.2.2)	92

3.4.3	System Performance Standards	106
Table 3.10	System Performance Standards (sub-clause 3.3.1)	106
Table 3.11	System Performance Standards (sub-clause 3.3.2)	110
Table 3.12	System Performance Standards (sub-clause 3.3.3)	113
3.5	Organisational systems standards	116
3.5.1	Asset management system	116
Table 3.13	Asset management system (sub-clause 4.1.1)	116
Table 3.14	Asset management system (sub-clause 4.1.2)	118
Table 3.15	Asset management system (sub-clause 4.1.3)	127
3.5.2	Environmental management system	130
Table 3.16	Environmental management system (sub-clause 4.2.1)	130
Table 3.17	Environmental management system (sub-clause 4.2.2)	131
3.6	Customer and stakeholder relations	134
3.6.1	Code of conduct with WIC Act Licensee	134
Table 3.18	Code of conduct with WIC Act Licensee (sub-clause 5.8.1)	134
3.6.2	Memorandum of Understanding with Department of Primary Industry – Water	136
Table 3.19	Memorandum of Understanding with Department of Primary Industry – Water (sub-clause 5.10.1)	136
3.6.3	Memorandum of Understanding with Fire and Rescue NSW	140
Table 3.20	Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.1)	140
Table 3.21	Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.2)	144
Table 3.22	Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.3)	146
4.	Previous Recommendations	149
4.1	Overview	149
4.2	Detailed Assessment of Status	150
4.2.1	Drinking Water	150
Table 4.1	Previous Recommendations 2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13	150
Table 4.2	Previous Recommendation 2016/17-01	153
Table 4.3	Previous Recommendation 2016/17-02	154
Table 4.4	Previous Recommendation 2016/17-03	156
Table 4.5	Previous Recommendation 2016/17-04	158
4.2.2	Recycled Water	160
Table 4.6	Previous Recommendations 2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13	160
Table 4.7	Previous Recommendation 2015/16-05	163
Table 4.8	Previous Recommendation 2016/17-05	165
Table 4.9	Previous Recommendation 2016/17-06	166
Table 4.10	Previous Recommendation 2016/17-07	168
4.2.3	Asset management system	170
Table 4.11	Previous Recommendation 2015/16-06	170
Table 4.12	Previous Recommendation 2016/17-08	173
Table 4.13	Previous Recommendation 2016/17-09	176
4.2.4	Environmental management system	179
Table 4.14	Previous Recommendation 2016/17-10	179
Table 4.15	Previous Recommendation 2016/17-11	181
Appendix A	Audit Scope	183
Appendix B	Hunter Water Representatives	215

Glossary

Acronym/Term	Description
ADWG (2011)	<i>Australian Drinking Water Guidelines, 2011</i>
AGWR (2006)	<i>Australian Guidelines for Water Recycling, 2006</i>
AMP	Asset Management Plan
AOMS	Asset Operations Maintenance System
CCAG	Customer and Community Advisory Group
CIS	Customer Information System
CMMS	Computerised Maintenance Management System
CPI	Consumer Price Index
ΔCPI	Change in CPI calculated in accordance with the Hunter Water Determination (refer Table 3.3)
DBYD	Dial Before You Dig
DoI Water	Department of Industry – Water (formerly Department of Primary Industries Water)
DWQIP	Drinking Water Quality Improvement Plan
DWQMS	Drinking Water Quality Management System
DWQMSM	Drinking Water Quality Management System Manual
Ellipse	Enterprise Asset Management System used by Hunter Water
EMS	Environmental Management System
ERM	Enterprise Risk Management (framework implemented by Hunter Water)
FFWG	Fire Fighting Working Group (relates to the Memorandum of Understanding with Fire and Rescue NSW)
IPART	The Independent Pricing and Regulatory Tribunal (NSW)
LHWP	<i>Lower Hunter Water Plan</i>
MBR	Membrane Bioreactor
MERI	Monitoring, evaluation, reporting and improvement (reports prepares in respect of implementation of the Lower Hunter Water Plan).
ML	Megalitre (1 million litres)
MoU	Memorandum of Understanding
MST	Maintenance Schedule Task
NATA	National Association of Testing Authorities
OFI	Opportunity for Improvement
O&M	Operations and Maintenance
PARMS	Pipeline Asset and Risk Management System for Reticulation (PARMS) software
PFAS	Per- and poly-fluoroalkyl substances
pH	A measure of acidity or alkalinity of water

Acronym/Term	Description
QA	Quality Assurance
QC	Quality Control
RWQMP	Recycled Water Quality Management Plan
RWQMS	Recycled Water Quality Management System
SCADA	Supervisory Control and Data Acquisition
SLG	Strategic Liaison Group (relates to the Memorandum of Understanding with Fire and Rescue NSW)
SOP	Standard Operating Procedure
TRIM	Total Records and Information Management
WATHNET	Water Headworks Network simulation model
UV	Ultra Violet (as it relates water disinfection using ultra violet light)
UVT	UV Transmissivity
VAMS	Veolia Asset Management System (computerised maintenance management system used by Veolia)
WFP	Water Filtration Plant
WSAA	Water Services Association of Australia
WTP	Water Treatment Plant
WWTW	Wastewater Treatment Works

Executive Summary

Auditor Declaration

This report presents the findings of an Operational Audit of Hunter Water Corporation's compliance with the requirements of its Operating Licence during the period 1 July 2017 to 31 October 2018. The audit was undertaken by Cobbitty Consulting, in association with Viridis Consultants, for the Independent Pricing and Regulatory Tribunal (IPART).

The audit team confirms that:

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

Major Findings

The audit team found that Hunter Water had performed well against the audited obligations over the audit period. Twenty two (22) clauses of the Operating Licence were audited, the findings in respect of which can be summarised as follows:

- It was found that there was no requirement for compliance in respect of two (2) of the audited clauses during the audit period;
- Non-compliance (non-material) has been assigned in respect of one (1) clause;
- Compliance (minor shortcomings) has been assigned in respect of four (4) clauses; and
- Compliance has been awarded to all of the remaining fifteen (15) audited clauses.

The identified shortcomings relate to Pricing, Drinking water, Recycled water, the Environmental management system, and a Memorandum of understanding with Fire and Rescue NSW.

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

¹ IPART, *Audit Guideline; Public Water Utilities* (Issue PWUAG-Rev2), September 2018.

² IPART, *Request for Quote – RFQ 18/167; 2018 Hunter Water Corporation Audit*, undated.

Table E.1 Summary of Audit Findings

Licence Part	Clause/Obligation	Compliance Grade/Comment ³
1. Licence context and authorisation	1.5.1	Compliant
	1.5.2	Compliant
	1.8.1	Non-compliant (non-material) <i>Hunter Water has declared non-compliance with this obligation in respect of the application of its Environmental Improvement Charge (EIC) and charges for the receipt of tankered high strength waste. Corrective action has been taken in respect of the EIC issue; action is also planned in relation to the incorrect application of tankering charges.</i>
2. Water Conservation	2.1.1	Compliant
	2.2.1	Compliant
3. Supply services and performance standards	3.1.1	Compliant (minor shortcomings) <i>The drinking water management system was generally compliant, although some shortcomings were identified. The risk assessments do not document the risk associated with the supply for Central Coast Council. Hygiene procedures for network repairs were also lacking; although there are procedures in place, the requirements for minor works were not sufficiently detailed. These deficiencies did not, however, compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.</i>
	3.1.2	Compliant
	3.2.1	Compliant (minor shortcomings) <i>Whilst Hunter Water and Veolia have established a RWQMS that is compliant with the AGWR, there is opportunity to improve the documentation of the critical limits and operational monitoring in relation to UV disinfection. It was considered that the shortcomings did not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.</i>
	3.2.2	Compliant
	3.3.1	Compliant
	3.3.2	Compliant
	3.3.3	Compliant

³ Comment provided where less than full compliance assessed.

Licence Part	Clause/Obligation	Compliance Grade/Comment ³
4. Organisational systems management	4.1.1	Compliant
	4.1.2	Compliant
	4.1.3	Compliant
	4.2.1	Compliant
	4.2.2	Compliant (minor shortcomings) <i>Hunter Water demonstrated that environmental management is a key part of the integrated management system and is taken into account throughout the business. The environmental management system is well managed and, in general, is implemented as defined; however, some high-risk improvement items have not been closed out within the agreed timeframes. These deficiencies do not adversely impact the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.</i>
5. Customer and stakeholder relations	5.8.1	Compliant
	5.10.1	Compliant
	5.11.1	Compliant (minor shortcomings) <i>Hunter Water demonstrated that it has been working with Fire and Rescue NSW to establish a Memorandum of Understanding between the parties; however, it had not entered into such Memorandum of Understanding by 31 December 2017. Whilst the evidence suggests that work has continued, there appear to have been some periods during which there has been a lapse in activity (for example, between February and May 2018).</i>
	5.11.2	No Requirement
	5.11.3	No Requirement

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

Recommendation	Licence Reference ^{4,5} and Operational Issue	Status/Comment ⁶
2013-14-03 2013-14-04 2013-14-06 2013-14-13	<i>Water Quality; Drinking Water (clauses 2.1.1 & 2.1.2)</i> Review of Critical Control Points (CCPs) for drinking water treatment plants.	Ongoing <i>Parts b), c), d), e) and f) of the recommendation have been completed; Part a) is awaiting sign-off by NSW Health.</i>
2016-17-01	<i>Water Quality; Drinking Water (clauses 2.1.1)</i> Addressing repeat water quality incidents and trends.	Completed
2016-17-02	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Review of emergency and incident management procedures.	Completed
2016-17-03	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Inclusion of a Critical Control Point breach in next emergency training scenario.	Completed
2016-17-04	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Training in respect of reservoir inspection records.	Completed <i>However, a new recommendation (REC-HWC-2017/18-09) has been made.</i>
2013-14-03 2013-14-04 2013-14-06 2013-14-13	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Review of Critical Control Points (CCPs) for recycled water plants.	Ongoing <i>Parts b), d) and f) of the recommendation have been completed; Parts a), c) and e) are awaiting sign-off by NSW Health.</i>
2015-16-05	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Completion of gap analysis for all RWQMPs.	Completed
2016-17-05	<i>Water Quality; Recycled Water (clauses 2.2.1)</i> Update of the Corporate Recycled Water Quality Management Plan.	Completed
2016-17-06	<i>Water Quality; Recycled Water (clauses 2.2.1)</i> Inclusion of a Critical Control Point in each Recycled Water Quality Management Plan; consultation with NSW Health in respect of validation testing for recycled water schemes; and review performance requirements/validation for UV units.	Ongoing <i>Hunter Water is awaiting feedback NSW Health to fully address this recommendation.</i>

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

⁵ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁶ Comment provided where less than recommendation has not been fully addressed (i.e. completed).

Recommendation	Licence Reference ^{4,5} and Operational Issue	Status/Comment ⁶
2016-17-07	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Ensuring that log reduction requirements for helminth control at agricultural reuse sites are achieved.	Completed
2015-16-06	<i>Assets; Asset Management System (clause 4.1.2)</i> Review of Asset Class Management Plans.	Completed <i>However, a new recommendation (REC-HWC-2017/18-10) has been made.</i>
2016-17-08	<i>Assets; Asset Management System (clause 4.1.2)</i> Implementation of asset criticality and risk assessment approach consistent with enterprise risk management framework.	Ongoing <i>The basis and methodology of an asset criticality and risk assessment approach that is consistent with the enterprise risk management framework has been developed and it now remains for the process to be implemented across the asset portfolio.</i>
2016-17-09	<i>Assets; Asset Management System (clause 4.1.2)</i> Review of currency and preparation of update program for planned maintenance work instructions.	Completed
2016-17-10	<i>Environment; Environment Management (clause 6.1.3)</i> Conduct of refresher training for operations and maintenance staff with a focus on the identification and mitigation of environmental impacts.	Completed
2016-17-11	<i>Environment; Environment Management (clause 6.1.3)</i> Review and expansion of the environmental inspections schedule.	Completed

Recommendations

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

Table E.3 Audit Recommendations

Licence Part	Clause/Obligation	Recommendation
1. Licence context and authorisation	1.8.1	<p>REC-HWC-2017/18-01: Hunter Water should take action to ensure that:</p> <ul style="list-style-type: none"> the use of paper tanker delivery dockets is replaced by a digital capture (mobility) arrangement by 31 March 2019; automated billing for the receipt of tankered waste is implemented as part of Hunter Water's proposed billing system upgrade (expected completion 31 December 2019); and draft bill validation processes are implemented for tankering bills by 30 June 2019.
3. Supply services and performance standards	3.1.1	<p>REC-HWC-2017/18-02: By 30 June 2019, the risk assessment process should be made clear and transparent. It is recommended that the risk process is reviewed, clearly mapped out and documented to ensure that all stakeholders are able to follow the process easily. Documentation should include all relevant data that is used to inform the risk assessment, including for example, non-detections of <i>E. coli</i>.</p> <p>REC-HWC-2017/18-03: By 30 June 2019, the hazardous event of receiving water from Central Coast Council needs to be clearly identified in the risk assessment and preventive/control measures must be documented and fully implemented.</p> <p>REC-HWC-2017/18-04: By 30 June 2019, the improvement actions identified in the 2018 risk assessment should be prioritised to ensure maintenance hygiene procedures are reviewed to ensure that consistent hygiene practices are implemented and are auditable. These should include the disinfection of tools, personal hygiene (in relation to workwear), disinfection and storage of parts/pipes, working clearances to prevent contamination, flushing, reinstating a service and acceptance criteria.</p>
	3.2.1	<p>REC-HWC-2017/18-05: By 30 June 2019, Hunter Water should ensure that critical limits are documented accurately in the RWQMP, including any time delays; ensure that the location of where the critical limit applies is accurately documented; and ensure that they are consistently documented across Hunter Water and Veolia documentation.</p>

Licence Part	Clause/Obligation	Recommendation
		<p>REC-HWC-2017/18-06: By 30 June 2019, Hunter Water should:</p> <ul style="list-style-type: none"> a) include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection; b) confirm that critical limits (for example UVT) are set in accordance with the available validation information; c) for schemes that have online monitoring of UVT, implement an alarm and or shut down for when UVT falls outside the validated operational range for the UV system (e.g. 45% at Morpeth WWTW); and d) for schemes that do not have online monitoring of UVT, establish appropriate monitoring processes, such as regular grab samples with identified corrective actions for when UVT falls outside the validated operational range specified by the manufacturer. <p>By 30 June 2020, Hunter Water should:</p> <ul style="list-style-type: none"> e) investigate the establishment of online monitoring of UVT with alarms and or shutdowns at all sites that rely on UV disinfection for primary disinfection of recycled water.
4. Organisational systems management	4.2.2	<p>REC-HWC-2017/18-07: There are a number of items in the Environmental Compliance Tracking Register that have slipped past the due date. Whilst this cannot be helped on this occasion, it is recommended that high risk issues have realistic completion dates and are addressed within the allocated timeframe. This should be addressed by 30 June 2019.</p>
5. Customer and stakeholder relations	5.11.1	<p>REC-HWC-2017/18-08: Hunter Water should use its best endeavours to develop and enter into a Memorandum of Understanding with Fire and Rescue NSW by 31 March 2019.</p>

Licence Part	Clause/Obligation	Recommendation
Previous Recommendation 2016/17-04	3.1.2	<p>REC-HWC-2017/18-09: Add reservoir inspection training to the training needs matrix for all positions undertaking reservoir inspections, to ensure training is current.</p> <p>Revise the <i>Reservoir Inspection</i> form to be specific rather than subjective, where possible. For example, under Roof Hatches and Roof Sheeting, the inspection item:</p> <p><i>"P1 – evidence of bird/vermin in reservoir or vent/opening not bird/vermin proof."</i></p> <p>could be revised to include a specific measurable assessment criterion:</p> <p><i>"P1 – evidence of bird/vermin in reservoir or vent/opening greater than "X"mm."</i></p> <p>These issues should be addressed by 30 June 2019.</p>
Previous Recommendation 2016/17-04	4.1.2	<p>REC-HWC-2017/18-10: It is recommended that Hunter Water fully documents its adopted approach to the management of the assets under the revised document hierarchy/structure, which comprises a portfolio of Asset Management Plans, Facility Plans, Asset Strategies and Fatal Asset Strategies. Priority documentation including the Asset Management Plans, Asset Strategies and Fatal Asset Strategies should be in place by 30 June 2021; Facility Plans should be substantially in place by 30 June 2021.</p>

1. Introduction

1.1 Objectives

The objective of this audit was to assess, for the period from 1 July 2017 to 31 October 2018, Hunter Water Corporation's (Hunter Water's) performance against the terms and conditions (obligations) of:

- the *Hunter Water Operating Licence 2017-2022* (Operating Licence); and
- any other Ministerially-imposed requirements.

1.2 Audit Method

1.2.1 Audit Scope

The scope of the 2017/18 Operational Audit of Hunter Water is specified in detail in the *Request for Quote – RFQ 18/167; 2018 Hunter Water Corporation Audits*; it comprised:

- audit of Hunter Water's compliance with the obligations and requirements set out in its Operating Licence;⁷ and
- assessment of Hunter Water's progress in addressing outstanding recommendations arising from previous audits.

As outlined in its *Audit Guideline – Public Water Utilities*,⁸ IPART adopts a risk-based approach in setting the scope of public water utility operational audits. The clauses/obligations against which Hunter Water's compliance has been assessed are identified in **Table 1.1**. Full details of the audit scope, as defined by IPART, are presented in **Appendix A**.

Table 1.1 Scope of 2017/18 Operational Audit of Hunter Water

Licence Part	Clause/Obligation
1. Licence context and authorisation	1.5.1; 1.5.2; 1.8.1
2. Water Conservation	2.1.1; 2.2.1; 2.2.2 ⁹
3. Supply services and performance standards	3.1.1; 3.1.2; 3.2.1, 3.2.2; 3.3.1; 3.3.2; 3.3.3
4. Organisational systems management	4.1.1; 4.1.2; 4.1.3; 4.2.1; 4.2.2
5. Customer and stakeholder relations	5.8.1; 5.10.1; 5.11.1; 5.11.2; 5.11.3

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

⁷ Refer to **Section 1.3** for a discussion of the regulatory regime under which Hunter Water operates, including identification of its operating licences.

⁸ IPART, *Audit Guideline; Public Water Utilities* (Issue PWUAG-Rev2), September 2018.

⁹ Although clause 2.2.2 is included as part of the 2018 Operational Audit scope (refer **Appendix A**), compliance with this clause has been assessed by IPART and is not addressed in this Audit Report.

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

Recommendation	Licence Reference ^{10,11} and Operational Issue
2013-14-03 2013-14-04 2013-14-06 2013-14-13	<i>Water Quality; Drinking Water (clauses 2.1.1 & 2.1.2)</i> Review of Critical Control Points (CCPs) for drinking water treatment plants.
2016-17-01	<i>Water Quality; Drinking Water (clauses 2.1.1)</i> Addressing repeat water quality incidents and trends.
2016-17-02	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Review of emergency and incident management procedures.
2016-17-03	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Inclusion of a Critical Control Point breach in next emergency training scenario.
2016-17-04	<i>Water Quality; Drinking Water (clauses 2.1.2)</i> Training in respect of reservoir inspection records.
2013-14-03 2013-14-04 2013-14-06 2013-14-13	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Review of Critical Control Points (CCPs) for recycled water plants.
2015-16-05	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Completion of gap analysis for all RWQMPs.
2016-17-05	<i>Water Quality; Recycled Water (clauses 2.2.1)</i> Update of the Corporate Recycled Water Quality Management Plan.
2016-17-06	<i>Water Quality; Recycled Water (clauses 2.2.1)</i> Inclusion of a Critical Control Point in each Recycled Water Quality Management Plan; consultation with NSW Health in respect of validation testing for recycled water schemes; and review performance requirements/validation for UV units.
2016-17-07	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2)</i> Ensuring that log reduction requirements for helminth control at agricultural reuse sites are achieved.
2015-16-06	<i>Assets; Asset Management System (clause 4.1.2)</i> Review of Asset Class Management Plans.
2016-17-08	<i>Assets; Asset Management System (clause 4.1.2)</i> Implementation of asset criticality and risk assessment approach consistent with enterprise risk management framework.
2016-17-09	<i>Assets; Asset Management System (clause 4.1.2)</i> Review of currency and preparation of update program for planned maintenance work instructions.
2016-17-10	<i>Environment; Environment Management (clause 6.1.3)</i> Conduct of refresher training for operations and maintenance staff with a focus on the identification and mitigation of environmental impacts.
2016-17-11	<i>Environment; Environment Management (clause 6.1.3)</i> Review and expansion of the environmental inspections schedule.

¹⁰ Refer to the relevant section of this report and associated appendix for full details of previous recommendations.

¹¹ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

1.2.2 Audit Standard

The auditing principles/guidance presented in ISO 19011:2018 *Guidelines for auditing management systems* have been applied in conducting this audit. Guidance presented in the following standards was also considered where appropriate:

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

1.2.3 Audit Steps

The audit was undertaken in accordance with the methodology outlined in IPART's *Audit Guideline – Public Water Utilities*.¹² The audit steps are identified in **Table 1.3**.

Audit interviews and field verification site visits were undertaken during the three (3) day period 6 November 2018 to 8 November 2018. Interviews were conducted with Hunter Water representatives at Hunter Water's Newcastle offices. Field verification site visits were made to:

- Maintenance planning and scheduling team (located at Head Office);
- North Lambton maintenance depot;
- North Lambton reservoir;
- Planned maintenance activity;
- Morpeth wastewater treatment works (including recycled water use at golf club); and
- Dungog water treatment plant.

Table 1.3 Audit Steps¹³

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

¹² IPART, *Audit Guideline; Public Water Utilities* (Issue PWUAG-Rev2), September 2018.

¹³ IPART, *Audit Guideline; Public Water Utilities* (Issue PWUAG-Rev2), September 2018, section 3 and figure 3.1.

1.2.4 Audit Team

The audit team comprised of the following:

- Jim Sly – team lead and Lead Auditor;
- James Howey – Lead Auditor;
- Karen Pither –Lead Auditor providing audit support; and
- Mark Favetta – Technical Specialist providing audit support.

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

Table 1.4 Allocation of Audit Responsibilities






Licence Part	Clause/Obligation	Lead Auditor
1. Licence context and authorisation	1.5.1; 1.5.2 1.8.1	Jim Sly/Mark Favetta Jim Sly/Mark Favetta
2. Water Conservation	2.1.1 2.2.1	Jim Sly/Mark Favetta Jim Sly/Mark Favetta
3. Supply services and performance standards	3.1.1; 3.1.2 3.2.1, 3.2.2 3.3.1; 3.3.2; 3.3.3	James Howey/Karen Pither James Howey/Karen Pither Jim Sly/Mark Favetta
4. Organisational systems management	4.1.1; 4.1.2; 4.1.3 4.2.1; 4.2.2	Jim Sly/Mark Favetta James Howey/Karen Pither
5. Customer and stakeholder relations	5.8.1 5.10.1 5.11.1; 5.11.2; 5.11.3	Jim Sly/Mark Favetta Jim Sly/Mark Favetta Jim Sly/Mark Favetta
Recommendations/Outstanding Items from Previous Audits	2013/14-03, 04,06,13 2015/16-05 2015/16-06 2016/17-01, 02, 03, 04 2016/17-05, 06, 07 2016/17-08, 09 2016/17-10, 11	James Howey/Karen Pither James Howey/Karen Pither Jim Sly/Mark Favetta James Howey/Karen Pither James Howey/Karen Pither Jim Sly/Mark Favetta James Howey/Karen Pither

IPART representatives Robert Aposhian and Matthew Van Uffelen attended throughout the audit as observers. A list of Hunter Water representatives that attended audit interviews and/or field verification visits is provided in **Appendix B**.

1.2.5 Audit Grades

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

Table 1.5 Compliance Grades for Public Utilities¹⁴

Grades of compliance	Description
 Compliant	Sufficient evidence is available to confirm that the requirements have been met.
 Compliant (minor shortcomings)	Sufficient evidence is available to confirm that the requirements have been met apart from minor shortcomings which to date have not compromised the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 Non-compliant (non-material)	Sufficient evidence is not available to confirm that the requirements have been met and the deficiency does not adversely impact the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 Non-compliant (material)	Sufficient evidence is not available to confirm that the requirements have been met and the deficiency does adversely impact the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
 No Requirement	There is no requirement for the utility to meet this assessment criterion within the audit period.

1.3 Regulatory Regime

Hunter Water Corporation is constituted under the *Hunter Water Act 1991* and is a statutory State-owned corporation pursuant to the *State Owned Corporations Act 1989*. It provides drinking water, wastewater, recycled water and some stormwater services to a population approaching 600,000 people in homes and businesses across the Lower Hunter.

Pursuant to Section 12 of the *Hunter Water Act 1991*, Hunter Water can be granted an operating licence to authorise it to carry out its specified and other functions. For the purposes of this audit (which addresses the audit period 1 July 2017 to 31 October 2018), Hunter Water has been granted and has been operating under the provisions of the *Hunter Water Operating Licence 2017-2022*.

¹⁴ IPART, *Audit Guideline; Public Water Utilities* (Issue PWUAG-Rev2), September 2018, figure 2.1.

1.4 Quality Assurance Process

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

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

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

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

2. Site Visit Report

2.1 Overview

As part of this audit, field verification site visits were made to a number of sites/facilities to verify how effectively Hunter Water is implementing the requirements of the *Operating Licence* in practice. These visits involved inspection of facilities, observation of activities being undertaken and discussions with field personnel.

Sites/facilities inspected for the purposes of this audit included:

- Maintenance planning and scheduling team (located at Head Office);
- North Lambton maintenance depot;
- North Lambton reservoir;
- Planned maintenance activity;
- Morpeth wastewater treatment works (including recycled water use at golf club); and
- Dungog water treatment plant.

A brief summary of the assets and/or activities inspected at each site, the issues reviewed and/or identified and the observations made are set in the following sections. More detailed discussion of specific aspects or issues is presented in **Section 3**.

It is noted that Hunter Water has contracted Veolia Water Australia (Veolia) to provide operation and maintenance (mechanical and electrical) services at all of its treatment facilities. Accordingly, there is some reference to Veolia in the following sections.

2.2 Maintenance Planning and Scheduling Team

A visit was made to the maintenance planning and scheduling area at Hunter Water's head office. A briefing was provided by the Field Supervisor and an Administrative Support Officer, who outlined the planning and scheduling of the preventative maintenance program and the response to any public complaints/enquiries or issues identified by the network operators or field staff.

Hunter Water implements an ongoing program of preventative maintenance in respect of its assets; all mechanical and electrical operation and maintenance at its treatment plants has been subcontracted to Veolia. Maintenance schedules are prepared on a weekly basis, although always planned at least two weeks ahead. Planning includes (for example):

- Identification of critical customers that may be affected (via the GIS) and making appropriate arrangements (e.g. providing tankered water or scheduling work to be undertaken at night).
- Issue of shutdown notifications; 2 days' notice is required for residential and 7 days for non-residential customers.
- Organisation of road occupancy permits.
- Requesting DBYD (dial before you dig) information in respect of other services; this information is entered into the email system for accessibility to field operators.
- Engagement of external agencies as required; this often has an impact on timelines.

It was noted that bundling of planned and reactive maintenance jobs is considered wherever possible to avoid multiple shutdowns and less interruption. Maintaining customer satisfaction is a primary objective.

Reactive maintenance, i.e. required maintenance work identified when undertaking routine /preventative maintenance, is addressed on the basis of assessed priority. Such maintenance may be identified from (for example) a 2-monthly walk around or 6-monthly full inspection of a reservoir.

Corrective maintenance is addressed as it arises. As noted above, this may arise in response to a public complaint/enquiry or the need may be identified by the network operators or field staff. The System Controller monitors the network operation and asset performance via the SCADA system, and also has visibility of the treatment plants (operated by Veolia).

All corrective maintenance jobs are attended by a “first responder”, a one person crew with a vehicle set up as a “first responder” unit. A site assessment is made, the issue is addressed if possible or the need for further response identified.

All corrective and reactive maintenance is addressed/scheduled on a priority basis. A standard priority is assigned on the basis of the task involved, although this can be adjusted by either the field staff or schedulers.

Hunter Water advised that, in respect of civil maintenance, approximately 75% of maintenance jobs are reactive (25% planned). Of the reactive jobs, approximately 25% are converted to scheduled maintenance. This compares to mechanical and electrical maintenance for which 75% is planned.

Some further information drawn from the discussions included:

- In respect of water main works:
 - New mains are super-chlorinated prior to being brought into service; a work instruction is in place for this.
 - Work instructions are in place for reticulation repairs; these identify flushing times, but don’t specify disinfection requirements. Past testing has not revealed a need to super-chlorinate following main break repair; this is discussed in **Table 3.6**.
 - Hunter Water does, however, test water quality before returning larger mains (typically greater than 375mm nominal diameter) to service. Job specific procedures are prepared for this work.
- Audits of 100% of properties in the dual reticulation areas at Morpeth and Chisholm have been undertaken; these audits were conducted at night.
- The same crews work on sewer and water jobs. Jobs are scheduled on priority and crews swap between sewer and water jobs.

2.3 North Lambton Maintenance Depot

The North Lambton maintenance depot is one of Hunter Water’s two main civil maintenance depots. The visit to this site involved an overview of a typical maintenance vehicle, discussions with a maintenance crew leader and inspection of the storage arrangements for spare materials (pipes, fittings, etc.).

At the time of arrival at the depot, a major toolbox talk was in progress. Toolbox talks are conducted at local depots on a weekly basis, with major talks involving a broader group of staff being held at the major depots every eight (8) weeks. It was noted that one of the topics discussed at a previous toolbox talk related to reservoir inspections; a copy of the meeting notes to demonstrate this was requested (refer to **Section 4.2.1/ Table 4.5**).

A Level 4 (Gang) truck/maintenance vehicle was inspected. All vehicles of this class, which can be used to respond to either water or sewer jobs, are set up identically and are used when undertaking work that involves excavation. Some spare materials (pipes and fittings) are carried; these are replaced on the vehicle as used. More water spares are carried as these can, in many case, be used for either water or sewer.

When queried by the auditors, it was noted that disinfectant is carried on the vehicles to wash tools after completing sewer jobs. This issue is addressed in more detail in relation to the planned maintenance job subsequently inspected (refer **Section 2.5** for further discussion).

Also in response to the auditors' query, it was confirmed that supervisors undertake regular field audits both during and following the completion of works. These audits address issues including (for example) availability of DBYD (dial before you dig) information in respect of other services; completion of risk assessments; work being completed in accordance with work instructions; and quality/standard of work.

Discussions were held with a Maintenance Crew Leader, who explained the field management of work orders. The process of work order allocation (from the recipient's perspective), implementation and completion using the mobility platform was demonstrated. Some points from the discussion included:

- Assigned tasks are managed through a scheduling application called "Schedule it".
- Scheduling is based on an allocated time for each work order.
- Risk assessments are undertaken by both first responders (Take 5 risk assessment) and crews (3 in 1 risk assessment) upon arrival at a site.
- In most cases, work orders are closed out by phone call to the despatch team; the despatch team takes notes from the crew and completes the work order on-line.

The Maintenance Crew Leader noted that lessons learnt are fed back through toolbox meetings, citing an example of a power near miss that was followed up with a toolbox meeting on the same day. It was further noted that other utilities sometimes participated in toolbox meetings, a positive approach given that there are some areas where Hunter Water will not undertake work without other utility representatives being on site.

Inspection of the material storage areas revealed that spare pipes are stored in the yard and are not capped. These pipes contained a reasonable amount of dirt and are accessible to animals.

2.4 North Lambton Reservoir

The North Lambton Reservoir is an above-ground mass in-situ concrete structure of 105 ML storage capacity. Constructed as an open reservoir in the late 1930s, it was roofed in 1999 to protect the treated water supply, i.e. to maintain water quality.

The retro-fitted roof comprises an aluminium support structure with aluminium sheeting. The total roof area is more than 14,000 square metres.

Inspection of this site commenced with a background briefing, during which the maintenance /inspection regime was briefly discussed. Copies of the relevant inspection procedures and records of inspections were requested; these are discussed in **Table 3.14**.

As the primary objective of this inspection was to observe the general condition of the asset, and specifically to inspect the effectiveness of the roof sealing against the ingress of foreign bodies (dust, vermin, birds, etc.), the roof was accessed via the valve house located at the northern corner of the reservoir.

Access was limited to a platform surrounding the valve house. Hunter Water advised that an operator had recently experienced a substantial deflection of the roof sheeting at one location whilst undertaking a roof inspection; therefore access onto the roof was prohibited. Investigation had revealed that a roof purlin had disconnected from a rafter (parts of the roof supporting structure). Further investigation and repair may require dewatering half of the storage (which is divided into two compartments); however, Hunter Water is also investigating other interim inspection methods. A copy of documentation relevant to this issue was sought and is discussed in **Table 3.14**.

On a roof of the type on the Lambton North Reservoir, there are three primary areas that require particular attention in respect of sealing against ingress; at roofing sheet ends, around the perimeter of the structure and around access hatches of other penetrations. Observations made were as follows:

- The large roof slope length (approximately 60 metre) has necessitated the use of multiple roofing sheet lengths to cover the full extent of each slope of the roof, which requires effective sealing of the roof at each sheet end overlap. These could not be closely inspected; however, the integrity of the sealing at these overlaps appeared to be sound (i.e. the gaps appeared to be fully sealed and the sealing strip in good condition).
- Although it was difficult to inspect more than a small portion of the perimeter sealing, one opening was identified. The roof ridges were not sealed on the sheets behind the gutter adjacent to the valve house. The gutter itself had leaf mesh installed and this may have at one point restricted access to the area behind the gutter, however, there was a fist size hole in the mesh. Drawings of the roof edge details were requested to enable further assessment of the arrangements. This is discussed further in **Table 4.5**.
- There was a 5mm gap at a joint adjacent to the valve house that allowed rain water from the platform to drain into the reservoir. This was at a point in the roof where leaves and sediment accumulate. This is discussed further in **Table 4.5**.
- As access onto the roof was prohibited, sealing at access hatches could not be inspected.

It is noted that there was no observed roofing screw failure, which is often observed on similar roofs due to the different thermal expansion rates of aluminium roof sheeting and a steel support structure; this is a benefit of using an aluminium support structure. There was no apparent distress between the aluminium roof and the concrete reservoir structure due to the impact of differential thermal expansion; however, closer inspection would be required to confirm this.

2.5 Planned Maintenance Activity

The planned maintenance activity was to involve the replacement of a faulty valve located on the north east corner at the intersection of Elder Street and Lloyd Road (in Elder Street), Lambton. The existing valve had been excavated in preparation for replacement and a new valve was on hand ready for installation; however, maintenance staff were having difficulties isolating the location as one of the shut-down valves had seized.

Some observations made/information provided by Hunter Water (in respect of the inspected job and more generally) included:

- New valves of both flanged and in-line configuration were available on site; it is not always known what configuration is required until the existing valve is exposed.
- A bridging cable had been installed to enable monitoring/protect against stray electrical currents that may travel along metallic pipelines.
- Hunter Water will typically dig to 300mm below the main to allow access before commencing the work.
- Dirty water is pumped onto grass to filter out sediment.
- An environmental assessment is undertaken prior to planned jobs being undertaken. This identifies issues such as acid sulphate soils and contaminated land.
- In this case the existing main was Denso (protective coating) wrapped; this would require reinstatement following installation of the new valve.
- In some locations there is asbestos wrapping on steel mains; known locations are recorded in the GIS, otherwise tests are undertaken to check for asbestos. A similar approach applies for asbestos cement (AC) pipelines and contaminated soils.
- Following completion of job of this nature the main is flushed. No water quality testing is undertaken, discussed in **Table 3.6**.

Copies of paperwork relevant to the job (work order, etc.) were requested, together with training records for the maintenance personnel involved. These are discussed in **Table 3.14**.

A more detailed inspection of the maintenance vehicle on site for this job revealed:

- A spray bottle with Atmosphere® Odor Control is kept on the vehicles to clean equipment and neutralise the odour from sewage spills. DISO was previously used; however, this was changed to Atmosphere for environmental reasons.
- Separate boots were on the truck for sewer work.
- Although the same truck is used for sewer and water jobs, they mostly require different tools.
- Hygiene practices were not standardised and each crew were responsible for their vehicle.

2.6 Morpeth Wastewater Treatment Works (including recycled water use at golf club)

2.6.1 Facility description

The Morpeth WWTW provides secondary treatment of wastewater using an activated sludge process. It is designed to biologically remove nutrients (nitrogen and phosphorus) and to provide a high level of disinfection.

The plant consists of:

- screening facilities comprising two mechanical step screens and a manually raked bar screen;
- an inlet lift pumping station;
- a vortex grit removal tank and grit classifier;
- a soil bed filter for odour control;
- a biological reactor (anaerobic/anoxic/aerobic);
- two circular clarifiers;
- ultra-violet (UV) disinfection;
- two gravity drainage decks;
- an aerobic digester;
- two belt filter presses for sludge dewatering;
- a lime clarifier;
- an effluent pumping station; and
- four maturation ponds (retained from old WWTW for habitat and effluent reuse storage).

Whilst the majority of effluent is discharged to the Hunter River, some water is recycled. An advanced water treatment plant comprising ultrafiltration together with UV and chlorine disinfection is currently under construction and, once completed, will supply water into the Thornton North dual reticulation scheme.

Recycled water from the plant is currently used for grit and screening washing, general wash down around the plant and grounds irrigation. A nearby farmer and golf course (refer below) also take effluent from the plant for irrigation.

2.6.2 Inspection overview

Inspection of the treatment plant was undertaken by generally following the flow path through the plant. This was followed by a brief overview of Veolia's asset management practices and a review of critical control point settings in the SCADA system.

2.6.3 Asset management

Observations from an asset management perspective included the following:

- The facility was in generally good condition and appeared to be well maintained.
- Most equipment (e.g. pumps) is installed on a duty standby basis, which is typical for installations of this nature.
- Veolia advised that an aeration blower had recently failed and required replacement. The blowers are installed in a duty/assist/standby configuration, which covers the deficiency.

Veolia has submitted a report to Hunter Water for approval to replace the failed unit (as required under the service contract arrangements); a copy was requested for review.

- When inspecting the Membrane Bioreactor (MBR) recirculation pumps it was noted that labelling of equipment could be improved; for example, although there was some labelling on the switch panels there were no labels or tags on the pumps to identify their asset numbers. An opportunity for improvement has been identified in respect of this issue in **Table 3.14**.
- The asset hierarchy as captured in VAMS (Veolia Asset Management System; i.e. the computerised maintenance management system implemented by Veolia) was viewed. It was noted that the asset register was currently being updated to ensure that all assets are captured and appropriately assigned; for example, rather than capturing the site fire system as a whole, it was being assigned to each appropriate building.
- It was noted that (refer also to discussion in **Table 3.14**) alignment between VAMS and Ellipse (Hunter Water's asset/maintenance management system) needs to be maintained.
- Veolia noted that fortnightly meetings are held with Hunter Water to address asset management matters and ensure that alignment is maintained between records held in the respective management systems (a requirement under the service contract).

Maintenance records in respect of a selection of assets, together with copies of a sample of operators' daily/weekly checklists, were requested for review; these are discussed in **Table 3.14**.

2.6.4 Water quality

Observations from a water quality perspective included the following:

- The recycled water process schematic was correct.
- Launderers on the clarifiers are manually cleaned; chlorine is not used.
- Filamentous algae can slough off the clarifiers. Hunter Water has installed some coarse screens to try and prevent it passing through the UV system.
- Critical limits in the SCADA system were generally as documented in the Recycled Water Management Plan. On-site SCADA did have a 5 minute delay for the inflow, which is considered to be reasonable, although this was not identified in the plan.
- Flow rate is important for hydraulically controlled processes; however, it was discussed on-site whether monitoring ammonia would be a better means to determine the health of the biological process.
- Although UVT is discussed in the documentation and is monitored through the SCADA system; the alarm is set at 20%, which is less than the validated limit of 45%. This is discussed in **Table 3.8**.

2.6.5 Easts Golf Course Recycled Water Scheme

Inspection of golf course at which the recycled water is used revealed the following:

- The on-site controls required by the golf course are being implemented; these were:
 - Irrigation is ceased at 4:00am, to give the irrigated area time to dry before the first players;
 - Directional sprinklers are in use;
 - If day time sprinkling is required, the course is closed;

- If there are high winds, sprinkling is not undertaken. This is a manual process at the moment; however, a new system is being installed and this will have a weather station that will automatically shut it off in high winds; and
- The course is fenced.
- Recycled water is held in a holding pond, where it is mixed with stormwater. The water is aerated using a fountain. This is not switched off in high winds and does have the ability to send aerosols over players in these circumstances.

2.7 Dungog Water Treatment Plant

2.7.1 Facility description

The Dungog Water Treatment Plant treats water from Chichester Dam; it has a peak supply capacity of 90 megalitres per day. The treatment plant uses direct filtration, and incorporates the following processes:

- coagulation/flocculation;
- contact filtration;
- pH correction;
- disinfection; and
- fluoridation.

It was noted that there were two issues currently impacting the facility; earth leakage (a safety concern) and chemical management. Works were in hand to address both of these issues.

2.7.2 Inspection overview

Following an initial briefing, the site inspection of the Dungog WTP was undertaken in two streams; one with a focus on asset management and the second on water quality management.

2.7.3 Asset management

Selected components of the facility were inspected including the chemical storage areas and the mechanical equipment room/building. A major upgrade of the chemical storage/management arrangements is planned and an electrical upgrade was in progress.

Some observations made in respect of the chemical dosing equipment:

- Day tank chemical storage (for example) is located in a bunded area, which drains to the waste storage. The manner in which any captured spillage is treated is dependent upon what it is; in any case all spillage passes through lagoons before discharge to sewer.
- Veolia noted that a work order has been issued for a slight leak in the lime silo.
- Dosing pumps are typically operated on a run-to-fail basis, although this is dependent upon the actual duty and assessed criticality.
- The lime installation is to be upgraded; Veolia has identified the need and has submitted a report to Hunter Water for consideration.

The mechanical equipment room/building accommodates the filter backwash pumps, process water pumps, air scour blowers and air compressors. This equipment appeared to be in generally good condition and well maintained. Maintenance records for the backwash pumps were requested and are discussed in **Table 3.14**.

Maintenance management arrangements were discussed; some points of interest include:

- Maintenance records in respect of a selection of assets, together with copies of a sample of operators' daily/weekly checklists, were requested for review; these are discussed in **Table 3.14**.
- Veolia explained its Asset Deficiency Register, which documents identified deficiencies across all treatment plants. Each entry is initially prioritised by Veolia before the register is submitted to Hunter Water with each monthly report. Veolia and Hunter Water then collaboratively prioritise the items, taking into account whether they are deficiencies or opportunities for improvement (required or discretionary). Works approved for implementation may be undertaken as minor works (by Veolia) or as part of an upgrade (managed by Hunter Water).
- Veolia can submit a Veolia Development Proposal in respect of required repairs or civil works improvements, which are typically larger (Hunter Water undertakes civil maintenance at the treatment plants). Refurbishment of the filter gallery concrete was cited as an example; a copy of the documentation was requested for review.
- Veolia explained the progression of work orders under VAMS (its maintenance management system), which is as follows:
 - Generated – by the maintenance planner;
 - Prepared – assigned to a maintenance technician;
 - In progress;
 - Sign-off – removed off list of active works orders;
 - Cost assigned;
 - Completed.

A selection of work orders is subject to internal audit.

- Issued work orders include details of the last five work orders related to the asset, including corrective work orders. These records appropriately inform the maintenance technician of the performance history of the asset.
- Under the service contract, Veolia is required to transfer all asset maintenance information into Ellipse (Hunter Water' asset/maintenance management system). This is currently undertaken as a manual process, with inherent potential for error. An opportunity for improvement has been identified in respect of this issue in **Table 3.14**.

2.7.4 Water quality

In general, the Dungog WTP was run well from a water quality perspective. The staff appeared to be competent and undertook their duties diligently.

The following observations were made:

- Veolia policies are displayed on the wall at the entry to the WTP.
- A walk-through of the process was conducted and process flow diagram was found to be generally accurate. Clear Water Tank 1 can be bypassed, resulting in no post-dose of lime or carbon dioxide, which is not shown on the diagram. This is discussed further in **Table 3.6**.

- Supernatant return flow is set at 5% of plant flow, but can be increased if the quality of the water is satisfactory based on turbidity and colour. A flow rate of up to 10% is considered acceptable based on relevant guidelines (such as WaterRA, *Good Practice Guide to the Operation of Drinking Water Supply Systems for the Management of Microbial Risk*, 2015).
- Turbidity meters are to be replaced by Endress and Hauser (alternative instrument supplier); once this has been done a service contract will be established with Endress and Hauser.
- Chemicals are batched into day tanks before use; this helps with the management of risk as chemical usage can be closely monitored and the extent of over dosing limited.
- Pre-lime is optional and was being dosed at the time of the inspection.
- Actions are recorded in the plant diary. Annotations are also made on the SCADA trends where there is an anomaly.
- When raw water turbidity changes, jar tests are undertaken. There is currently no raw water turbidity alarm; however, it takes approximately 8 hours for raw water to flow from the source at Chichester to the WTP. There is an historic dose curve for coagulant, based on turbidity, which is used to determine an approximate dose rate. This allows the operators to get an approximate dose rate, which can be fine-tuned using jar tests.
- There are 1 hour alarms for disabling most shutdown interlocks. These can be used when maintenance is undertaken.
- Based on the observations made onsite it appears that fluoride dosing is managed in accordance with the *NSW Code of Practice for Fluoridation of Public Water Supplies*; however, due to time constraints a detailed assessment was not undertaken.

3. Detailed Audit Findings

3.1 Overview


This section sets out the detailed findings of the audit for each audited clause of the *Operating Licence*. In each case the following is provided:

- the Licence requirement is defined;
- the risk that non-compliance with the requirement presents;
- the target for full compliance;
- the assessed level of compliance (Compliance grade);
- a summary of the reason for the assessed compliance grade;
- a list of the evidence reviewed in assessing compliance;
- discussion of the evidence reviewed and how it demonstrates/supports the assessed level of compliance;
- any recommendations (in the event that full compliance is not assessed); and
- any identified opportunities for improvement.

3.2 Licence context and authorisation

3.2.1 Obligation to make Services available

Table 3.1 Obligation to make Services available (sub-clause 1.5.1)

Sub-clause	Requirement	Compliance Grade
1.5.1	<p>Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any Property situated in the Area of Operations which is connected to or, for which a connection is available to:</p> <p>a) in the case of supplying water, the Water Supply System; and</p> <p>b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.</p>	<div></div> <div>Compliant</div>
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a high risk that services may not be provided to properties that require them. Ultimately, this may present a risk to public health or the environment.	Evidence that Hunter Water has provided Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to, the relevant System.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.MS Excel workbook: <i>Notice of requirements over 2017-18 (June 2018).xlsx</i>.MS Excel workbook: <i>Notice of Requirements 2018-19 (September 2018).xlsx</i>.Documentation as referenced in respect of Application for Developer Services (reference: 2017-52).Documentation as referenced in respect of Application for Developer Services (reference: 2017-1234).		
Summary of reasons for grade		
<p>Hunter Water demonstrated that it has processes in place to assess applications and provide Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to, the Water Supply System or Sewerage System. The provision of Services is dependent upon compliance with a <i>Notice of Requirements</i> (issued under section 49 of the <i>Hunter Water Act</i>) which details the actions that must be taken before the Service can be provided, as evidenced by the issue of a Certificate of Compliance (issued under section 50 of the <i>Act</i>).</p> <p>Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>Hunter Water outlined the process that it implements in responding to applications for the provision of services. It confirmed that the approach is the same for all applications, including those ranging from individual properties to larger developments.</p>		

Upon receipt of an application under section 49 of the *Hunter Water Act* for the provision of Services, Hunter Water provides a formal *Notice of Requirements*, which outlines Hunter Water's requirements that must be satisfied before a connection can be provided. Once compliance with the *Notice of Requirements* has been demonstrated by the applicant, Hunter Water issues a *Certificate of Compliance* following which the development can proceed and the connection provided.

Once an application is received, a TRIM (records management system) workflow is generated and progress tracked; every application is subject to the same assessment pathway. Applications are assigned an initial category based on an assessment of work required to facilitate a connection:

- Category 1 – no works; no services;
- Category 2 – no works;
- Category 3 – minor works; and
- Category 4 – major works.

The staff engaged in assessing an application and detailing the requirements for inclusion in a *Notice of Requirements* is dependent upon the assessed technical, commercial and legal complexity and level of risk associated with the required servicing arrangements. A “notice letter engine” is used to produce a letter comprising standard paragraphs, thereby ensuring consistency across all *Notice of Requirements*.

Each *Notice of Requirements* is prepared specific to each individual application; a *Notice of Requirements* is provided in response to all applications so that the applicant is informed of what is required for a connection to be provided. It was noted that it is the developer's responsibility to extend water and sewer services to the proposed development and augment infrastructure where necessary; this requirement forms part of the *Notice of Requirements*.

Hunter Water advised that:¹⁵

- during 2017/18 it had processed 2,203 development assessment applications;
- 100% of applicants had received a *Notice of Requirements* within the regulatory requirement of 60 days;
- typically a *Notice of Requirements* is provided within 30 days, with the average response time being in the range 13-20 days.

These details were confirmed by reference to a *Notice of Requirements Workbook*,¹⁶ the 2018/19 version¹⁷ of which showed that a further 556 applications had been assessed in the period to the end of September 2018.

To illustrate the process, Hunter Water provided documentation in relation to a proposed development (reference: 2017-52) comprising demolition of an existing dwelling and construction of a new single storey dwelling and attached secondary dwelling, including:

- Application form (Hunter Water, *Application for Developer Services 2016-17*) dated 11 January 2017, and attached plans;
 - *Notice of Requirements* (letter dated 25 January 2017 from Hunter Water to applicant) – provision of a copy of the development consent and confirmation by a plumber that the existing water service size is adequate were required prior to issue of a *Certificate of Compliance*;
 - Email dated 24 November 2017 to Hunter Water providing the requisite information (as attachments); and
-

¹⁵ Hunter Water response to 2018 Audit Questionnaire.

¹⁶ MS Excel workbook: *Notice of requirements over 2017-18 (June 2018).xlsx*.

¹⁷ MS Excel workbook: *Notice of Requirements 2018-19 (September 2018).xlsx*.

-
- *Certificate of Compliance* dated 30 November 2017, as issued by Hunter Water.

As components of this example were from prior to the audit period, Hunter Water provided a copy of the application (dated 10 August 2017) and *Notice of Requirements* (dated 28 August 2017) in respect of a proposed development (reference: 2017-1234) comprising the construction of storage sheds. In this case, the Notice of Requirements identified the need to provide a copy of the development approval and to contact Hunter Water to determine whether submission of an application for a hydraulic design assessment was required.

It is therefore apparent that Hunter Water has processes in place for responding to requests for the provision of Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to either the Water Supply or Sewerage systems. No evidence to the contrary was identified.

Furthermore, on the basis of the explanations provided, Hunter Water will detail (in a *Notice of Requirements*) the actions/work required to provide Services where a connection is not currently available, provided the property lies within the Area of Operations.


Recommendations

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

Opportunities for improvement

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

Table 3.2 Obligation to make Services available (sub-clause 1.5.2)

Sub-clause	Requirement	Compliance Grade
1.5.2	<p>Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any WIC Act Licensee for ultimate end-use within the Area of Operations, where the WIC Act Licensee is connected to, or where a connection is available in respect of that WIC Act Licensee to:</p> <p>a) in the case of supplying water, the Water Supply System; and</p> <p>b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.</p>	 Compliant
Risk		Target for Full Compliance
Failure to comply with the requirements of this obligation presents a high risk that services may not be provided to properties that require them. Ultimately, this may present a risk to public health or the environment.		Evidence that Hunter Water has provided Services on request to any WIC Act Licensee for ultimate end-use within the Area of Operations where the WIC Act Licensee is connected to, or for which a connection is available to, the relevant System.
Evidence sighted		
<ul style="list-style-type: none"> Hunter Water response to 2018 Audit Questionnaire. <i>Huntlee Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 2 December 2016. <i>Cooranbong Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016. <i>Deed of Variation to Cooranbong Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016. <i>Supply Agreement; Agreement for the Supply of Treated Effluent and Potable Water</i> between Hunter Water Corporation, Kooragang Water Pty Ltd and WUA Midco Pty Ltd, dated 28 November 2017. Email dated 14 November 2018 from Hunter Water to Cobbitty Consulting (re: KIWS agreement signing date). 		
Summary of reasons for grade		
<p>Hunter Water advised that it had not received any requests for the provision of Services from WIC Act Licensees during the audit period; however, it demonstrated that it has previously entered into agreements for the supply of such services. Hunter Water also entered into an agreement for the supply of services to a WIC Act Licensee as part of the Kooragang Industrial Water Scheme (KIWS) sale (by Hunter Water).</p> <p>It is therefore apparent that Hunter Water has provided Services to WIC Act Licensees upon request. Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		

Discussion and notes

Hunter Water advised that it had not received any formal or informal requests for the provision of Services from WIC Act Licensees during the audit period.¹⁸

It further advised that previous applications from Huntlee Water and Cooranbong Water (subsidiaries of Flow Systems) had resulted in these WIC Act Licensees entering into Utility Service Agreements with Hunter Water. Evidence of the Huntlee Water¹⁹ and Cooranbong Water²⁰ Utility Service Agreements was provided; the Utility Service Agreement with Cooranbong Water was subsequently varied.²¹

In the case of both Huntlee Water and Cooranbong Water, the WIC Act Licensee purchases potable water from Hunter Water for supply to its retail customers. Cooranbong Water also has a temporary connection to Hunter Water's local sewerage network.

Service arrangements for the Kooragang Industrial Water Scheme (KIWS), which include the supply of effluent from Hunter Water's Shortland Wastewater Treatment Plant, the supply of potable water and the acceptance of trade waste, were put in place as part of the sale of the scheme by Hunter Water. SUEZ Water Pty Ltd,²² which operates the KIWS, is a WIC Act Licensee.

The sale of the KIWS was concluded in November 2017 (i.e. during the audit period); service arrangements are evidenced by the *Supply Agreement*^{23,24} between the two parties.

On this basis, it is apparent that Hunter Water has provided Services to WIC Act Licensees upon request.

Recommendations

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

Opportunities for improvement

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

¹⁸ Hunter Water response to 2018 Audit Questionnaire.

¹⁹ *Huntlee Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 2 December 2016.

²⁰ *Cooranbong Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.

²¹ *Deed of Variation to Cooranbong Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.


²² Prior to 2 December 2017, SUEZ Water Pty Ltd (ACN 051 950 068) was known as SUEZ Water and Treatment Solutions Pty Ltd.

²³ *Supply Agreement; Agreement for the Supply of Treated Effluent and Potable Water* between Hunter Water Corporation, Kooragang Water Pty Ltd and WUA Midco Pty Ltd, 28 November 2017.

²⁴ Although the date of signing was not recorded on the copy of the Supply Agreement provided for the audit, this was subsequently advised by Hunter Water (refer: Email dated 14 November 2018 from Hunter Water to Cobbitty Consulting (re: KIWS agreement signing date)).

3.2.2 Pricing

Table 3.3 Pricing (sub-clause 1.8.1)

Sub-clause	Requirement	Compliance Grade
1.8.1	Subject to the terms of this Licence, the Act and the IPART Act, Hunter Water must set the level of fees, charges and other amounts payable for its Services in accordance with any applicable determination or determination under the IPART Act.	<div> Non-compliant (non-material)</div>
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a risk that Hunter Water is either overcharging its customers or failing to recover the costs of providing the service.	Evidence that Hunter Water has set the level of fees, charges and other amounts payable for its Services in accordance with any applicable determination or determination under the IPART Act.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.Hunter Water, <i>Statement of Compliance 2017-18</i>, 30 August 2018.Email dated 22 October 2018 from Hunter Water to IPART and Cobbitty Consulting (re: <i>IPART operational audit of OL clause 1.8 - Tanker pricing</i>).IPART, <i>Hunter Water Corporation; Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016; Determination No. 4</i>, June 2016.Email dated 11 May 2018 from IPART to Hunter Water (re: <i>CPI Notification</i>).Document (screenshot): <i>Pricing spreadsheet endorsements.png</i>.MS Excel workbook: <i>HW2007-1522 7.002 Schedule - HW2007-1522 Price Schedule 2017-18 MASTER FINAL.xlsx</i>.MS Excel workbook: <i>Procedure - HW2007-1522 Price Schedule 2018-19 MASTER FINAL.xlsx</i>.Document: <i>Price Updating Procedure.docx</i>.Sample Customer bills as referenced.Sample of tanker delivery dockets (not specifically referenced).Sample of tankering bills (not specifically referenced).MS Excel workbook: <i>EnviroKing bill reconciliation.xlsx</i>.MS Excel workbook: <i>July 2018 - Enviroking.xlsx</i>.		
Summary of reasons for grade		
<p>Hunter Water demonstrated that, in most respects, it has calculated and applied fees, charges and other amounts payable for its Services in accordance with the applicable IPART Determination, principally the 2016 <i>Hunter Water Determination</i>. Checking of a sample of prices confirms that they have been correctly calculated, whilst review of a sample of customer bills confirms that the prices have been correctly applied.</p> <p>Hunter Water has, however, declared non-compliance with this obligation in respect of the application of its Environmental Improvement Charge (EIC) and charges for the receipt of tankered high strength waste. Corrective action has been taken in respect of the EIC issue; action is also planned in relation to the incorrect application of tankering charges.</p>		

Hunter Water's declared non-compliance with this obligation has been confirmed; however, given that the EIC issue has been substantially addressed with minimal further correction anticipated; and given the relatively minor impact of the incorrectly applied tankering charges, the non-compliance is considered not to be material.

Discussion and notes

In defining the scope of the 2018 Operational Audit, IPART noted that:²⁵

"In April 2018, Hunter Water verbally informed the IPART Secretariat that it has charged the Environmental Improvement Charge (EIC) to customers that should not be charged.

Hunter Water's Statement of Compliance notes that Hunter Water considers it did not have the legal authority to levy the EIC on vacant land for the period since 1 July 2013. Hunter Water ceased levying the EIC on vacant land in April 2018. Hunter Water is taking steps to locate and pay a refund to affected customers.

On 4 September 2017, Hunter Water sought advice from IPART on inconsistencies between the 2016 Determination and its current pricing practices for tankered trade waste. In March 2018, Hunter Water advised that it intends to maintain its current approach to pricing tankered trade waste.

The auditor should audit this clause by considering five fees or charges under the current Hunter Water Determination including the Environmental Improvement Charge and pricing for tankered trade waste."

Overview:

Assessment of compliance in respect of this obligation has involved review of Hunter Water's annual price updating process and the more detailed assessment of a sample of prices/charges and their application.

In its *Statement of Compliance*,²⁶ Hunter Water self-identified a non-compliance with this obligation; it had incorrectly applied the Environmental Improvement Charge to vacant land for a period of time. Hunter Water further advised that, in the process of compiling evidence in response to the Audit Questionnaire, it had identified potential issues²⁷ and subsequently confirmed that it had incorrectly applied its high strength tankered waste charge on a number of occasions.²⁸

In view of these non-compliances, and consistent with IPART's audit scope definition, the Environmental Improvement Charge and pricing for tankered trade waste were specifically included in the audit sample of prices/charges reviewed. A sample of water and wastewater charges and the backflow prevention test and associated fees were also reviewed.

Determination and Price Schedule:

Hunter Water noted that its schedule of fees and charges is described in the IPART *2016 Price Determination*,²⁹ (also referred to as the *Hunter Water Determination*). It is noted the Hunter Water's pricing arrangements during the audit period were also subject to:

- *Developer Charges, Determination No. 9, 2000 (Developer Charges Determination);*
- *Pricing arrangements for recycled water and sewer mining, Determination No. 8 and 9, 2006 (Recycled Water and Sewer Mining Determination); and*
- *Pricing of Backlog Sewerage Services, Determination No. 4.1, 1997 (Backlog Sewerage Charges Determination).*

²⁵ Refer **Appendix A**.

²⁶ Hunter Water, *Statement of Compliance 2017-18*, 30 August 2018.

²⁷ Hunter Water response to 2018 Audit Questionnaire.

²⁸ Email dated 22 October 2018 from Hunter Water to IPART and Cobbitty Consulting (re: *IPART operational audit of OL clause 1.8 - Tanker pricing*).

²⁹ IPART, *Hunter Water Corporation; Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016; Determination No. 4*, June 2016.

The *Hunter Water Determination* (*Determination*, for the purposes of this report) details the maximum prices/charges that Hunter Water can levy with prices after the first year of the period for which prices have been determined to be calculated by application of changes in the Consumer Price Index (CPI). The value of the change in CPI (Δ CPI) is calculated in accordance with the *Determination* and advised annually by IPART. For example, IPART advised that the following change in CPI figures should be used in calculating prices for 2018/19:³⁰

- *Hunter Water Determination: 4.1%.*
- *Developer Charges Determination: 1.9%.*
- *Recycled water and Sewer Mining Determination: 1.9%.*
- *Backlog Sewerage Charges Determination: 2.1%.*

Hunter Water advised that:³¹

“Hunter Water has converted this price determination to our own spreadsheet schedule of prices, showing the calculation of various fees and charging, including appropriate application of IPART’s determination relating to annual indexing (to reflect changes in the Consumer Price Index) and specific rounding rules. This is our master pricing spreadsheet for internal use, including annual updates of our prices.”

The *Price Schedule* is endorsed and approved annually, following which it is used as the basis for updating Hunter Water’s billing system. Evidence of endorsement and approval of the 2018/19 *Price Schedule* was provided in the form of:

- internal correspondence advising relevant staff from each part of the business of their role in applying the new schedule of 2018-19 prices and charges; and
- on-line sign-off to demonstrate that each relevant staff member had fulfilled their obligations.³²

The *Price Schedule* for both 2017/18³³ and 2018/19³⁴ were provided for review, which revealed that changes in CPI appeared to have been correctly applied in both cases (refer below for further discussion).

In response to the auditor’s enquiry, Hunter Water advised that whilst components of the pricing update process/procedure have been documented,³⁵ a comprehensive ‘end-to-end’ procedure was not available. As an opportunity for improvement (**OFI-HWC-2017/18-01**), it is suggested Hunter Water considers developing a comprehensive ‘end-to-end’ procedure detailing its annual price updating process.

Water and Wastewater:

A sample of water service and usage charges was independently calculated to check values in Hunter Water’s Price Schedule. This is summarised in the following table, which shows that all tested values were correctly calculated:

³⁰ Email dated 11 May 2018 from IPART to Hunter Water (re: *CPI Notification*).

³¹ Hunter Water response to 2018 Audit Questionnaire.

³² Document (screenshot): *Pricing spreadsheet endorsements.png*.

³³ MS Excel workbook: *HW2007-1522 7.002 Schedule - HW2007-1522 Price Schedule 2017-18 MASTER FINAL.xlsx*.

³⁴ MS Excel workbook: *Procedure - HW2007-1522 Price Schedule 2018-19 MASTER FINAL.xlsx*.

³⁵ Document: *Price Updating Procedure.docx*.

Water Charge	Δ CPI (%) 2017/18 / 2018/19	Hunter Water calculated Charge		Auditor Calculated			
		2017/18	2018/19	2017/18		2018/19	
				Det. Base	Value	Det. Base	Value
Water Supply Service Charge	2.1 / 4.1						
Metered Residential Properties	2.1 / 4.1	51.12	75.01	50.07	51.12	72.06	75.01
Metered Non-Residential Properties: 50mm meter	2.1 / 4.1	350.75	490.76	343.54	350.75	471.43	490.76
Metered Non-Residential Properties: 200mm meter	2.1 / 4.1	5,611.97	7,852.05	5,496.54	5,611.97	7,542.80	7,852.05
Water Usage Charge	2.1 / 4.1						
Filtered Water < 50,000L	2.1 / 4.1	2.30	2.34	2.25	2.30	2.25	2.34
Filtered Water > 50,000L (Dungog)	2.1 / 4.1	1.85	1.89	1.81	1.85	1.82	1.89
Filtered Water > 50,000L (Newcastle)	2.1 / 4.1	2.09	2.13	2.05	2.09	2.05	2.13

Note: "Det. Base" means the base price (pre-application of Δ CPI) published in the Determination.

The following sample of sewer charges were also independently calculated and found to be correct:³⁶

- Metered Residential Properties/Unmetered Properties;
- Multi-premises Residential Properties;
- Non-residential Properties: 50mm meter, assuming a 60% Discharge Factor; and
- Non-residential Properties: 200mm meter, assuming a 60% Discharge Factor.

A check of the current (2018/19) water charges published on the Hunter Water website revealed them to be consistent with the above table, and therefore Hunter Water's *Price Schedule* and the *Determination*.

Hunter Water provided examples of Customer's bills as follows, review of which confirmed that the water and sewer charges had been correctly calculated, noting that pro-rating of annual charges is based on the number of days in the period:

- Residential Customer (Account No: 9207 800 000) for period 1 November 2017 to 28 February 2018; and
- Non-residential Customer (Account No: 4393 120 000) for period 1 November 2017 to 28 February 2018.

The Customer classification applicable to these examples was confirmed by CIS (Customer Information System) screenshots.

On the basis of the above observations, it was assessed that water and sewerage charges had been calculated and applied in accordance with the *Determination*.

Environmental Improvement Charge:

As noted above, Hunter Water self-identified a non-compliance in respect of the application of its Environmental Improvement Charge (EIC); it had incorrectly applied the EIC to vacant land for the period subsequent to implementation of the 2013 Price Determination. The 2013 Determination authorised Hunter Water to levy the EIC on vacant land, but included a later reference to a connection to the sewerage system as a determinant of eligibility. IPART's 2016

³⁶ Summary not presented due to greater complexity of calculation.

Price Determination defined “Environmental Improvement Charge Properties” to mean properties connected to Hunter Water’s sewerage system; there was no reference to vacant land.³⁷ Hunter Water had not identified the changes in either Determination that restricted the levy to properties connected to its sewerage system.

Following a Customer enquiry regarding application of the levy, Hunter Water investigated the matter and determined that it did not have a legal basis to levy the EIC on vacant land in the period since 1 July 2013; it ceased doing so in April 2018.

Hunter Water advised that it has taken action based on three groups of property owners:

- Property owners who paid the EIC on vacant land and have subsequently connected to Hunter Water’s sewerage system;
- Property owners who paid the EIC on vacant land and still own the vacant land; and
- Property owners who paid the EIC on vacant land but sold the land to another party during the period 1 July 2013 to 30 April 2018.

Property owners in the first two groups have an existing account with Hunter Water. Hunter Water has issued refunds in the form of a credit to their account and advised them of that action; an offer of a cash refund has also been provided. Hunter Water is continuing to implement action to locate and pay a refund to property owners in the third category; this includes the engagement of an external agency to support its endeavours.

As evidence of the action taken, Hunter Water provided:

- Customer bills for Account No: 0038 020 000 as issued in March 2018 and August 2018. These show the EIC being levied on the March 2018 bill, and a significantly greater credit (representing the accumulated amount) being applied in the August 2018 bill. It is noted that the EIC was the only charge applied/credited in both cases.
- Samples of letters sent to a Customer (Account No: 6769 198 907) for a property that was not connected to the sewerage for part of the period 1 July 2013 to 30 April 2018, and a Customer (Account No: 0109 237 212) for a property that remains vacant land.
- A sample Customer bill (Account No: 2786 200 000) issued in September 2018 that demonstrates that the EIC is not applied to properties with a water connection only.

Hunter Water advised that it continues its endeavours to contact the remaining property owners (i.e. the third group described above); however, the current approach appears to have been exhausted and will be closed out. Alternative approaches, which are yet to be confirmed, will be implemented.

Whilst this matter clearly represents a non-compliance with this Licence obligation, given that Hunter Water has and currently continues to implement appropriate corrective action, it is difficult to identify a meaningful recommendation the completion of which can be effectively measured. For example, a recommendation that Hunter Water takes action to ensure that it sets and levies its fees, charges in accordance with the relevant Price Determination could only be effectively measured by the absence of any further non-compliance over time. Accordingly, no recommendation is made.

Tanker Pricing:

Hunter Water advised³⁸ that it receives tankered waste at five of its wastewater treatment works (WWTW); waste is only accepted from customers that have a tanker agreement with Hunter Water in place. Three types of waste are accepted via tanker: septic waste, portable toilet effluent and treated oily water.

³⁷ Hunter Water, *Statement of Compliance 2017-18*, 30 August 2018.

³⁸ Hunter Water response to 2018 Audit Questionnaire.

Charges are levied on the basis of information provided on a tanker docket, on which the volume and type of waste delivered to the WWTW is recorded. Charges for septic waste and portable toilet effluent are charged on the basis of volume only, whereas charges for treated oily water (classified as high strength waste) also include a weight based component. All deliveries incur a processing fee, which is applied on a per delivery docket basis.

Charges are also levied for the establishment, variation or renewal of tanker agreements; however, Hunter Water advised that there had been no such cases during the audit period.

Review of the tankering charges shown in the *Price Schedule* confirms that they are consistent with the *Determination*.

A sample of delivery dockets demonstrated how deliveries are recorded. Details are manually entered into an Access database. It was noted that all prices/charges other than tanker charges are programmed into the CIS, whereas tanker charges are separately applied. In the case of septic and portable toilet waste, a report is run directly from the Access database; application of the applicable rates is automated. Review of a sample of bills (for septic and portable toilet waste) confirmed that they had been correctly applied.

Charges for high strength waste received by tanker, which includes application of the additional pollutant load based component, are calculated in a separate spreadsheet.

As noted above, Hunter Water advised that it had incorrectly applied its high strength tankered waste charge on a number of occasions. This occurred as rates in the spreadsheet weren't subject to the checks applied to the remainder of the billing system.

It is noted that Hunter Water receives high strength waste from only one tanker customer. A reconciliation (undertaken by Hunter Water) of billings for that customer over the period from July 2014 has revealed a net undercharge of \$22.54.³⁹ Review of the July 2018 bill re-calculation confirmed that it was correct.⁴⁰

Hunter Water advised of the following proposed corrective action:

- A comprehensive review of tanker and trade waste charges is being undertaken.
- A new billing system is being commissioned and is expected to be in place by November 2019. Tankering and trade waste pricing/billing will be automated in the new system.
- A new mobility solution (application) will be implemented to replace the paper dockets in March 2019. Application of the pollutant load price component will remain manual; however, a review process will be put in place.
- Consistent with the remainder of Hunter Water's billing system, draft bill validation of tankering bills prior to implementation of new charges will be introduced.

These actions are considered appropriate.

In recognition of the non-compliance, and on the basis of Hunter Water's advice, it is recommended (**REC-HWC-2017/18-01**) that Hunter Water takes action to ensure that:

- the use of paper tanker delivery dockets is replaced by a digital capture (mobility) arrangement by 31 March 2019;
- automated billing for the receipt of tankered waste is implemented as part of Hunter Water's proposed billing system upgrade (expected completion 31 December 2019); and
- draft bill validation processes are implemented for tankering bills by 30 June 2019.

³⁹ MS Excel workbook: *EnviroKing bill reconciliation.xlsx*.

⁴⁰ MS Excel workbook: *July 2018 - Enviroking.xlsx*.

Backflow prevention device test fee:

Hunter Water advised that it had not applied the backflow prevention device test fee during the audit period as it has not undertaken any tests on devices located on Customers' properties. It further noted that:⁴¹

"We currently manage the requirement for customers to test their backflow prevention device through a process of constant communication and engagement in order to deliver a better customer experience. We consider the fee a last resort only to be used if the engagement approach fails, and was not required to be used during the past financial year."

Hunter Water also noted that there are potential issues in respect of legal liability if it undertakes backflow prevention device testing on behalf of their Customers.

Calculation of the charges in respect of backflow prevention devices based on the *Determination* confirms that they have been correctly calculated as follows, noting that in this case charges are to be rounded to the nearest dollar:

Backflow Prevention Device Fees	Determ'n base value	Hunter Water calculated Charge		Auditor Calculated			
		2017/18	2018/19	2017/18		2018/19	
				CPI (%)	Value	CPI (%)	Value
a) Device Test	332.26	339.00	346.00	2.1	339.00	4.1	346.00
b) Disconnection for noncompliance	336.32	343.00	350.00	2.1	343.00	4.1	350.00
c) Reconnection after rectification of noncompliance	177.28	181.00	185.00	2.1	181.00	4.1	185.00

Pricing for backflow prevention device testing does not appear to be published on Hunter Water's website; it is assumed that this is reflective of its management approach in respect of these devices. Hunter Water advised that it has proposed that this charge be discontinued in its pricing submission for the next Determination.

Recommendations

The following recommendation is made in respect of this sub-clause:

- **REC-HWC-2017/18-01:** Hunter Water should take action to ensure that:
 - the use of paper tanker delivery dockets is replaced by a digital capture (mobility) arrangement by 31 March 2019;
 - automated billing for the receipt of tankered waste is implemented as part of Hunter Water's proposed billing system upgrade (expected completion 31 December 2019); and
 - draft bill validation processes are implemented for tankering bills by 30 June 2019.

Opportunities for improvement

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


- **OFI-HWC-2017/18-01:** It is suggested Hunter Water considers developing a comprehensive 'end-to-end' procedure detailing its annual price updating process.

⁴¹ Hunter Water response to 2018 Audit Questionnaire.

3.3 Water Conservation

3.3.1 Catchment to water treatment plants

Table 3.4 Catchment to water treatment plants (sub-clause 2.1.1)

Sub-clause	Requirement	Compliance Grade
2.1.1	<p>Hunter Water must calculate the System Yield either:</p> <ul style="list-style-type: none"> a) in accordance with the memorandum of understanding with the Department of Primary Industries Water referred to in clause 5.10.1(a); or b) if no such memorandum of understanding is in effect, in accordance with a reasonable methodology that Hunter Water considers suitable. 	 Compliant
Risk		Target for Full Compliance
<p>Failure to comply with this obligation presents a high operational risk. In the absence of a robust estimation of System Yield, Hunter Water will be unable to assess the adequacy of the sources to maintain supply.</p>		<p>Evidence that Hunter Water has calculated the System Yield in accordance with the Memorandum of Understanding referred to in clause 5.10.1(a).</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ Metropolitan Water Directorate, <i>Lower Hunter Water Plan</i>, 2014. ▪ <i>Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan</i> between Metropolitan Water Directorate (now DoI Water) and Hunter Water, dated 23 May 2014. ▪ DPI, <i>Lower Hunter Water Plan; MERI Annual Evaluation 2014</i>, October 2014. ▪ DPI Water, <i>Lower Hunter Water Plan; MERI Annual Evaluation 2015</i>, December 2015. ▪ DPI Water, <i>Lower Hunter Water Plan; MERI Major Evaluation 2016</i> (Draft 0.3), 16 November 2016. ▪ DPI Water, <i>Lower Hunter Water Plan; MERI Evaluation 2017</i> (Version 3.0), 20 December 2017. 		
Summary of reasons for grade		
<p>Hunter Water demonstrated that it has calculated the System Yield as required pursuant to its obligations under the <i>Roles and Responsibilities Protocol</i> (i.e. the Memorandum of Understanding referred to in clause 5.10.1(a)). The calculated System Yield is documented in the annual MERI (monitoring, evaluation, reporting and improvement) reports on implementation of the <i>Lower Hunter Water Plan</i> prepared by DoI Water.</p> <p>Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		

Discussion and notes

Hunter Water confirmed that it periodically calculates the System Yield,⁴² and that it does so using a methodology developed and approved through the *2014 Lower Hunter Water Plan*.⁴³ It is noted that under the terms of the *Roles and Responsibilities Protocol*⁴⁴ (Memorandum of Understanding between Hunter Water and DoI Water,⁴⁵ which was established to support implementation of the Lower Hunter Water Plan), Hunter Water has a number of roles and responsibilities including:

“maintaining and updating Hunter Water’s water source model, including implementing recommendations from the 2013 peer review of the model, and undertaking further scenario modelling as agreed by the parties

Furthermore, Hunter Water’s roles and responsibilities also include:

“Updating and evaluating the supply-demand balance at least every 12-months”

for which the calculation of System Yield is a primary input.

Hunter Water uses an in-house model to calculate System Yield. The *Roles and Responsibilities Protocol* does not specify a methodology for calculating the System Yield; however, it does require the implementation of peer review recommendations and modelling of additional scenarios, as indicated in the above extract.

Hunter Water advised that a major review of the *Lower Hunter Water Plan* is currently in hand, with the next update due in 2021. Hunter Water will be moving to the WATHNET modelling platform, to develop a new combined model, which will be peer reviewed by an independent panel. It is expected that the definition of System Yield will be revised under the 2021 Plan.

As evidence that it has periodically calculated the System Yield, Hunter Water provided copies of the 2014,⁴⁶ 2015,⁴⁷ 2016⁴⁸ and 2017⁴⁹ MERI (monitoring, evaluation, reporting and improvement) reports on implementation of the *Lower Hunter Water Plan*, noting that:⁵⁰

“The LHWMP monitoring, evaluation, reporting and improvement (MERI) plan requires annual evaluation of system yield and identification of material changes in yield (and other measures) that could potentially trigger an intervention. These evaluations of system yield are contained in annual MERI reports that are prepared by the lead agency (currently DoI Water, previously Metropolitan Water Directorate).”

Review of these reports confirmed that the System Yield has been calculated and assessed and the supply-demand balance determined and reported each year. The current estimate of System Yield is reported and any changes or potential impacts discussed. For example, the 2017 MERI report⁵¹ included the following summary:

“There were no changes to the calculation of HWC’s system yield (the volume of water that can be reliably supplied each year over the long term) in 2017. The system yield of 76GL/year is based on the current Central Coast transfer link capacity, prior to its planned increase to 30ML/day to meet the terms of the existing transfer agreement between HWC and Central Coast Council.

Modelling a range of alternative transfer regimes between the lower Hunter and the Central Coast identified further potential water security benefits to both regions from changing transfer rules.

⁴² Hunter Water response to 2018 Audit Questionnaire.

⁴³ Metropolitan Water Directorate, *Lower Hunter Water Plan*, 2014.

⁴⁴ *Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan* between Metropolitan Water Directorate (now DoI Water) and Hunter Water, dated 23 May 2014.

⁴⁵ Metropolitan Water Directorate previously fulfilled the role now undertaken by DoI Water as the lead agency for implementation of the *Lower Hunter Water Plan*.

⁴⁶ DPI, *Lower Hunter Water Plan; MERI Annual Evaluation 2014*, October 2014.

⁴⁷ DPI Water, *Lower Hunter Water Plan; MERI Annual Evaluation 2015*, December 2015.

⁴⁸ DPI Water, *Lower Hunter Water Plan; MERI Major Evaluation 2016* (Draft 0.3), 16 November 2016.

⁴⁹ DPI Water, *Lower Hunter Water Plan; MERI Evaluation 2017* (Version 3.0), 20 December 2017.

⁵⁰ Hunter Water response to 2018 Audit Questionnaire.

⁵¹ DPI Water, *Lower Hunter Water Plan; MERI Evaluation 2017* (Version 3.0), 20 December 2017, page 16.

HWC noted that a number of supply side risks to water security still exist, including future potential for:

- *change due to incorporating pre-instrumental evidence of climate variability from paleo climate records into stochastic modelling*
- *loss of catchment area within the Tomago Sandbends due to PFAS contamination*
- *changes to groundwater access following review of the interaction between bore operations and groundwater dependent ecosystems.*

Upward and downward pressures on water security, along with alternative measures of security, will be considered as part of the analysis for the next LHWP.”

It is therefore apparent that Hunter Water has calculated the System Yield as required pursuant to its obligations under the *Roles and Responsibilities Protocol*⁵² (i.e. the Memorandum of Understanding between Hunter Water and DoI Water for the purposes of this Licence).

Recommendations

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


Opportunities for improvement

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

⁵² *Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan* between Metropolitan Water Directorate (now DoI Water) and Hunter Water, dated 23 May 2014.

3.3.2 Water treatment plants to taps

Table 3.5 Water treatment plants to taps (sub-clause 2.2.1)

Sub-clause	Requirement	Compliance Grade
2.2.1	<p>Hunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year is equal to or less than 215 kilolitres for each Property used for residential purposes which is connected to the Water Supply System (Water Conservation Target), until Hunter Water has obtained IPART’s approval for the Economic Level of Water Conservation Methodology (in accordance with clauses 2.2.2 and 2.2.3), and developed a program of water conservation activities using the approved Economic Level of Water Conservation Methodology (in accordance with 2.2.4).</p> <p><i>[Note: Clause 2.2.1 requires Hunter Water to maintain the Water Conservation Target that was in the immediate predecessor to this Licence while the Economic Level of Water Conservation Methodology is being approved and applied.]</i></p>	<div></div> <div>Compliant</div>
<hr/>		
Risk	Target for Full Compliance	
Failure to comply with this obligation presents a high risk. Failure to meet the Water Conservation Target may have significant operational impacts on both the supply-demand balance and capacity of the water supply network, with consequential financial implications.	Evidence that the 5 year rolling average annual residential water consumption for each financial year is equal to or less than the target 215 kilolitres for each Property.	
<hr/>		
Evidence sighted		
<div><div>▪ Hunter Water response to 2018 Audit Questionnaire.</div><div>▪ Hunter Water, <i>Compliance and Performance Report</i>, September 2018.</div><div>▪ BoM/NWI Parties/WSAA, <i>National urban water utility performance reporting framework: Indicators and definitions handbook</i>, January 2018.</div><div>▪ MS Excel workbook: <i>Water Consumption by Premise Type - FY 2017-18.xlsx</i>.</div><div>▪ MS Excel workbook: <i>Average Consumptions Connections Calculation.xlsx</i>.</div><div>▪ MS Excel workbook: <i>PropertiesConnected_Summary.xlsx</i>.</div><div>▪ MS Excel workbook: <i>Properties Connected To HWC Services June 2018.xlsx</i>.</div></div>		
<hr/>		
Summary of reasons for grade		
<p>Hunter Water advised that the 5-year rolling average annual residential water consumption for the 2017/18 financial year was 173.7 kL/property, which is significantly less than the 215 kL/property Water Conservation Target. It demonstrated that it has developed and implements a procedure for calculating this performance characteristic which is consistent with the guidance presented in the <i>National urban water utility performance reporting framework: Indicators and definitions handbook</i>.</p> <p>Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		

Discussion and notes

Hunter Water advised⁵³ that the 5-year rolling average annual residential water consumption for the 2017/18 financial year was 173.7 kL/property. This was reported as 173 kL/property in the *Compliance and Performance Report*.⁵⁴ In either case it is significantly less than the 215 kL/property Water Conservation Target.

Hunter Water advised that it calculates annual residential water consumption in accordance with the *National urban water utility performance reporting framework: Indicators and definitions handbook*.⁵⁵ It is determined as:

$$\text{Annual Residential Consumption per Property} = \frac{\text{Total volume of water supplied to residential properties (W8)}}{\text{Number of connected residential properties: water supply (C2)}}$$

Where:

$$\begin{aligned} W8 &= W8.3 + W20 + W28.4 \\ &= [\text{W8.3—Volume of water supplied to residential customers}] \\ &\quad + [\text{W20—Volume of recycled water supplied to residential customers}] \\ &\quad + [\text{W28.4—Volume of urban stormwater supplied to residential customers}] \end{aligned}$$

The volume of water supplied to residential customers (W8.3) is determined by extracting a standard water consumption report from the CIS (Customer Information System). This is captured in pivot table format in an MS Excel workbook,⁵⁶ from where water consumption data for each residential premise type (RES-CT, RES-SA, RES-SU, RES-MO, COM-RES and OTHER SM) is extracted and used to calculate the total residential consumption in the *Average Consumptions Connections Calculation* workbook.⁵⁷ The OTHER SM (strata master) premise type is added at the end of the calculations, as this element of demand is not included in the demand from single dwelling or multiple dwelling (flats/units) premise types.

Adjustments are made for potable top-up water to the recycled water system, and for meter lag and reservoir level change. These amounted to 85 ML and 60.22 ML respectively in 2017/18.

Hunter Water does not supply any recycled water or stormwater to residential properties; accordingly, both W20 and W28.4 = 0.

The number of residential properties: water supply (C2) is derived from a standard report, extracted from the CIS, to determine the number of properties connected to Hunter Water services. The report examines service agreements in the billing system. Where a single service connection supplies more than one dwelling, such as for flats and units, multiple properties are counted. For properties with a water service agreement, an MS Excel template⁵⁸ is used to aggregate the total number of residential properties with residential premise type attributes.⁵⁹

The annual residential consumption per property and average annual residential consumption per property are calculated in the *Average Consumptions Connections Calculation* workbook.

Hunter Water noted that:⁶⁰

“The five-year rolling average water consumption is 173.7 kL/property. This differs to the number published in the compliance and performance report (173) due to a rounding error. We intend to publish a footnote in the 2018-19 compliance and performance report that corrects this error.”

⁵³ Hunter Water response to 2018 Audit Questionnaire.

⁵⁴ Hunter Water, *Compliance and Performance Report*, September 2018.

⁵⁵ BoM/NWI Parties/WSAA, *National urban water utility performance reporting framework: Indicators and definitions handbook*, January 2018.

⁵⁶ MS Excel workbook: *Water Consumption by Premise Type - FY 2017-18.xlsx*.

⁵⁷ MS Excel workbook: *Average Consumptions Connections Calculation.xlsx*.

⁵⁸ MS Excel workbook: *PropertiesConnected_Summary.xlsx*.

⁵⁹ MS Excel workbook: *Properties Connected To HWC Services June 2018.xlsx*.

⁶⁰ Hunter Water response to 2018 Audit Questionnaire.

Recommendations

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


Opportunities for improvement

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

3.4 Supply services and performance standards

3.4.1 Drinking Water

Table 3.6 Drinking Water (sub-clause 3.1.1)

Sub-clause	Requirement	Compliance Grade
3.1.1	<p>Hunter Water must maintain a Management System for Drinking Water that is consistent with the Australian Drinking Water Guidelines, except to the extent that NSW Health specifies otherwise in writing (the Drinking Water Quality Management System).</p> <p><i>[Note: It is expected that the Drinking Water Quality Management System will be consistent with the Framework for Management of Drinking Water Quality. However, where NSW Health considers it appropriate, the application of Australian Drinking Water 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.</i></p> <p><i>The Australian Drinking Water Guidelines has provisions relating to the prevention of use of non-potable water for potable purposes.]</i></p>	<div></div> <p>Compliant (minor shortcomings)</p>
<hr/>		
Risk	Target for Full Compliance	
Without a comprehensive and effectively implemented Drinking Water Quality Management System, there is a high risk that Hunter Water may not be able to effectively manage risks to drinking water quality and protect public health.	Evidence that a Drinking Water Quality Management System is established, maintained and kept up to date, and that it is consistent with the <i>Australian Drinking Water Guidelines</i> , and any additional requirements of NSW Health.	
<hr/>		
Evidence sighted		
General:		
<ul style="list-style-type: none">▪ Hunter Water response to 2018 Audit Questionnaire.▪ HW2006-1448 53 4.015 Minutes - Hunter Water NSW Health Liaison Committee Meeting – 7 March 2018.▪ HW2006-2906 10 2.005 Register - Drinking Water Quality Improvement Plan.▪ HW2006-2906 2 6.006 Water Quality Monitoring Plan.▪ HW2006-2906 8 33.014 Drinking Water Quality Risk Assessment Calendar.▪ HW2006-2968 41 44.001 Policy - Drinking Water.▪ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.▪ HW2015-1443 4 3.005 Letter to NSW Health - Significant Changes to Hunter Water’s DWQMS and RWQMS.▪ HW2015-1449 1 11.023 Drinking Water Quality Management Plan – Veolia.		
Further evidence is listed by ADWG Element in the following.		

Element 1:

- HW2006-2968 41 44.001 Policy - Drinking Water Policy.
- HW2007-900 27 1.009 Corporate Emergency Management Plan.
- HW2011-662 14 5.002 Emergency Response Communications Plan.
- HW2012-441 23 1.029 Procedure - Managing Legal and Other Requirements.
- HW2012-778 77.001 Data - Compliance Calendar.
- HW2013-421 9.006 Register - Legal and Other Requirements – Quality.
- HW2013-421 9.007 Register - Summary of Corporate Reporting Requirements.
- HW2014-1242 4 2.006 Business Resilience Calendar.
- HW2015-1449 1 5.013 Data - Veolia Staff Contact Details.
- HW2015-1449 1 5.015 File note - Lab Staff Contact Details.
- CS0341 Treatment Operations Contract Practice Note – PN111 Drinking Water Standards.
- Hunter Water Reporting Manual Operating Manual 2017-2022.
- HW2013 421 1.007 Guideline – Engagement with External Stakeholders.

Element 2:

- CS0341 Treatment Operations Contract Practice Note – PN111 Drinking Water Standards.
 - Dungog WTSS WQ Risk Register.
 - HDR1204-04-D-REG HWC Distribution System Risk.
 - Hunter Water Reporting Manual Operating Manual 2017-2022.
 - HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.
 - HW2006-2906 8 33.014 Drinking Water Quality Risk Assessment Calendar.
 - HW2008-704 17.004 Procedure Enterprise Risk Management Framework.
 - HW2015-1190 3 14.047 Report - PFAS Operating Strategy for the Tomago Borefield.
 - HW2015-1190 3 14.049 Letter - Chair PFAS Expert Panel to EPA CEO Re Approval of Hunter Water PFAS Strategy 2018.
 - HW2015-1190 3 16.002 Presentation - MPs PFAS Briefing - Oct 2017.
 - HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.
 - HW2015-1365 16.005 Plan - Flow Diagram - Dungog Water Supply System.
 - HW2015-1365 17.002 Report - Chichester Catchment Risk Assessment Briefing Paper.
 - HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.
 - HW2015-1443/4/3.005 Letter - to NSW Health - 190318 - Significant Changes to Hunter Water's DWQMS and RWQMS – signed.
 - HW2015-1449 1 11.047 Email - email note of NSW Health support for ERM public health descriptors.
 - HW2015-705 1.002 Dungog WTP Process Flow Diagram.
 - Report - HDR1204-02-B-REP HWC Distribution System Risk Review Briefing Paper.
 - S09-13 16 1.005 Distribution Network.
 - Report - Disinfection Optimisation Strategy Report Final.
 - HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.
-

Element 3:

- HW2015-1365 18.009 Report - Dungog system Risk Assessment Summary Report.
- HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.
- HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response.
- HW2006-2906 7 5.029 File note - Follow-up actions from meeting with NSW Health re CCPs - June 2018.
- HW2016-1069 3.003 Minutes - Meeting with NSW Health on CCPs – 010318.
- HW2017-1005 4.001 File note - Technical Specification - CCP Review and online Ct calc.
- HW2017-1005 5.002 Report - Draft Report of existing Methods of Disinfection Monitoring and Ct Calculation.
- HW2017-1005 5 5.001 Report - Review and Assessment of Disinfection Monitoring Practices.
- HDR1204-04-D-REG HWC Distribution System Risk.
- Dungog WTSS WQ Risk Register.
- HW2015-1365 16.005 Plan - Flow Diagram - Dungog Water Supply System.

Element 4:

- HW2015-1449 1 11.027 Procedure - Dungog WTP and Chichester Dam Operating Manual – Veolia.
- HW2006-2906 2 6.006 Water Quality Monitoring Plan.
- HW2015-1449 1 11.001 Presentation - Screenshot OurSafety Intranet Page.
- HW2015-1449 1 5.024 Presentation - Screenshot Asset Operation Intranet Page.
- HW2015-1449 1 11.028 Hunter Water Contract Maintenance Charter.
- HW2015-1449 1 11.029 Maintenance work order user guide (GAMA).
- HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.
- HW2015-1449 1 11.024 WIS-3180 HW - Water Treatment Sampling Manual.
- HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response Plan.
- HW2006-2247 34 11.001 Agreement - Contract for Supply and Delivery of Bulk Chemicals - CS0525 IXOM.
- HW2015-1449 1 5.061 Presentation - Screenshot Approved Producers and Manufacturers Internet Page.
- WI-001 - Work in potable water mains.
- HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.
- HDR1204-04-D-REG HWC Distribution System Risk.

Element 5:

- HW2006-2906 2 6.006 Water Quality Monitoring Plan.
 - HW2013-421 22.001 Standard for managing incidents.
 - HW2010-1986 8.023 Procedure - Water Quality Exception Reporting.
 - HW2006-2906 4 6.023 Procedure to notify NSW Health of events with potential public health impact.
 - HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.
 - HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response - 18.07.2018.
 - HW2015-1449 1 11.041 Customer Complaints Handling Standard.
 - HW2015-1449 1 11.049 Customer Complaints Handling Guidelines.
-

-
- HW2008-235 7.001 Service Fault Map.
 - HW2008-235 6.016 Guideline - Water Quality - Air White.
 - HW2008-235 6.017 Guideline - Water Quality – Chlorine.
 - HW2006-1417 30 9.005 Network Operations Report – September 2018.
 - HW2006-1417 30 9.005 Network Operations Report – August 2018.
 - HW2006-1417 15 17.001 Statement – Water Quality Committee Terms of Reference.
-

Element 6:

- HW2007-900 27 1.009 Corporate Emergency Management Plan.
 - HW2011-662 14 5.002 Emergency Response Communications Plan.
 - HW2006-2906 4 6.023 Procedure to notify NSW Health of events with potential public health impact.
 - HW2006-1448 53 3.003 Guideline - Criteria for Notification to NSW Health - re Drinking Water Quality - March 2018.
 - HW2006-2906 4 6.023 Procedure – Water Quality Notification to NSW Health.
 - HW2006-2906 4 6.023 Guidelines – Criteria for Notification to NSW Health.
 - HW2014-778 15 2.001 Plan – Veolia CCP Exceedance Response.
 - HW2007-900 27 1.009 Corporate Emergency Management Plan.
-

Element 7:

- HW2015-1449 1 9.040 Drinking Water Quality Awareness Training Material.
 - HW2015-1449 1 9.012 DWQ Compliance Training Material.
 - HW2015-1449 1 11.043 PD – manager water network.
 - HW2015-1449 1 11.042 PD – manager water treatment.
 - HW2015-1449 1 11.044 PD – manager water planning.
 - HW2015-1449 1 5.018 Data - System Ops Competency Requirements.
 - HW2015-1449 1 11.030 Veolia Training Matrix.
 - HW2015-1449 1 11.045 Training Calendar.
 - Training Needs Matrix.
-

Element 8:

- HW2015-1055 7.002 Guideline - 2017+3 Strategy.
 - HW2011-662 5 35.004 Agenda and Meeting Papers - May 2018 – CCAG.
 - HW2015-1449 1 9.041 PFAS Communication Strategy.
 - Hunter Water website – water quality:
<https://www.hunterwater.com.au/Water-and-Sewer/Water-Supply/Water-Quality/>.
 - Guideline - Engaging with External Stakeholders.
-

Element 9:

- Documents related to research. The R&D projects register includes a list of key projects, more information on which are available on request.
 - HW2009-1367 27.001 Agreement - Research and Development Committee Charter.
 - HW2015-1449 1 11.003 Article - Extract from R&D projects and assessment guide.
 - Documents related to product and process validation.
 - HW2015-1449 1 5.060 Presentation - Screenshot Hunter Water Design Manual Page.
-

-
- HW2007-2744 5.082 Guideline - QG052 Design Validation Guideline.
 - HW2015-1449 1 5.061 Presentation - Screenshot Approved Produces and Manufacturers Internet Page.
 - HW2015-1449 1 11.023 Drinking Water Quality Management Plan – Veolia.
-

Element 10:

- Documents related to records management and document management, document review.
 - HW2015-1449 1 9.008 Article - Screenshot of TRIM Workspace.
 - HW2012-441 9 1.002 Procedure – Manage Document Control.
 - HW2015-1449 1 11.032 Veolia Document Management Procedure.
 - HW2015-1449 1 11.031 Veolia Records Management Procedure.
 - Documents related to reporting.
 - HW2015-1449 1 11.004 Report - Monthly-Drinking-Water-Quality-Summary August-2018.
 - HW2007-1642 39 2.002 Data - Hunter Water - Fluoride Report - August 2018.
 - HW2006-1448 41 9.007 Report - Quarterly to NSW Health - Drinking Water and Recycled Water Quality Exceptions April to June 2018.
 - Hunter Water Reporting Manual Operating Licence 2017-2022.
 - HW2012-778 77.001 Data – Compliance Calendar.
 - Procedure - PN111 - Drinking Water Standards.
-

Element 11:

- Example documents containing analysis for Dungog WTP risk assessment.
 - HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.
 - HW2015-1365 17.002 Report - Chichester Catchment Risk Assessment Briefing Paper.
 - HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.
 - HW2013-421 11.002 Procedure - Conduct Management System Internal Audit.
 - HW2013-421 9.001 Register - Management Systems - Triennial Audit Programme 2018-2021.
 - HW2015-106 7 2.001 Register - ALS Lab Contract Audit Register.
 - HW2014-778 40.011 Register - WTP Audit Register - Water Treatment Operations.
-

Element 12:

- HW2013-1447 2.022 Report - Pre-reading for Management Systems Review August 2017.
 - HW2013-1447 2.023 Presentation - Management System Review Meeting August 2017.
 - HW2013-1447 2.024 Agenda - Management Systems Review Meeting - Aug 2017.
 - HW2013-1447 2.025 Minutes - Management System Review Meeting 14 August 2017.
 - HW2006-2906 10 2.005 Register - Drinking Water Quality Improvement Plan.
 - HW2006-1417 30 6.007 Minutes - July 2018 WQCM.
 - HW2015-1449 1 11.033 PR-ANZ-1-476 Management Review Procedure.
-

Summary of reasons for grade

The Drinking Water Quality Management System (DWQMS) is generally good and the Drinking Water Quality Management System Manual (DWQMSM) is easy to follow and provides a pathway to find the documentation required to fulfil the requirements of the Australian Drinking Water Guidelines (ADWG). Within the DWQMSM there were a number of documents that were used to determine compliance that were not referenced or accessible using the manual. However, it is understood that this is a new format and will evolve over time.

This sub-clause has been awarded the grade of compliant (minor shortcomings), due to some omissions in the risk management system documentation.

It was considered that risk assessments (catchment, and water treatment and distribution) do not document the risk associated with the supply of treated water from Central Coast Council (Element 2). This supply was detailed in the Distribution System Briefing Paper, but was not included in the risk assessment. It was noted during the audit that this supply has the potential to affect the chlorine residual in the Hunter Water distribution system, however it is being managed by the Disinfection Optimisation Strategy. So, although the risk is not documented, it is being managed. It was also considered that the risk assessment process lacked clarity and would benefit from a review and additional documentation.

It is also considered that the hygiene procedures for network repairs were insufficient to manage the risk of contamination (Element 4). Although there are procedures in place, the requirements for minor works were not detailed enough and for major works specific procedures are prepared for the job, however, there was insufficient governance around the process. This has been identified by Hunter Water as a shortcoming and there is an improvement action.

In assessing the appropriate grading it was considered that these deficiencies have not compromised the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.

Discussion and notes

Maintenance of the DWQMS to be consistent with each ADWG Element is discussed below.

Element 1:

Drinking Water Policy

Hunter Water has a drinking water policy,⁶¹ which is consistent with the ADWG. The policy has been signed by the Managing Director.

Regulatory and Formal Requirements

Hunter Water has a procedure⁶² for identifying and managing legal and other requirements. Details of the requirements are in two registers, one for reporting⁶³ and one for legal and other requirements,⁶⁴ which appears to contain the relevant legal requirements. There is also a calendar,⁶⁵ which is used to track compliance requirements.

Engaging Stakeholders

The ADWG⁶⁶ requires that stakeholders who could affect, or be affected by, decisions or activities of the drinking water supplier are identified, appropriate mechanisms are developed for their

⁶¹ HW2006-2968 41 44.001 Policy - Drinking Water Policy.

⁶² HW2012-441 23 1.029 Procedure - Managing Legal and Other Requirements.

⁶³ HW2013-421 9.007 Register - Summary of Corporate Reporting Requirements.

⁶⁴ HW2013-421 9.006 Register - Legal and Other Requirements – Quality.

⁶⁵ HW2012-778 77.001 Data - Compliance Calendar.

⁶⁶ NHMRC. *Australian Drinking Water Guidelines 2011*.

involvement and the list is regularly updated. The DWQMSM references the Emergency Management Plan⁶⁷ as containing the stakeholder list. The plan mentions some of the relevant stakeholders, but it is not a definitive list. There is other documentation, not mentioned in the plan, which addresses the management of stakeholder involvement, such as:

- Guideline – Engagement with External Stakeholders;⁶⁸
- MoU NSW Health;
- MoU Newcastle University;
- Treatment Operations Contract and practice notes;⁶⁹
- Laboratory contract; and
- Hunter Water Reporting Manual Operating Manual 2017-2022.⁷⁰

The documentation for the engagement of stakeholders does exist, but it is somewhat piecemeal.

OFI-HWC-2017/18-02: It would be beneficial to have a consolidated list of stakeholders who could affect, or be affected by, decisions or activities of Hunter Water, accessible from one location. This list could simply reference documentation that relates to the terms of engagement for the relevant stakeholder.

Element 2:

Water Supply System Analysis

Process flow diagrams have been developed for the schemes. The Dungog water supply scheme flow diagrams were provided as evidence. There is an overall flow diagram⁷¹ depicting the system from catchment to tap and detailed diagrams for the WTP⁷² and distribution network.⁷³

Key characteristics of the supply system are captured in the risk assessment briefing paper.⁷⁴

Assessment of Water Quality Data

Historical data trends for WTPs are provided in the risk assessment briefing reports.⁷⁵ Appendix D of the briefing reports contains time-series plots of raw, process and treated water. It was noted that these plots use monthly averages. Rounding the data using such a large time period will show long-term trends in water quality parameters but is not suitable to review exceedances or compliance with the water quality specifications. The high turbidities mentioned in the report cannot be seen on the trends, possibly due to the averaging of the data.

It was noted that *E. coli* data was not included in the Dungog WTP risk assessment briefing report; however, it was explained during the audit that data for all non-detections were not included in the report, but discussed at the risk assessment workshop. If this is the case it should be mentioned in the report, as currently it could be construed as an omission to those not present at the workshop. Also, Section 3.2.1 of the risk assessment briefing report states that water quality exceedances are listed and examined as part of the risk assessment workshop. However, there is no evidence to verify that this occurred; they are not listed in the briefing report. The briefing report only discusses exceedances of the manganese target and issues with the lime

⁶⁷ HW2007-900 27 1.009 Corporate Emergency Management Plan.

⁶⁸ HW2013 421 1.007 Guideline – Engagement with External Stakeholders.

⁶⁹ CS0341 Treatment Operations Contract Practice Note – PN111 Drinking Water Standards.

⁷⁰ Hunter Water Reporting Manual Operating Manual 2017-2022.

⁷¹ HW2015-1365 16.005 Plan - Flow Diagram - Dungog Water Supply System.

⁷² HW2015-705 1.002 Dungog WTP Process Flow Diagram.

⁷³ S09-13 16 1.005 Distribution Network.

⁷⁴ HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.

⁷⁵ HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.

system resulting in high turbidities. There was a very detailed water quality summary prepared for the Chichester catchment and Dungog WTP raw water.⁷⁶

Water quality in the distribution system was assessed in the risk assessment briefing report.⁷⁷ This provided a detailed analysis of the water quality leaving the treatment plants, in the distribution system and from the supply received from Central Coast Council.

Hazard Identification and Risk Assessment

Hunter Water has a corporate risk assessment methodology that is applied to all risk assessments, the Enterprise Risk Assessment Framework.⁷⁸ The framework includes definitions for consequence, likelihood, a risk matrix as well as risk appetite. Specific action is required based on the level of controlled risk. Risk assessments are reviewed in accordance with the DWQMS Risk Assessment Calendar.⁷⁹

Risk assessments were provided for the Dungog catchment and WTP⁸⁰ and Hunter Water distribution system.⁸¹ Risk summary reports were also provided for the Dungog catchment⁸² and Dungog WTP.⁸³ The Dungog catchment and WTP and Distribution risk assessments were completed within the audit period.

Both of the risk assessments use the Enterprise Risk Assessment Framework. However, the layout of risk assessments is significantly different. The distribution risk assessment uses a conventional layout with fields in columns and each hazardous event to a row. The risk assessment for the catchment and WTP uses a matrix approach with hazardous events in rows but has multiple risks levels in the columns at various stages throughout the treatment process. This makes it a fairly complex approach and takes some effort to interpret. Also, this approach makes it difficult to see how risks from the catchment and WTP flow through to the distribution risk assessment. Figure 4 in the DWQMSM⁸⁴ does state that risks are handed over from one stage to the next, but this is not transparent. **REC-HWC-2017/18-02:** By 30 June 2019, the risk assessment process should be made clear and transparent. It recommended that the risk process is reviewed, clearly mapped out and documented to ensure that all stakeholders are able to follow the process easily. Documentation should include all relevant data that is used to inform the risk assessment, including for example, non-detections of *E. coli*.

In addition, a number of the fields in the distribution risk assessment have been left blank; these could be taken as omissions. **OFI-HWC-2017/18-03:** All boxes/fields in registers should be filled in; if a field is not applicable it should be marked as such. Empty fields in risk assessments especially can be interpreted as not having been considered.

In spite of the above comments, it is considered that both the risk assessments fulfil the requirements of the ADWG.

Although, there appears to be a gap in the risk assessment, the risk of receiving water from Central Coast Council and the preventive/control measures to manage the risk were well documented in the risk assessments. During the audit it was clear that this can have an adverse impact on chlorine residuals in the Hunter Water network, and such impacts require management. It is noted that the Distribution System Risk Review Briefing Paper discusses this issue in detail and the impact is managed to an extent by the Disinfection Optimisation Strategy.⁸⁵ However, it is considered that the risk and subsequent preventive measures should be specifically included in

⁷⁶ HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.

⁷⁷ Report - HDR1204-02-B-REP HWC Distribution System Risk Review Briefing Paper.

⁷⁸ HW2008-704 17.004 Procedure Enterprise Risk Management Framework.

⁷⁹ HW2006-2906 8 33.014 Drinking Water Quality Risk Assessment Calendar.

⁸⁰ Dungog WTSS WQ Risk Register.

⁸¹ HDR1204-04-D-REG HWC Distribution System Risk.

⁸² HW2015-1365 18.009 Report - Dungog System Risk Assessment Summary Report.

⁸³ HW2015-1365 18.009 Report - Dungog WTP Risk Assessment Summary Report.

⁸⁴ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.

⁸⁵ Report - Disinfection Optimisation Strategy Report Final.

the risk assessment.

REC-HWC-2017/18-03: By 30 June 2019, the hazardous event of receiving water from Central Coast Council needs to be clearly identified in the risk assessment and preventive/control measures must be documented and fully implemented.

Hunter Water is planning to undertake a project to increase water flow from Central Coast Council and, as part of this project on-line water quality monitoring will be installed at the handover point. The ability to boost chlorine residuals in the zone receiving this water is also being considered. This change will provide greater control of this water supply.

Element 3:

Preventive Measures and Multiple Barriers

Preventive measures are identified through the risk assessment process. For the catchment and WTPs they are in the WTP risk assessments (the Dungog WTP risk assessment was provided as an example),⁸⁶ and for the distribution they are in the Distribution System Risk Assessment.⁸⁷ The preventive measures for the catchment and plant are summarised in the risk summary reports (the Dungog WTP HACCP Workshop Outcomes Report was supplied as evidence).⁸⁸

Although preventive measures are identified from catchment to tap in the catchment and WTP risk assessments, the association of these measures with processes is high level and there is no clear linkage to an action to implement the preventive measure. This has been more clearly identified in the CCP Limit Tables for the treatment plant portion; the Dungog WTP – CCP Limit Table⁸⁹ has been provided. There is no equivalent documentation for the catchment or distribution. However, controls in the distribution risk assessment are much clearer, which only leaves the catchment portion as being vague. **OFI-HWC-2017/18-04:** It would add to clarity if there was a register/list of control measures by process from catchment to consumer, with a related procedure for implementation and responsibility (e.g. HWC, Veolia, ALS).

Critical Control Points

Critical control points (CCPs) have been identified and are detailed in the CCP Limit Tables for the treatment plants; the Dungog WTP – CCP Limit Table⁹⁰ has been provided. CCP7 is in the distribution and is managed by Hunter Water; details of this CCP are in the Network Chlorinators – HACCP Limit Table.⁹¹ This document provides the information for CCPs as required in the ADWG.

There is an outstanding recommendation for CCPs. There is a chlorine C_T study being undertaken to validate the chlorine CCP for the disinfection step at each of the WTPs (refer to **Table 4.1** in respect of previous recommendations 2013/14 03, 04, 06 and 13).

Element 4:

Operational Procedures

Operational procedures for the WTPs are available through Hunter Water's 'Reservoir' intranet workspace and Veolia's 'On Tap' intranet workspace. The 'Reservoir' site was observed during the audit. These procedures have been compiled into a manual for each WTP and the Dungog WTP and Chichester Dam Operating Manual⁹² was provided as evidence. These are detailed operational procedures covering plant operations during normal and abnormal events.

⁸⁶ Dungog WTSS WQ Risk Register.

⁸⁷ HDR1204-04-D-REG HWC Distribution System Risk.

⁸⁸ HW2015-1365 18.009 Report - Dungog System Risk Assessment Summary Report.

⁸⁹ HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.

⁹⁰ HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.

⁹¹ HW2015 1303 10.003 Network Chlorinators – HACCP Limit Table.

⁹² HW2015-1449 1 11.027 Procedure - Dungog WTP and Chichester Dam Operating Manual – Veolia.

Procedures for the distribution network are available through the 'OurSafety' intranet web page. These were viewed during the audit. The *Working on potable water mains and fittings*⁹³ procedure was reviewed and found to provide a step-by-step guide to working on water mains. The body of the procedure included details on pipe flushing; a number of other controls to prevent the contamination of drinking water were in the risk assessment at the back of the procedure. It is considered that this information does not provide the detail required to ensure hygiene of the water main. For example there is not detail on how the following should be achieved:

- minimising the presence of water within the excavated working area; and
- adequate disinfection of tools previously used in sewer.

It is recognised that isolation procedures, which include hygiene practices are developed for major jobs; however, there is very limited direction on hygiene practices for day-to-day activities. This was also identified in the 2018 risk assessment⁹⁴ and actions have been identified. It is considered that the improvement actions should be prioritised to ensure a consistent standard of hygienic practice is applied, especially as crews, trucks and equipment are used on both sewer and water jobs. **REC-HWC-2017/18-04:** By 30 June 2019, the improvement actions identified in the 2018 risk assessment should be prioritised to ensure maintenance hygiene procedures are reviewed to ensure that consistent hygiene practices are implemented and are auditable. These should include the disinfection of tools, personal hygiene (in relation to workwear), disinfection and storage of parts/pipes, working clearances to prevent contamination, flushing, reinstating a service and acceptance criteria.

Operational Monitoring

The CCP Tables for each plant detail the operational envelopes for CCPs, critical operational points and other monitoring, including grab sampling. They also specify the location, if the monitoring is online and continuous, or grab samples and the frequency of non-continuous sampling. In addition to this Hunter Water has a detailed monitoring plan⁹⁵ that includes operational and verification monitoring, undertaken by Veolia and ALS.

Corrective Action

Corrective actions at the WTP are undertaken in accordance to the *Veolia CCP Exceedance Response Plan*.⁹⁶ The plan details the responses to be undertaken when the CCP limits are exceeded (alert and critical), as well as action to be taken if the limits for the Critical Operational Points (COPs) are exceeded. Details of notifications are also included in these plans. During the audit this procedure was reviewed and, based on the CCP table, if alkalinity is out of specification the CCP Response Plan should be followed. However, this response plan does not include alkalinity. **OFI-HWC-2017/18-05:** Update the CCP Response Plan for Dungog to include alkalinity.

Operational data is entered into the plant spreadsheet⁹⁷ and this uses conditional formatting to change cell colour to identify out of specification results. The spreadsheet is also capable of sending an email to the supervisor group for out of specification results.

Equipment Capability and Maintenance

Maintenance for WTPs is managed in the Computerised Maintenance Management System (CMMS) to ensure that assets operate to the required level of performance. Maintenance scheduling on the distribution system is managed using Hunter Water's corporate asset management system (Ellipse).

⁹³ WI-001 – Working on potable water mains and fittings.

⁹⁴ HDR1204-04-D-REG HWC Distribution System Risk.

⁹⁵ HW2006-2906 2 6.006 Water Quality Monitoring Plan.

⁹⁶ HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response Plan.

⁹⁷ HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.

Hunter Water has approved suppliers for materials and chemicals; the contract with Ixom Operations Pty Ltd⁹⁸ for the supply of chlorine gas and sodium hypochlorite was provided as evidence. Hunter Water has a page on its intranet for approved products.⁹⁹

Veolia has separate contracts for chemicals (although these were not sighted during the audit).

Element 5:

Drinking Water Quality Monitoring

Verification monitoring is detailed in the Drinking Water Quality Monitoring Program.¹⁰⁰ This details the locations, frequency and parameters to be monitored. ALS undertakes verification monitoring on behalf of Hunter Water. Veolia also undertakes some of the verification monitoring at the WTPs. The monitoring plan specifies monitoring undertaken by both ALS and Veolia. This is the minimum requirement; more monitoring may be undertaken if there is a business need.

Consumer Satisfaction

Hunter Water has a customer complaint standard¹⁰¹ that sets a broad framework for the management of customer complaints. The service fault map¹⁰² shows how jobs are entered into AOMS (Asset Operations Maintenance System) and the job categories. There are also a number of procedures for complaint handling, two of which have been provided as evidence:

- Guideline – Water Quality – Air White;¹⁰³ and
- Guideline – Water Quality – Chlorine.¹⁰⁴

Short-term Evaluation of Results

ALS is required to contact Hunter Water immediately with any health-based exceedances under their contract (not sighted).

There is a monthly network operations report¹⁰⁵ that details the following:

- customer complaints;
- thematic mapping of: chlorine residual, pH, temperature & manganese;
- PFAS results;
- flows; and
- chlorine targets.

The Water Quality Committee meets monthly to review water quality monitoring data,¹⁰⁶ as well as performance, CCPs and incidents.

Corrective Action

Hunter Water has a procedure for Water Quality Exception Reporting.¹⁰⁷ This covers the process of actioning microbial water quality test exceptions. In general, exceedances to ADWG health guidelines are responded to in accordance with the Corporate Emergency Management Plan,¹⁰⁸

⁹⁸ HW2006-2247 34 11.001 Agreement - Contract for Supply and Delivery of Bulk Chemicals - CS0525 IXOM.

⁹⁹ HW2015-1449 1 5.061 Presentation - Screenshot Approved Produces and Manufacturers Internet Page.

¹⁰⁰ HW2006-2906 2 6.006 Water Quality Monitoring Plan.

¹⁰¹ HW2015-1449 1 11.041 Customer Complaints Handling Standard.

¹⁰² HW2008-235 7.001 Service Fault Map.

¹⁰³ HW2008-235 6.016 Guideline - Water Quality - Air White.

¹⁰⁴ HW2008-235 6.017 Guideline - Water Quality - Chlorine.

¹⁰⁵ HW2006-1417 30 9.005 Network Operations Report – September 2018.

¹⁰⁶ HW2006-1417 15 17.001 Statement – Water Quality Committee Terms of Reference.

¹⁰⁷ HW2010-1986 8.023 Procedure - Water Quality Exception Reporting.

¹⁰⁸ HW2007-900 27 1.009 Corporate Emergency Management Plan.

although the DWQMSM currently references documents used for operational corrective action. **OFI-HWC-2017/18-06:** Review the DWQMSM to reference documentation, such as the Corporate Emergency Management Plan, for corrective action taken in response non-conforming verification monitoring.

Element 6:

Communication

The Emergency Management Plan (EMP)¹⁰⁹ has general communication and notification guidelines and a list of key contacts for emergencies. In addition to the general notification protocols, Hunter Water has detailed communications identified for:

- Veolia – CCP Exceedance Response Plan;¹¹⁰ and
- NSW Health – Notification procedure¹¹¹ and notification criteria.¹¹²

The Emergency Response Communications Plan¹¹³ is there for emergencies or major incidents and identifies how a Communication Coordinator is responsible for handling internal and external communication and acts as a central location for links to useful documents and information required in an incident response.

Emergency Response Protocols

The Emergency Management Plan covers all of Hunter Water's area of operations. It determines what constitutes an emergency or major incident and provides guidance to respond. Roles and responsibilities are identified in the plan. It contains links to a number of checklists that would be useful in the instance of an incident or emergency to ensure that things do not get overlooked.

The plan steps through the stages of an incident from activation through to demobilisation and debrief.

Element 7:

Employee Awareness and Training

Hunter Water staff undertake induction training, which includes the Drinking Water Awareness¹¹⁴ training. This program contains a general overview of drinking water quality management. An example given in the training for 'maintenance and construction' is the capping of stored pipes. However, as discussed earlier under Element 4, this is not undertaken. **OFI-HWC-2017/18-07:** Review the awareness training material and ensure that examples are current.

Staff and Veolia are required to undertake Drinking Water Quality Compliance¹¹⁵ training. This training material is more technical and contains more detail on risk management, CCPs and operational actions to be undertaken.

Employee Training

Hunter Water has documented competency requirements for System Controllers.¹¹⁶ Drinking water quality responsibilities, education and experience are included in position description (PDs), a sample of which were provided as evidence:

¹⁰⁹ HW2007-900 27 1.009 Corporate Emergency Management Plan.

¹¹⁰ HW2014-778 15 2.001 Plan – Veolia CCP Exceedance Response.

¹¹¹ HW2006-2906 4 6.023 Procedure – Water Quality Notification to NSW Health.

¹¹² HW2006-2906 4 6.023 Guidelines – Criteria for Notification to NSW Health.

¹¹³ HW2011-662 14 5.002 Emergency Response Communications Plan.

¹¹⁴ HW205-1449 1 9.040 Drinking Water Quality Awareness Training Material.

¹¹⁵ HW2015-1449 1 0.012 DWQ Compliance Training Material.

¹¹⁶ HW2015-1449 1 5.018 Data – System Ops Competency Requirements.

-
- Manager Water Networks;¹¹⁷
 - Manager Water Treatment;¹¹⁸ and
 - Manager Water Planning.¹¹⁹

Training coordinated through the Learning and Development group is scheduled using an organisational training calendar. Hunter Water has a detailed training matrix that covers position title by training package.¹²⁰

The Learning and Development group coordinates training across Hunter Water. Ellipse is used to record training dates and expiry dates; TRIM is used to retain certificates and competency assessments.

Veolia, as the treatment operations service provider, has a training matrix.¹²¹ This details a broad range of training from induction, safety and technical by the positions involved in delivery of the contract.

ALS, as the laboratory services contractor, is NATA accredited (for the relevant services), therefore requiring trained staff and being subject to competency audits as required.

Element 8:

Community Consultation

Hunter Water's 2017+3 Plan¹²² provides a foundation for customer engagement and greater transparency in service provision. Among the objectives is to understand customer, consumer and community needs and expectations, actively participate in the community and be responsive to the needs of customers. In developing its long-term plans Hunter Water has stated that it will undertake a program of engagement to gather insights and guide plans.

Hunter Water's Customer and Community Advisory Group (CCAG) meets three times per year to discuss a range of operational and planning matters. It has representatives from a range of community sectors, including environmental, local government and education. The May 2018 meeting papers¹²³ were provided as evidence. In this meeting, support of the 2017+3 Plan, future of water in the Hunter Valley and what this means for engagement were discussed.

Communication

Hunter Water's communication program with its consumers is managed by the Community and Stakeholder Team. Hunter Water's website has a 'Water Quality' section,¹²⁴ which explains the details of water treatment, catchment management and includes a monthly water quality monitoring report.

Communication to external stakeholders is detailed in the Guideline - Engaging with External Stakeholders.¹²⁵

¹¹⁷ HW2015-1449 1 11.043 PD – Manager Water Networks.

¹¹⁸ HW2015-1449 1 11.042 PD – Manager Water Treatment.

¹¹⁹ HW2015-1449 1 11.044 PD – Manager Water Planning.

¹²⁰ Training Needs Matrix.

¹²¹ HW2015-1449 1 11.030 Veolia Training Matrix.

¹²² HW2015-1055 7.002 Guideline - 2017+3 Strategy.

¹²³ HW2011-662 5 35.004 Agenda and Meeting Papers - May 2018 – CCAG.

¹²⁴ <https://www.hunterwater.com.au/Water-and-Sewer/Water-Supply/Water-Quality/>.

¹²⁵ Guideline - Engaging with External Stakeholders.

Element 9:

Investigative Studies and Research Monitoring

Hunter Water has a 4-year Research and Development (R&D) Plan and maintains a register of R&D projects.¹²⁶ The register contains a broad range of projects that Hunter Water is undertaking in conjunction with research partners. Investment in research is directed by the Research and Development (R&D) Committee.¹²⁷

Hunter Water has active R&D partnerships with water industry bodies (such as Water Research Australia, Water Services Association of Australia and Water Quality Research Australia), the Australian Research Council and various universities around Australia.

For the Hunter Water/Veolia Treatment Operations contract, an Innovation Committee has been established to evaluate innovations and organise fellowships to study new technologies. High level details are included in the Veolia Drinking Water Quality Management Plan.¹²⁸

Validation of Processes

Hunter Water's design validation process is explained in the Design Validation Guideline¹²⁹ document which is a part of the Asset Creation Framework. The purpose of the process is to ensure that the resulting asset is capable of meeting the requirements for the specified application or intended use. This guideline covers projects that will be undertaken by Hunter Water, but not the WTP contractor. The Veolia Drinking Water Quality Management Plan includes high-level details of validation processes to be implemented when plants are commissioned or when processes are changed.

Design of Equipment

Hunter Water has adopted the Water Services Association of Australia (WSAA) Water Supply Code (WSA03) and has details of asset design standards on its intranet page 'Water & Sewer Design Manuals'.¹³⁰

Element 10:

Management of Documentation and Records

Hunter Water uses HP Records Manager (TRIM) as its record management system. Veolia, the Treatment Operations Service Provider, uses a SharePoint system called 'OnTap'. Hunter Water also has a SharePoint site 'Reservoir' that it uses to provide information on its DWQMS. Both of the Hunter Water systems were observed during the audit.

Hunter Water uses the document control system Integrum to manage periodic reviews. The process for document management and control is in the Procedure – Manage Document Control.¹³¹ This procedure details the steps required for the creation, review and retirement of documents. It was not examined during this audit.

Many of the documents and records used for the operation of the WTPs are maintained by Veolia. Veolia has its own records management procedure¹³² for the Hunter Water contract and uses a corporate document management procedure.¹³³

¹²⁶ HW2015-1449 1 11.003 Article – Extract from R&D Projects and Assessment Guide.

¹²⁷ HW2009-136 27.001 Agreement – Research and Development Committee Charter.

¹²⁸ HW2015-1449 1 11.023 Drinking Water Quality Management Plan – Veolia.

¹²⁹ HW2007-2744 5.082 Guideline – QC052 Design and Validation Guideline.

¹³⁰ HW2015-1449 1 5.060 Presentation – Screenshot Hunter Water Design Manual Page.

¹³¹ HW2012-441 9 1.002 Procedure – Manage Document Control.

¹³² HW2015-1449 1 11.031 Veolia Records Management Procedure.

¹³³ HW2015-1449 1 11.032 Veolia Document Management Procedure.

Reporting

Reporting to IPART and NSW Health is covered in the *Hunter Water Reporting Manual Operating Licence 2017-2022*.¹³⁴ The Compliance Calendar¹³⁵ is used to track regulatory reporting.

The Veolia Drinking Water Quality Management Plan¹³⁶ details reporting to Hunter Water; this includes 'as required' reporting in relation to specific issues and regular monthly contract reports. This is undertaken in accordance with the contract practice notes.¹³⁷

The DWQMSM¹³⁸ discusses internal and external reporting; however the manual does not provide specific detail in relation to internal reporting. It was noted during the audit that internal reporting does take place, such as the Network Performance Report. It would be beneficial, from a system perspective, to document the internal reporting requirements in the DWQMSM.

OFI-HWC-2017/18-08: Document specific internal reporting requirements in the DWQMSM. This may include details of the required reports, frequency and any supporting information required for preparation.

Element 11:

Long-term Evaluation of Results

Long-term trends are analysed as part of the risk assessment process. A summary of water quality data analysis is contained in the briefing papers discussed in Element 2. WTP risk assessments are reviewed approximately every operating licence period.

Audit of Drinking Water Quality Management

Hunter Water's Integrated Management System (IMS) requires an internal audit program. An internal audit procedure¹³⁹ has been developed, which details the steps of undertaking an audit. The following audit registers have been developed:

- Internal management systems;
- ALS Contract; and
- WTP Audit.

The DWQMSM¹⁴⁰ states that:

- Under the Treatment Operations Contract, Veolia is required to establish and implement a DWQMS assessed by an independent DWQMS qualified auditor as being fully compliant with the requirements of the ADWG Framework for Management of Drinking Water Quality.
 - The Treatment Operations team also undertakes procedure-based site inspection audits of the WTPs.
 - Under the Laboratory Services Contract, ALS is required to establish and maintain NATA accreditation during the contract term.
-

¹³⁴ Hunter Water Reporting Manual Operating Licence 2017-2022.

¹³⁵ HW2012-778 77.001 Data – Compliance Calendar.

¹³⁶ HW2015-1449 1 11.023 Drinking Water Quality Management Plan – Veolia.

¹³⁷ Procedure - PN111 - Drinking Water Standards.

¹³⁸ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.

¹³⁹ HW2013-421 11.002 Procedure - Conduct management System Internal Audit.

¹⁴⁰ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.

Element 12:

Review by Senior Executive

The Hunter Water DWQMSM¹⁴¹ states that an annual Integrated Management System Review Meeting is held with the Executive Management Team. The Drinking Water Quality Management System is considered as a subsection and incorporated into the standard meeting agenda;¹⁴² however, this is very high-level. The pre-reading¹⁴³ for the review shows that the performance of the DWQMS was considered during the meeting.

Drinking Water Quality Management Improvement Plan

Hunter Water maintains all drinking water quality management improvement actions in a corporate register, the Drinking Water Quality Improvement Plan (DWQIP).¹⁴⁴

The progress of the DWQIP is updated and reported through the monthly Water Quality Committee as a standing agenda item.¹⁴⁵

Recommendations

The following recommendations in respect of this sub-clause:

Element 2:

- **REC-HWC-2017/18-02:** By 30 June 2019, the risk assessment process should be made clear and transparent. It recommended that the risk process is reviewed, clearly mapped out and documented to ensure that all stakeholders are able to follow the process easily. Documentation should include all relevant data that is used to inform the risk assessment, including for example, non-detections of *E. coli*.
- **REC-HWC-2017/18-03:** By 30 June 2019, the hazardous event of receiving water from Central Coast Council needs to be clearly identified in the risk assessment and preventive/control measures must be documented and implemented.

Element 4:

- **REC-HWC-2017/18-04:** By 30 June 2019, the improvement actions identified in the 2018 risk assessment should be prioritised to ensure maintenance hygiene procedures are reviewed to ensure that consistent hygiene practices are implemented and are auditable. These should include the disinfection of tools, personal hygiene (in relation to workwear), disinfection and storage of parts/pipes, working clearances to prevent contamination, flushing, reinstating a service and acceptance criteria.

Opportunities for improvement

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

Element 1:

- **OFI-HWC-2017/18-02:** It would be beneficial to have a consolidated list of stakeholders who could affect, or be affected by, decisions or activities of Hunter Water, stored in one location. This list could simply reference documentation that relates to the terms of engagement for the relevant stakeholder.

¹⁴¹ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.

¹⁴² HW2013-1447 2.024 Agenda – Management Systems Review Meeting – Aug 2017.

¹⁴³ HW2013-1447 2.022 Report – Pre-reading for Management Systems Review August 2017.

¹⁴⁴ HW2006-2906 10 2.005 Register – Drinking Water Quality Improvement Plan.

¹⁴⁵ HW2006-1417 30 6.007 Minutes – July 2018 WQCM.

Element 2:

- **OFI-HWC-2017/18-03:** All boxes/fields in registers should be filled-in; if a field is not applicable it should be marked as such. Empty fields in risk assessments especially can be interpreted as not having been considered.

Element 3:

- **OFI-HWC-2017/18-04:** It would add to clarity if there was a register/list of control measures by process from catchment to consumer, with a related procedure for implementation and responsibility (e.g. HWC, Veolia, ALS).

Element 4:

- **OFI-HWC-2017/18-05:** Update the CCP Response Plan for Dungog to include alkalinity.

Element 5:

- **OFI-HWC-2017/18-06:** Review the DWQMSM to reference documentation, such as the Corporate Emergency Management Plan, for corrective action taken in response non-conforming verification monitoring.


Element 7:

- **OFI-HWC-2017/18-07:** Review the awareness training material and ensure that examples are current.

Element 10:

- **OFI-HWC-2017/18-08:** Document specific internal reporting requirements in the DWQMSM. This may include details of the required reports, frequency and any supporting information required for preparation.
-

Table 3.7 Drinking Water (sub-clause 3.1.2)

Sub-clause	Requirement	Compliance Grade
3.1.2	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 Drinking Water Quality Management System and to the satisfaction of NSW Health.	 Compliant

Risk

If the Drinking Water Quality Management System is not fully implemented, there is a high risk that Hunter Water may not be able to effectively manage risks to drinking water quality and protect public health.

Target for Full Compliance

Evidence that the Drinking Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, and to the satisfaction of NSW Health.

Evidence sighted

General:

- Hunter Water response to 2018 Audit Questionnaire.

Further evidence is listed by ADWG Element in the following.

Element 1:

- HW2015-1449 1 9.040 Drinking Water Quality Awareness Training Material.
- HW2013-421 9.007 Register - Summary of Corporate Reporting Requirements.
- HW2013-421 9.006 Register - Legal and Other Requirements – Quality.
- HW2012-441 23 1.029 Procedure - Managing Legal and Other Requirements.
- HW2006-1448 53 4.015 Minutes - Hunter Water NSW Health Liaison Committee Meeting - 7 March 2018.
- HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.
- Procedure - PN111 - Drinking Water Standards.
- MCR CSO341 July 2018.

Element 2:

- HW2015-1365 16.005 Plan - Flow Diagram - Dungog Water Supply System.
- HW2015-705 1.002 Dungog WTP.
- S09-13 16 1.005 Distribution Network.
- HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.
- HW2015-1365 17.002 Report - Chichester Catchment Risk Assessment Briefing Paper.
- HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.
- HW2008-704 17.004 Procedure Enterprise Risk Management Framework.
- HW2015-1365 18.009 Report - Dungog WTP Risk Assessment Summary Report.
- HW2006-2906 8 33.014 Drinking Water Quality Risk Assessment Calendar.
- HDR1204-04-D-REG HWC Distribution System Risk.
- HW2006-1417 30 8.008 Minutes – Water Quality Committee – September 2018.
- Report - HDR1204-02-B-REP HWC Distribution System Risk Review Briefing Paper.

Element 3:

- AOMS 532424 (Fennell Bay DN375 Trunkmain Break).
- Dungog Daily WQ Test Sheet 7/11/2018.
- Dungog Instrument Calibration Checklist – Weekly Print Out Sheet 5/11/2018.
- Dungog WTP – Weekly PMT Duties 5/11/2018.
- Dungog WTP Daily Datasheet 7/11/2018.
- Email: Super-chlorination Fennel Bay Flushing Procedures.
- HDR1204-04-D-REG HWC Distribution System Risk.
- HW2006-2906 4 6.023 procedure to notify NSW Health of events with potential public health impact.
- HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response.
- HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.
- HW2015-1160 3 17.015 Article - SCADA Screen Shots Critical Limit Alarms WTPs.
- HW2015-1449 1 11.006 Email - Reservoir Inspections and Repairs - KPI Report for July.
- HW2015-1449 1 9.040 Drinking Water Quality Awareness Training Material.
- Procedure - Flushing and Recharge Procedure - 375 Trunk Main Fennel Bay.
- Procedure – Super-chlorination Trunk Main Fennel Bay (Initial).

Element 4:

- HW2015-1449 1 11.005 Reservoir SharePoint page.
- HW2015-1449 1 11.034 Veolia on tap screen shot.
- HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.
- HW2015-1449 1 11.024 WIS-3180 HW - Water Treatment Sampling Manual.
- HW2015-1449 1 11.037 Dungog calibration records.
- HW2015-1449 1 11.038 Certificate of Analysis 4239252.
- HW2015-1449 1 11.025 TEM-2833 HW - Chemical Delivery Work Permit – Fluoride.
- Dungog Daily WQ Test Sheet 7/11/2018.
- Dungog Instrument Calibration Checklist – Weekly Print Out Sheet 5/11/2018.
- Dungog WTP – Weekly PMT Duties 5/11/2018.
- Dungog WTP Daily Datasheet 7/11/2018.
- Procedure - Flushing and Recharge Procedure - 375 Trunk Main Fennel Bay.
- Procedure – Super-chlorination Trunk Main Fennel Bay (Initial).
- AOMS 532424 (Fennell Bay DN375 Trunkmain Break).
- Email: Super-chlorination Fennel Bay Flushing Procedures.
- HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.
- PRO-6185 HW - WTP Bulk Chemical Ordering, Delivery and Quality Management – 1.

Element 5:

- HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.
 - HW2006-1417 30 9.005 Network Operations Report - September 2018.
 - HW2015-1449 1 11.041 Customer Complaints Handling Standard.
 - HW2015-1449 1 11.049 Customer Complaints Handling Guidelines.
 - HW2008-235 7.001 Service Fault Map.
-

-
- HW2008-235 6.017 Guideline - Water Quality – Chlorine.
 - HW2008-235 6.016 Guideline - Water Quality - Air - White.
 - HW2015-1449 1 11.010 Email - High Geosmin result.
 - HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response.
 - Completed report for DMAN-3FDCF4.
 - Email - Re E. coli detection – 7 Alana Close, Edgeworth.
 - Minutes – Hunter Water NSW Health Liaison Committee Meeting – 27 June 2018.
 - Report – Quarterly to NSW Health – Drinking Water and Recycled Water Exceptions April to June 2018.
 - HW2010-1986 8.023 Procedure – Water Quality Exception Reporting.
-

Element 6:

- Completed report for DMAN-3FDCF4.
 - Hunter Water - Business Resilience Training Course Attendance – 30 August 2018.
 - Hunter Water – Spreadsheet – Business Resilience Emergency Participants 2018.
 - HW2006-1448 41 9.007 Report - Quarterly to NSW Health - Drinking Water and Recycled Water Quality Exceptions April to June 2018.
 - HW2008-947 8 10.014 Email - TO HEALTH - *E. coli* Detect at Coal Point 2 Reservoir on 3 July 2018.
 - HW2010-1986 8.023 Procedure – Water Quality Exception Reporting.
 - Report – Quarterly to NSW Health – Drinking Water and Recycled Water Exceptions April to June 2018.
-

Element 7:

- HW2015-1449 1 11.011 HWC Training Report August 2018.
 - HW2015-1449 1 11.046 Drinking Water Quality Training and Completion report.
 - HW2015-1449 1 5.016 Report - Lab Staff Training Record Example.
 - HW2015-1449/1/11.043 PD – manager water network.
 - HW2015-1449/1/11.042 PD – manager water treatment.
 - HW2015-1449/1/11.044 PD – manager water planning.
 - MCR Extract Sep 2018 - Section 10 HR.
-

Element 8:

- CCF Minutes October 2017.
 - Consultative Committee Williamtown Update 24 Oct 17.
 - Hunter Water - Business Resilience Training Course Attendance – 30 August 2018.
 - Hunter Water – Spreadsheet – Business Resilience Emergency Participants 2018.
 - HW2011-662 5 35.004 Agenda and Meeting Papers - May 2018 – CCAG.
 - HW2015-1449 1 11.009 Article - Twitter page - From our catchment to your taps.
 - HW2015-1449 1 11.011 HWC Training Report August 2018.
 - HW2015-1449 1 9.018 Article - Twitter Page 2 of 2.
 - HW2015-1449 1.010 Article - Twitter Page 1 of 2.
 - MCR Extract Sep 2018 - Section 10 HR.
 - Report – Quarterly to NSW Health – Drinking Water and Recycled Water Exceptions April to June 2018.
-

Element 9:

- HW2006-1417 30 8.005 Network Operations Report - August 2018.
- HW2015-1449 1 11.003 Article - Extract from R&D projects and assessment guide.
- HW2015-1449 1 11.050 Assessment & Management of Aesthetic & Health Risks Associated with Cyanobacteria.
- HW2015-1449 1 5.060 Presentation – Screenshot Hunter Water Design Manual Page.
- Report - Disinfection Optimisation Strategy Report Final.

Element 10:

- HW2012-441 9 1.002 Procedure – Manage Document Control.
- HW2015-1449 1 11.005 Reservoir SharePoint page.
- HW2015-1449 1 9.008 Article - Screenshot of TRIM Workspace.
- HW2015-1160 3 17.005 Article - Integrum - WQ Incident.
- Completion report for DMAN-3FDCE4.
- AOMS 532424 (Fennell Bay DN375 Trunkmain Break).
- HW2006-1417 30 8.005 Network Operations Report - August 2018.
- HW2006-1448 41 9.007 Report - Quarterly to NSW Health - Drinking Water and Recycled Water Quality Exceptions April to June 2018.
- MCR Extract Sep 2018 - Section 10 HR.
- HW2015-1449 1 11.004 Report - Monthly-Drinking-Water-Quality-Summary August-2018.
- Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

Element 11:

- <https://www.hunterwater.com.au/Water-and-Sewer/Water-Supply/Water-Quality/Water-Quality.aspx>.
- HW2006-1417 30 8.005 Network Operations Report - August 2018.
- HW2006-1417 30 8.006 Report - Monthly Catchment Report - August 2018.
- HW2014-778 40.011 Register - WTP Audit Register - Water Treatment Operations.
- HW2015-106 7 2.001 Register - ALS Lab Contract Audit Register.
- HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.
- HW2015-1343 15 2.004 Report - HDR1204-11-C-REP HWC DWQMS Update Short Form Report.
- HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.
- HW2015-1365 17.002 Report - Chichester Catchment Risk Assessment Briefing Paper.
- HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.
- Turbidity meter cleaning observation summary.
- Turbidity meter cleaning procedure with mark-up from audit.

Element 12:

- HW2013-1447 2.022 Report - Pre-reading for Management Systems Review August 2017.
 - HW2013-1447 2.023 Presentation - Management System Review Meeting August 2017.
 - HW2013-1447 2.024 Agenda - Management Systems Review Meeting - Aug 2017.
 - HW2013-1447 2.025 Minutes - Management System Review Meeting 14 August 2017.
 - HW2006-1417 30 6.007 Minutes - July 2018 WQCM.
-

-
- HW2006-2906 10 2.005 Register - Drinking Water Quality Improvement Plan.
 - HW2006-1448 53 5.016 Minutes - Hunter Water NSW Health Liaison Committee Meeting - 27 June 2018.
 - HW2018-198 10.001 Report - EXECUTIVE brief - Water System Performance – August 2018.
 - HW2015-1449 1 11.019 email requesting executive endorsement of audit responsibilities.
 - HW2015-1449 1 11.021 email requesting executive feedback on audit results.
 - HW2015-1449 1 11.020 email communicating final audit results to executives.
 - Register - HDR1204-04-D-REG HWC Distribution System Risk – FINAL.
-

Summary of reasons for grade

There were some OFIs highlighted for this sub-clause, which were seen only to contribute to continual improvement. It was considered that Hunter Water implements the plan well, as it stands. Also, that Veolia were very capable and implemented the WTP component of the plan well. It was clear to see that since the contract has started Hunter Water and Veolia have developed a strong working relationship and both parties are working to maintain it.

Discussion and notes

Implementation of the Drinking Water Quality Management System is discussed below by ADWG Element.

Element 1:

Drinking Water Policy

Hunter Water has a drinking water policy,¹⁴⁶ which is available on the Hunter Water website, physically at head office on the wall (viewed in break room) and in TRIM. The DWQMS has an intranet site (Reservoir) and the policy TRIM number is available from the site, however, it is not clickable and was a bit awkward to locate as the number couldn't be simply copied and pasted.

Induction awareness training¹⁴⁷ includes details of the policy.

Regulatory and Formal Requirements

The procedure¹⁴⁸ for identifying and managing legal and other requirements requires an annual review of legal requirements, which are in the Legal and Other Requirements Register.¹⁴⁹ Changes in legislation are discussed at Water Quality Committee meetings; it is a standing agenda item in the Terms of Reference.¹⁵⁰ Evidence that this occurs can be seen in the minutes of a Water Quality Committee meeting.¹⁵¹

The change history of the register shows when it was last updated, the most recent being on 27 June 2017; however, the register is not changed upon every review and review dates are not shown. Therefore, the currency of the register is not clear. . **OFI-HWC-2017/18-09:** It would be beneficial to include a review date in the Legal and Other Requirements Register to show that it has been reviewed within the 12-month period to provide confidence in the contents.

The Legal and Other Requirements Register does not include the version or date of legal and other requirements. This is useful from a currency perspective; however, to ensure changes to legislation are recognised and reviewed by the business it is not ideal. **OFI-HWC-2017/18-10:**

¹⁴⁶ HW2006-2968 41 44.001 Policy - Drinking Water Policy.

¹⁴⁷ HW2015-1449 1 9.040 Drinking Water Quality Awareness Training Material.

¹⁴⁸ HW2012-441 23 1.029 Procedure - Managing Legal and Other Requirements.

¹⁴⁹ HW2013-421 9.006 Register - Legal and Other Requirements – Quality.

¹⁵⁰ HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.

¹⁵¹ HW2006-1448 53 4.015 Minutes - Hunter Water NSW Health Liaison Committee Meeting - 7 March 2018.

Consider including a current version column in the Legal and Other Requirements Register.

Based on the evidence supplied for the Compliance Calendar¹⁵² it appears to be used. It includes details of recommendations from previous audits and details of actions that have been updated.

Hunter Water has an operation and maintenance contract with Veolia. Hunter Water undertakes contract audits to ensure that Veolia operates in accordance with the contract. This is discussed in Element 10. The contract details water quality requirements in the Water Quality Practice Note (PN111).¹⁵³ These are reported in the monthly contract report¹⁵⁴ and can also be tracked in real-time via the SCADA system. Hunter Water can view Veolia SCADA data and alarms.

Hunter Water also supplies treated water to MidCoast Water and Central Coast Council, however, the connection to Central Coast Council is bidirectional and Hunter Water can receive treated water in the opposite direction. Agreements are in place that require water quality to meet the ADWG (not sighted).

The Central Coast Council connection is for drought relief and in times of adequate water the pipeline is operated in a way that there is no net exchange of water. At the time of the audit Central Coast Council is receiving 15 ML per day.

At present there is no online water quality monitoring for the water supplied from Central Coast Council. There is routine network monitoring (verification) in the network to identify any water quality issues and there is a requirement to notify of a water quality issue. The installation of online water quality monitoring instrumentation is being investigated (turbidity, chlorine, pH, temperature).

Historically, sometimes there can be low chlorine from the Central Coast Council water. In response, Hunter Water has increased manual chlorine tablet dosing in reservoirs. There is a current investigation to upgrade automated chlorine dosing in the zone as part of an augmentation of the Central Coast Council connection.

MidCoast Water supply is much smaller, with approximately 20 customers. MidCoast Water has a sample point in its distribution network to notify Hunter Water if there is an issue.

Engaging Stakeholders

Contact details of key contractors and NSW Health were observed in the Hunter Water 'Reservoir' SharePoint site, including Veolia and ALS.

Minutes¹⁵⁵ were provided for the Hunter Water/NSW Health Liaison Committee meeting held on 7 March 2018 to demonstrate that engagement is taking place.

Element 2:

Water Supply System Analysis

Hunter Water has a Water Quality Committee in place, the terms of reference¹⁵⁶ including the endorsement of significant changes to the DWQMS and review of operational performance and trend in monitoring results. Water Quality Committee minutes were provided for September 2018.¹⁵⁷

The flow diagrams for Dungog^{158,159} were updated as part of the risk assessment process, which was undertaken on 13/14 August 2018. The WTP flowchart¹⁶⁰ was reviewed during the inspection of the Dungog WTP and based on the evidences observed is current and correct.

¹⁵² HW2012-778 77.001 Data - Compliance Calendar.

¹⁵³ Procedure - PN111 - Drinking Water Standards.

¹⁵⁴ MCR CSO341 July 2018.

¹⁵⁵ HW2006-1448 53 4.015 Minutes - Hunter Water NSW Health Liaison Committee Meeting - 7 March 2018.

¹⁵⁶ HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.

¹⁵⁷ HW2006-1417 30 8.008 Minutes – Water Quality Committee – September 2018.

¹⁵⁸ HW2015-1365 16.005 Plan - Flow Diagram - Dungog Water Supply System.

Assessment of Water Quality Data

Water quality data assessment for the Dungog scheme was last updated as part of the risk assessment. Raw water data was assessed in detail in the Chichester Dungog Water Quality Data Summary¹⁶¹ dated 31 July 2018 and summarised in the HACCP Workshop Briefing Paper (Chichester Catchment).¹⁶² Water quality at the Dungog WTP is in the HACCP Workshop Briefing Paper¹⁶³ issued on 10 August 2018. Distribution water quality was detailed in the Distribution Risk Assessment Briefing Paper.¹⁶⁴

It was noted that there were gaps in fluoride dosing. These require notification to NSW Health; a number of emails notifying NSW Health of periods of low or no fluoride dose from June to September 2017, as well as in May 2018, were sighted.

Hazard Identification and Risk Assessment

A comment was received from NSW Health regarding Hunter Water updating the Enterprise Risk Management Framework.¹⁶⁵ The corporate risk management framework was being reviewed and NSW Health thought that they should have been engaged in this process earlier.

Hunter Water explained that the framework had not been applied to the water quality risk assessments prior to raising it with NSW Health. NSW Health did get the opportunity to review the framework and made some changes to the public health descriptors, which was an existing issue and this was an opportunity to address them. **OFI-HWC-2017/18-11:** Engage with NSW Health during the planning and development stages of items that may impact upon public health or be a significant change in the DWQMS, rather than presenting finished articles for review. This will minimise future communication issues.

Risk assessment registers were reviewed to ensure that they covered the risks observed during the site inspections. When considering the Dungog WTP chemical dosing, risks only appear to be considered at a very high level. The only hazardous event for pre-dosing of lime, alum, polymer and chlorine is *Failure of pre-treatment equipment (mixers) and/or instrumentation (online raw water pH & turbidity meters) resulting in an under / over dosing situation*. There is also a hazardous event for filtration failure *Filter failure resulting in breakthrough due to sub-optimal backwash program i.e. frequency, duration, lack of monitoring*. The controls in place would seem to manage the event of chemical dosing failure, over or under, but it's not clear that they have been fully considered, based on the event description. **OFI-HWC-2017/18-12:** The risk assessment should assess hazardous events systematically following the process flowchart. It should be clear that failure modes of each process have been considered; where assumptions have been made these should be documented.

The distribution risk assessment,¹⁶⁶ although clear to read, appears to miss the risk of Hunter Water being supplied water from Central Coast Council. Water is supplied through a bi-directional pipeline and there have been instances where water supplied has resulted in a reduced chlorine residual in the Hunter Water reticulation. There is a hazardous event in relation to the Handover Point (CWT outlet or other), however, this appears to relate to Veolia and the controls do not appear to cover this scenario. This is covered in a recommendation under sub-clause 3.1.1 (refer **Table 3.6**).

¹⁵⁹ HW2015-705 1.002 Dungog WTP Process Flow Diagram.

¹⁶⁰ HW2015-705 1.002 Dungog WTP Process Flow Diagram.

¹⁶¹ HW2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.

¹⁶² HW2015-1365 17.002 Report - Chichester Catchment Risk Assessment Briefing Paper.

¹⁶³ HW2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.

¹⁶⁴ Report - HDR1204-02-B-REP HWC Distribution System Risk Review Briefing Paper.

¹⁶⁵ HW2008-704 17.004 Procedure Enterprise Risk Management Framework.

¹⁶⁶ HDR1204-04-D-REG HWC Distribution System Risk.

Element 3:

Preventive measures and Multiple Barriers

Preventive measures are documented as referred to in **Table 3.6** of this report. Implementation of a sample of these preventive measures was reviewed during the audit. During the walk through at the Dungog WTP, the preventive measures as stated in the CCP Limit Table¹⁶⁷ were being implemented. The following records were observed onsite:

- Dungog WTP Daily Datasheet 7 November 2018;
- Dungog Daily WQ Test Sheet 7 November 2018;
- Dungog WTP – Weekly PMT Duties 5 November 2018; and
- Dungog Instrument Calibration Checklist – Weekly Print Out Sheet 5 November 2018.

Preventive measures in the distribution system were undertaken by Hunter Water and are documented in the distribution risk assessment.¹⁶⁸ During the site inspections of the North Lambton Maintenance Depot and Reservoir and the planned maintenance activity distribution, preventive measures were reviewed. The following observations were made:

- An example of a control measure in the Drinking Water Quality Awareness¹⁶⁹ training for maintenance is the capping of stored pipes. This is identified in the 2014 risk assessment¹⁷⁰ (DISTR-012) as a treatment action, but has not been implemented based on observed stored pipes at the North Lambton Depot and the 2018 risk assessment (DISTR-008).
- Water quality acceptance criteria (current control DISTR 008), other than a visual turbidity assessment, are not in place for minor jobs and water quality testing is not undertaken after maintenance activities. For larger jobs individual procedures are developed, an example of which was supplied:
 - AOMS 532424 (Fennell Bay DN375 Trunkmain Break);
 - Email: Superchlorination Fennel Bay Flushing Procedures;
 - Procedure - Flushing and Recharge Procedure - 375 Trunk Main Fennel Bay; and
 - Procedure - Superchlorination Trunk Main Fennel Bay (Initial).
- The work instruction for working on potable water mains,¹⁷¹ as viewed during the audit, is mainly work health and safety focussed, but does include some control measures.
- A work instruction for the disinfection of tools is referred to as a control measure in the risk assessment (DISTR_004).
- The trucks have *Atmosphere Odor Control* on board, which is primarily for odour control, but the active ingredient (alkyl dimethyl benzyl ammonium chloride) does appear to be a disinfectant. The use of the disinfectant, cleaning of equipment and changing clothes (note crews work on both sewer and water jobs) is ad-hoc.
- Bird wire meshing is a control for risk RES_003, as well as reservoir inspections. On an inspection of North Lambton Reservoir there appeared to be an area which was not vermin proof where the roof meets the access point platform; holes in the roofing ridges were not sealed behind the gutter. This is covered in a previous recommendation, 2016/17-04 and is reviewed in **Table 4.5**.

¹⁶⁷ HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.

¹⁶⁸ HDR1204-04-D-REG HWC Distribution System Risk.

¹⁶⁹ HW2015-1449 1 9.040 Drinking Water Quality Awareness Training Material.

¹⁷⁰ HDR1204-04-D-REG HWC Distribution System Risk.

¹⁷¹ WI 001 – Working on Potable Water Mains and Fittings.

It is considered that shortcomings identified are addressed in the recommendation in relation to hygiene procedures (**REC-HWC-2017/18-04**) detailed **Table 3.6**.

Critical Control Points

CCPs are documented as referred to in **Table 3.6** of this report. Critical limits, as well as the other limits and targets, are coded into SCADA. There are two levels of SCADA; local SCADA at the plants, which contains the operational limits, and the Hunter Water SCADA, which has the critical limits coded in. The SCADA limits were compared to the documented limits and they appear to be consistent based on the sample observed for the Dungog WTP.

There is a procedure for the response to CCP exceedances.¹⁷² This procedure documents the course of action to take if there is an exceedance.

Element 4:

Operational Procedures

Based on the Dungog site inspection it could be seen that operational procedures were being followed. Records for routine inspection, maintenance and monitoring were observed on site.^{173,174,175,176}

For jobs on trunk mains, specific operational procedures are developed. These are detailed procedures and are prepared to manage water quality. An example has been provided for a job completed in Fennel Bay between December 2017 and January 2018.¹⁷⁷ This included a super-chlorination procedure¹⁷⁸ and a flushing and recharge procedure.¹⁷⁹ This included acceptance criteria to ensure that the water quality met required standards prior to mains being brought online. Although, it seems to be the practice to prepare these procedures for mains breaks, it is not clear in the DWQMSM when these need to be undertaken.

OFI-HWC-2017/18-13: It should be clearer in documentation when specific procedures are required (e.g. job specific isolation procedures), or in the instance of a risk-based process how the risk is assessed.

Operational Monitoring

Operational monitoring is detailed in the CCP Tables¹⁸⁰ as discussed in **Table 3.6** of this report. Details of monitoring are recorded in the respective WTP spreadsheet; the Dungog WTP spreadsheet was provided as evidence.¹⁸¹ Hunter Water uses the EnviroSys Environmental Data Management System to store water quality data. The plant spreadsheet extracts new operation data every day and sends an automatic email with a CSV file attached. EnviroSys can upload this data to the database. In this way Hunter Water has a complete set of operational data.

The SCADA system is the corporate database used for storing online operational measurements; the system was viewed during the site inspections. WTP online data is accessible by Hunter Water and Veolia.

¹⁷² HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response.

¹⁷³ Dungog Daily WQ Test Sheet 7/11/2018.

¹⁷⁴ Dungog Instrument Calibration Checklist – Weekly Print Out Sheet 5/11/2018.

¹⁷⁵ Dungog WTP – Weekly PMT Duties 5/11/2018.

¹⁷⁶ Dungog WTP Daily Datasheet 7/11/2018.

¹⁷⁷ AOMS 532424 (Fennell Bay DN375 Trunkmain Break).

¹⁷⁸ Procedure - Superchlorination Trunk Main Fennel Bay (Initial).

¹⁷⁹ Procedure - Flushing and Recharge Procedure - 375 Trunk Main Fennel Bay.

¹⁸⁰ HW2014-778 15 2.005 Register – Dungog WTP CCP Limit Table.

¹⁸¹ HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.

Corrective Action

Plant spreadsheet for Dungog was shown during the audit. If there is a non-compliant result, an email is sent to a group of supervisors. Also, the Data Check tab in the plant spreadsheet includes commentary and action taken on items in the spreadsheet that are out of specification.

Veolia creates annotations on SCADA trends to explain anomalies; this was observed at the Dungog WTP. An annotation was sighted on a turbidity trend on the outlet of the Clear Water Tank on 5 November 2018.

Equipment capability and maintenance

The plant spreadsheet¹⁸² is also used to record the calibration of laboratory and online instruments.

External calibrations are undertaken by external suppliers such as HACH and MERC. An example shown during the audit was for the Dungog Turbidity meter, 2100 Laboratory Turbidimeter Maintenance and Calibration Report (14 August 2018).

Hunter Water and Veolia are part of an inter-laboratory testing program, where a number of laboratories test the same sample, the Aged Water Program.

Materials and Chemicals

Chemical deliveries are supervised by either Hunter Water or Veolia staff, depending on whether the delivery is for the WTP or a re-chlorination site in the distribution network. Details of deliveries at the WTP are recorded in the WTP spreadsheets. Certificates of analysis are received for supplied chemicals; a number were sighted.¹⁸³ Delivery dockets¹⁸⁴ are received for all chemicals supplied. Veolia has a chemical delivery procedure¹⁸⁵ that includes acceptance criteria for the bulk chemical received.

Element 5:

Drinking Water Quality Monitoring

Verification monitoring is detailed in the Drinking Water Quality Monitoring Program.¹⁸⁶ This details the locations, frequency and parameters to be monitored. All monitoring data is stored on the EnviroSys.

A sample of data (*E. coli* monitoring for the Dungog WTP/Chichester system) was reviewed to determine compliance with the monitoring plan. The program states that a minimum of 14 (364/annum) samples per fortnight are required and 18 (468/annum) samples per fortnight were taken. When looking at the data, 457 results were obtained in the 2017/2018 period.

Hunter Water was well over the required number of samples, but fell short of the estimated number of samples. This was mostly due to the samples on 29 May 2018 not being tested for *E. coli*, only HPC.

Customer Satisfaction

Customer complaints are recorded in Hunter Water's corporate Assets Operations Maintenance System (AOMS). A summary of customer complaint information is reported, including to the Water Quality Committee, on a monthly basis in the Network Operations Report.¹⁸⁷

¹⁸² HW2014-1579 2.005 Dungog WTP Plant Spreadsheet.

¹⁸³ HW2015-1449 1 11.038 Certificate of Analysis 4239252.

¹⁸⁴ ATD - IXOM delivery docket.

¹⁸⁵ PRO-6185 HW - WTP Bulk Chemical Ordering, Delivery and Quality Management – 1.

¹⁸⁶ HW2006-2906 2 6.006 Water Quality Monitoring Plan.

¹⁸⁷ HW2006-1417 30 9.005 Network Operations Report – September 2018.

Short-term Evaluation of Results

During the audit period, *E. coli* was detected at 7 Alana Close, Edgeworth,¹⁸⁸ details of which were entered into Integrum. The sample was taken on 10 April 2018 and Hunter Water was notified by ALS on 11 April 2018 and it was reported to NSW Health on the same day. Notification was followed by an email to NSW Health,¹⁸⁹ including the Exception Report from ALS.

Hunter Water also inspected the upstream reservoirs, which were found to have some small holes in them. Follow-up samples were taken on the 11 & 12 April and no further *E. coli* was detected.

This issue was reviewed at the quarterly NSW Health Liaison meeting¹⁹⁰ and was also reported in the Hunter Water Exception Report.¹⁹¹

Corrective Action

In relation to the Edgeworth *E. coli* detection mentioned above, the corrective actions in accordance with the procedure for Water Quality Exception Reporting¹⁹² appear to have been followed.

Element 6:

Communication

There were no significant emergencies during the audit period; however, Hunter Water managed a number of incidents (WQ exceptions) during this period. These are discussed further below.

Based on the evidence supplied, notifications to NSW Health were made in accordance with the requirements.¹⁹³ Incident reports were provided for:

- *E. coli* at Edgeworth;¹⁹⁴ and
- *E. coli* at Coal Point Reservoir.¹⁹⁵

A sample of the exception reports to NSW Health¹⁹⁶ was also provided.

Incident and Emergency Response Protocols

As there were no incidents during the audit period, only a number of water quality excursions, Incident and Emergency Response Protocols were not enacted.

The Business Resilience Emergency Exercises Participants 2018 Spreadsheet¹⁹⁷ outlines the training undertaken in relation to the emergency management protocols. The Business Resilience Training Course Attendance (30 August 2018) sheet¹⁹⁸ was also provided as evidence of training undertaken by Hunter Water.

¹⁸⁸ Completed report for DMAN-3FD4CF4.

¹⁸⁹ Email - RE *E. coli* detection – 7 Alana Close, Edgeworth.

¹⁹⁰ Minutes – Hunter Water NSW Health Liaison Committee Meeting – 27 June 2018.

¹⁹¹ Report – Quarterly to NSW Health – Drinking Water and Recycled Water Exceptions April to June 2018.

¹⁹² HW2010-1986 8.023 Procedure – Water Quality Exception Reporting.

¹⁹³ HW2010-1986 8.023 Procedure – Water Quality Exception Report.

¹⁹⁴ Completed report for DMAN-3FD4CF4.

¹⁹⁵ HW2008-947 8 10.014 Email-TO HEALTH-E.coli Detected at Coal Point 2 Reservoir on 3 July 2018.

¹⁹⁶ Report – Quarterly to NSW Health – Drinking Water and Recycled Water Exceptions April to June 2018.

¹⁹⁷ Hunter Water – Spreadsheet – Business Resilience Emergency Participants 2018.

¹⁹⁸ Hunter Water - Business Resilience Training Course Attendance – 30 August 2018.

Element 7:

Employee Awareness and Involvement

Hunter Water requires all staff to attend a Corporate Induction Program, which includes drinking water management and requirements of the Australian Drinking Water Guidelines. Progress against this training requirement is reported monthly in the Hunter Water Training Snapshot.¹⁹⁹

Employee Training

WTP contractor's training, as required under the contract, is reported monthly.²⁰⁰

The laboratory contractor is required to maintain NATA certification, which requires employees to be trained accordingly.

Records of training for Hunter Water staff were viewed in Ellipse.

Element 8:

Hunter Water uses a range of methods to improve community awareness, including its website, social media^{201,202,203}, rangers (for the catchment) and a Community Advisory Group (CCAG). The meeting agenda and papers²⁰⁴ for the May 2018 meeting of this group were provided.

Hunter Water anecdotally also participates in a range of community events with its Hydration Station, manned by Hunter Water staff, who distribute water and discuss water-related issues with community members.

Community Consultation

Hunter Water also consults with the community directly on project specific matters. An ongoing example is the historic contamination of the Williamstown RAAF base with PFAS. This issue was raised with the Community Consultative Forum in the October 2017 meeting,²⁰⁵ where details of the contamination and proposed action were discussed.²⁰⁶

Element 9:

Investigative Studies and Research Monitoring

Hunter Water has conducted a number of relevant research projects during the audit period. This has included funding and in-kind contributions to WaterRA and WSAA on a number of projects, including microbial source tracking for drinking water sources and PFAS studies.²⁰⁷

A sample of the work being undertaken was provided as evidence of the assessment and management of water quality risks associated with Cyanobacteria.²⁰⁸ A presentation was also provided on the investigations that have been undertaken in relation to the legacy contamination at the Williamstown RAAF base. Hunter Water is installing drinking mains in the Salt Ash area, as many domestic bores are contaminated. In the meantime, bottled water is being provided by the Department of Defence and the NSW government. Hunter Water has also developed a PFAS management strategy for the Tomago Borefield in conjunction with NSW Health and the PFAS expert panel (Health, DPI water, consultants, Eco toxicologists). Guiding principles and the strategy has been signed off by the NSW government; this was sighted during the audit.

¹⁹⁹ HW2015-1449 1 11.011 HWC Training Report August 2018.

²⁰⁰ MCR Extract Sep 2018 - Section 10 HR.

²⁰¹ HW2015-1449 1.010 Article – Twitter Page 1 of 2.

²⁰² HW2015-1449 1 9.018 Article – Twitter Page 2 of 2.

²⁰³ HW2015-1449 1 11.009 Article – Twitter page – Form our catchment to your taps.

²⁰⁴ HW2011-662 5 35.004 Agenda and Meeting Papers – May 2018 – CCAG.

²⁰⁵ CCF Minutes October 2017.

²⁰⁶ Consultative Committee Williamstown Update 24 Oct 17.

²⁰⁷ HW2015-1449 1 11.003 Article – Extract from R&D projects and assessment guide.

²⁰⁸ HW2015-1449 1 11.050 Assessment & Management of Aesthetic & Health Risks Associated with Cyanobacteria.

Validation of Processes

Hunter Water has been running the Chlorination Strategy for a number of years. Chlorine residuals in the network are being mapped²⁰⁹ and improved by changing residuals out of the WTPs and using manual dosing. Hunter Water is about to start the next phase, which will require capital works to upgrade network chlorinators and additional dosing and mixing in key locations.²¹⁰

Performance of the WTPs has been assessed against the requirements of the Health Based Targets, as well as an assessment against the *Good Practice Guide to the Operation of Drinking Water Supply Systems for the Management of Microbial Risk*. Evidence was observed in Element 11, through the audits of the WTPs.

Design of Equipment

Hunter Water has adopted the Water Services Association of Australia (WSAA) Water Supply Code (WSA03) and has details of asset design standards on its intranet page 'Water & Sewer Design Manuals'.²¹¹

Element 10:

Management of Documents and Records

Throughout the audit, Hunter Water and Veolia demonstrated the systems in place for managing documents and records, including demonstrating the location and easy access to drinking water documents and records. Examples of systems for managing documentation include:

- Reservoir – Hunter Water's intranet workspace;²¹²
- TRIM – document management;²¹³
- Integrum – incident management,^{214,215} internal audits²¹⁶ and document management;
- Ellipse – asset management records;
- EnviroSys – monitoring data;
- SCADA – Operational monitoring data; and
- AOMS – Customer complaints and work orders.²¹⁷

Retrieval of requested documentation during the audit interviews was generally easy. However, it was noted during the audit that many of the documents referred to have only the TRIM reference provided. Documents would be more accessible if clickable links were provided.

OFI-HWC-2017/18-14: Consider inserting clickable links in the 'Reservoir' intranet site to open documents in TRIM.

Integrum is used to manage documents; this is in addition to TRIM that is used for storage and version control. Hunter Water is currently in the process of developing a new document control system to assist with electronic approval and notifications for scheduled periodic review.

²⁰⁹ HW2006-1417 30 8.005 Network Operations Report - August 2018.

²¹⁰ Report - Disinfection Optimisation Strategy Report Final.

²¹¹ HW2015-1449 1 5.060 Presentation – Screenshot Hunter Water Design Manual Page.

²¹² HW2015-1449 1 11.005 Reservoir SharePoint page.

²¹³ HW2015-1449 1 9.008 Article - Screenshot of TRIM Workspace.

²¹⁴ HW2015-1160 3 17.005 Article - Integrum - WQ Incident.

²¹⁵ Completion report for DMAN-3FDCF4.

²¹⁶ Turbidity meter cleaning observation summary.

²¹⁷ AOMS 532424 (Fennell Bay DN375 Trunkmain Break).

Reporting

Reports referenced in the DWQMS were produced based on the evidence. These reports include:

- Network performance report;²¹⁸
- Hunter Water Exception Report to NSW Health;²¹⁹
- Monthly contract report - Veolia to Hunter Water;²²⁰ and
- Monthly Drinking Water Quality Summary.²²¹

In addition, the *Compliance and Performance Report 2017-18*²²² outlines Hunter Water's performance over the financial year.

Element 11:

Long-term Evaluation of Results

Long-term water quality results are reviewed as part of the risk assessment process, which are undertaken every five years on a rolling basis. A summary of water quality from catchment to tap for each individual system can be found in the relevant risk assessment briefing papers.^{223,224}

Audit of Drinking Water Quality Management

The audit register²²⁵ for the WTPs was provided as evidence. There were 20 audits recorded in the audit period covering the following topics:

- IPART pre-audit inspection;
- Chemical dosing inspections;
- Safety systems checks;
- Good Practice guide site inspections; and
- General inspections.

A peer review of the DWQMS was undertaken within the audit period.²²⁶

The audit register for the laboratory contract was provided as evidence.²²⁷ There were 18 laboratory audits undertaken in the audit period; various test methods were observed including biological, chemical and physical parameters.

Evidence of an audit of a WTP operational procedure was provided. Audit of the *Cleaning of Online Turbidity Meters Anna Bay* was undertaken on 27 February 2018, as recorded in the Integrum record²²⁸ and marked up procedure.²²⁹

²¹⁸ HW/2006-1417 30 8.005 Network Operations Report - August 2018.

²¹⁹ HW/2006-1448 41 9.007 Report - Quarterly to NSW Health - Drinking Water and Recycled Water Quality Exceptions April to June 2018.

²²⁰ MCR Extract Sep 2018 - Section 10 HR.

²²¹ HW/2015-1449 1 11.004 Report - Monthly-Drinking-Water-Quality-Summary August-2018.

²²² Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

²²³ HW/2015-1365 17.009 Report - Dungog WTP Risk Assessment Briefing Paper.

²²⁴ HW/2015-1343 16 8.004 File note - Chichester Dungog Water Quality Data Summary.

²²⁵ HW/2014-778 40.011 Register - WTP Audit Register - Water Treatment Operations.

²²⁶ HW/2015-1343 15 2.004 Report - HDR1204-11-C-REP HWC DWQMS Update Short Form Report.

²²⁷ HW/2015-106 7 2.001 Register - ALS Lab Contract Audit Register.

²²⁸ Turbidity meter cleaning observation summary.

²²⁹ Turbidity meter cleaning procedure with markup from audit.

Element 12:

Review by Senior Executive

The Hunter Water DWQMSM²³⁰ states that an annual Integrated Management System Review Meeting is held with the Executive Management Team. The Drinking Water Quality Management System is considered as a subsection of this and is incorporated into the standard meeting agenda,²³¹ however this is very high-level. The pre-reading²³² for the review shows that the performance of the DWQMS was considered during the meeting.

Drinking Water Quality Management Improvement Plan

The progress of the DWQIP is reported monthly through the Water Quality Committee as a standing agenda item.²³³

The Drinking Water Quality Improvement Plan²³⁴ was provided as evidence. There was only one item, *Retrofit standpipes with backflow devices* that was overdue, however, it was given a revised completion date. Item 72, which included the capping of stored pipes, was closed; however, this is not currently undertaken, as observed at the North Lambton Maintenance Depot and as identified in the 2018 Distribution Risk Assessment.²³⁵ This is most likely due to an oversight as the item contained multiple actions. **OFI-HWC-2017/18-15:** When adding items to the DWQIP, try not to group multiple different actions or staged actions under the same item. This can make it difficult to close items out or lead to items being closed before every action is completed.

Improvements from the 2018 Distribution risk assessment are still to be added to the improvement plan. It is not entirely clear which items identified in the risk assessment have been resolved and no further action is required, and which need to be added to the improvement plan. There are currently no items in the register from the 2018 risk assessment; however, the risk register spreadsheet has a number of items in a *2018 Improvement Plan* tab.

OFI-HWC-2017/18-16: Keep the Drinking Water Quality Improvement Plan up-to-date; add items from risk assessments and other sources within a reasonable timeframe.

Recommendations

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

Opportunities for improvement

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

Element 1:

- **OFI-HWC-2017/18-09:** It would be beneficial to include a review date in the Legal and Other Requirements Register to show that it has been reviewed within the 12 month period to provide confidence in the contents.
- **OFI-HWC-2017/18-10:** Consider including a 'current version' column in the Legal and Other Requirements Register.

²³⁰ HW2015-1303 9.001 Report - Hunter Water Drinking Water Quality Management System.

²³¹ HW2013-1447 2.024 Agenda – Management Systems Review Meeting – Aug 2017.

²³² HW2013-1447 2.022 Report – Pre-reading for Management Systems Review August 2017.

²³³ HW2006-1417 30 6.007 Minutes - July 2018 WQCM.

²³⁴ HW2006-2906 10 2.005 Register - Drinking Water Quality Improvement Plan.

²³⁵ Register - HDR1204-04-D-REG HWC Distribution System Risk – FINAL.

Element 2:

- **OFI-HWC-2017/18-11:** Engage with NSW Health during the planning and development stages of items that may impact upon public health or be a significant change in the DWQMS, rather than presenting finished articles for review. This will minimise future communication issues.
- **OFI-HWC-2017/18-12:** The risk assessment should assess hazardous events systematically following the process flowchart. It should be clear that failure modes of each process have been considered, where assumptions have been made these should be documented.

Element 4:

- **OFI-HWC-2017/18-13:** It should be clearer in documentation when specific procedures are required (e.g. job specific isolation procedures), or in the instance of a risk-based process how the risk is assessed.

Element 10:


- **OFI-HWC-2017/18-14:** Consider inserting clickable links in the Reservoir intranet site to open documents in TRIM.

Element 12:

- **OFI-HWC-2017/18-15:** When adding items to the DWQIP, try not to group multiple different actions or staged actions under the same item. This can make it difficult to close items out or lead to items being closed before every action is completed.
 - **OFI-HWC-2017/18-16:** Keep the Drinking Water Quality Improvement Plan up-to-date; add items from risk assessments and other sources within a reasonable timeframe.
-

3.4.2 Recycled Water

Table 3.8 Recycled Water (sub-clause 3.2.1)

Sub-clause	Requirement	Compliance Grade
3.2.1	<p>Hunter Water must maintain a Management System for Recycled Water that is consistent with the Australian Guidelines for Water Recycling, except to the extent that NSW Health specifies otherwise in writing (the Recycled Water Quality Management System).</p> <p><i>[Note: It is expected that the Recycled Water Quality Management System will be consistent with the Australian Guidelines for Water Recycling, including the Framework for Management of Recycled Water Quality and Use. However, where NSW Health considers it appropriate, the application of the Australian Guidelines for Water Recycling 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.]</i></p>	<div><p>Compliant (minor shortcomings)</p></div>
Risk	Target for Full Compliance	
Without a comprehensive Recycled Water Quality Management System, there is a high risk that Hunter Water may not be able to effectively manage risks to recycled water quality, thereby posing risks to both public health and the environment.	Evidence that a Recycled Water Quality Management System is established, maintained and kept up to date, and that it is consistent with the <i>Australian Guidelines for Water Recycling</i> , and any additional requirements of NSW Health.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire. <p>Evidence sighted for each AGWR Element is listed in the following.</p>		
Element 1:		
<ul style="list-style-type: none">Hunter Water - Guideline – Engagement with External Stakeholders - HW2013-421/1.007 – May 2018.Hunter Water - Hunter Water/NSW Health Liaison Committee – Meeting Minutes - HW2006-1448 - 27th June 2018.Hunter Water - Guideline – Internal Communications - HW2013-421/1.006 – May.Hunter Water - Recycled Water Risk Assessment Update - Morpeth -April 2017.Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.Hunter Water – Policy – Recycled Water – June 2017.Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.		

Element 2:

- Hunter Water – Risk Workshop Update Background Information –Morpeth – April 2017.
- Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.
- Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.
- Hunter Water – Standard – Trace Wastewater – July 2016.
- Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.
- Easts Leisure and Golf – ‘Scorecard’ – undated.
- Hunter Water – Agreement for the Supply of Recycled Water – East Maitland Bowling Club Trading as Easts Leisure and Golf July 2017.
- Hunter Water – Agreement for the Supply of Recycled Water – Michael and Glenda Lynch - July 2017.
- Veolia – Minutes - Monthly Recycled Effluent Meeting – 20 August 2018.
- Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.
- Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water - Corporate Risk Driver Analysis Summary Table - Inability to Manage Recycled Water – February 2018.
- Hunter Water - Helminth controls for Hunter Water’s recycled water schemes – 24 July 2018.

Element 3:

- Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.
- Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.
- Hunter Water – Michael Lynch Annual Site Inspection – 19 June 2018.
- Hunter Water – Easts Leisure and Golf Annual Site Inspection – 19 June 2018.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

Element 4:

- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water – Blue Green Algae - Management Response Plan – Sewage Lagoons – Receiving Waters - 7 September 2018.
- Veolia - Plant Operating Manual Morpeth WWTW – 19 June 2018.
- Veolia - Morpeth WWTW Sampling Guide Sheet – Guide Sheet 15 – 12 June -2018.
- Veolia - Sodium Hypochlorite Solution Ordering, Delivery and Testing WI-HW-20-7847-1 28 May 2015.
- Veolia - Hydrated Lime Ordering, Delivery and Testing WI-HW-20-7841-1 28 May 2015.

Element 5:

- Hunter Water – Corporate Standard – Recycled Water Quality Monitoring Plan – Version 3 – 28 June 2017.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Veolia - Morpeth WWTW Sampling Calendar - TEM-2882 – 28 June 2018.
- Veolia - Morpeth WWTW Sampling Guide Sheet – Guide Sheet 15 – 12 June -2018.
- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Veolia – Standard - Recycled Water Quality Monitoring and Communication – HW2008-1592/6/1.019 – 28 June 2017.

Element 6:

- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Hunter Water – Corporate Emergency Management Plan – August 2017.
- Hunter Water – Procedure - Recycled Water Incident Notification & Response – HW2008-1592/8/2.002 – 28 June 2017.
- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018
- Hunter Water – Practice Note – Communication Protocol – HWC-PN113
- Veolia - Incident and Emergency Management Manual - PL-HW-9-7101-4 – 12 May 2017
- Veolia – Incident and Emergency Response Procedure - PR-HW-9-7123-2 - 12 May 2017

Element 7:

- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Veolia – Spreadsheet – Training Needs Matrix – Review date November 2018.
- Veolia – Presentation – Recycled Water Awareness Training – undated.
- Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.

Element 8:

- Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.
- Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.
- Hunter Water – Factsheet – General information for Recycled Water Users – undated.
- Hunter Water – Factsheet – Recycled Water for Homes – undated.
- Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

Element 9:

- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
 - Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.
 - Veolia – Spreadsheet – Morpeth UVT Data July 18-Oct18.
 - Hunter Water - Chisholm and Gillieston Heights Recycled Water Schemes Validation Report (Draft) November 2017.
 - Hunter Water - Helminth controls for Hunter Water’s recycled water schemes – 24 July 2018.
-

Element 10:

- Hunter Water – Procedure – Manage Document Control - HW2012-441/9/1.002 – 21 July 2015.
- Veolia – Screenshot – Hunter Water Portal Document Control and Access for Operators - undated
- Hunter Water - Compliance and Performance Report 2017-18 – September 2018.
- Hunter Water - Hunter Water Exception Report to NSW Health Drinking Water and Recycled Water 1st January to 31st March 2018.
- Veolia - Hunter Water Operations Monthly Contract Report – May 2018.

Element 11:

- Hunter Water – Management Systems Review Report – August 2017.
- Hunter Water – Spreadsheet – Requality Summary 2018.

Element 12:

- Hunter Water – Minutes - Management System Review Meeting Minutes - HW2013-1447/2.025 - 14 August 2017.
- Hunter Water – Presentation – Management Systems Review Meeting – August 2017.
- Hunter Water – Screenshot – Intgrum example – undated.
- Liaison meetings with NSW Health quarterly.
- Quarterly reporting to NSW Health and incidents that have occurred.

Summary of reasons for grade

Hunter Water demonstrated that it has maintained its Recycled Water Quality Management System (RWQMS) during the audit period. The Recycled Water Quality Management Plan (RWQMP) is consistent with the 12 Elements of the Australian Guidelines for Water Recycling (AGWR) and has been developed to manage the risk to public health and the environment in relation to the production and supply of recycled water.

Hunter Water has developed a Corporate Recycled Water Quality Management Plan (RWQMP)²³⁶ and scheme specific RWQMPs²³⁷ for each recycled water scheme. Its contractor Veolia has prepared its own scheme specific RWQMPs²³⁸ for the supply of recycled water from the wastewater treatment works (WWTW) that it operates on behalf of Hunter Water.

The RWQMS is a risk-based management system supported by a range of programs, such as monitoring, response programs, training and risk assessment processes. Hunter Water demonstrated that the supporting processes align to drive continuous improvement for the RWQMS.

The audit found that whilst Hunter Water and Veolia have established a RWQMS that is compliant with the AGWR, there is opportunity to improve the documentation of the critical limits (Element 3) and operational monitoring (Element 4) in relation to UV disinfection, resulting in a Compliant (with minor shortcomings) grade for this sub-clause. It was considered that the shortcomings did not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.

²³⁶ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²³⁷ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

²³⁸ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

The monitoring of UV Transmissivity (UVT) is identified in the risk assessment as a preventive measure for UV disinfection failure, and the UV disinfection units are validated to a minimum UVT. However, the Hunter Water site specific RWQMP for Morpeth does not mention UVT and the Veolia RWQMS identifies a critical limit for UVT which is marginally below the validated range and operational monitoring of UVT is not mentioned. Recommendations have been identified in relation to the documentation of critical control points and monitoring of UVT and opportunities for improvement have been identified for other minor shortcomings noted in the audit.

Discussion and notes

Maintenance of the Recycled Water Management System is discussed below by AGWR Element.

Element 1:

Responsible use of recycled water

The Corporate RWQMP²³⁹ and scheme specific RWQMPs²⁴⁰ outline Hunter Water's framework for ensuring the responsible use of recycled water. Veolia has prepared its own site specific RWQMPs²⁴¹ to document its framework for ensuring the responsible use of recycled water.

The Hunter Water Corporate and scheme specific RWQMPs are signed off by the Executive Manager Customer Strategy and Retail. The Executive Manager and associated team are responsible for the RWQMPs and for maintaining currency of the plans, and associated framework.

Regulatory and formal requirements

Formal and regulatory requirements are detailed in the Corporate RWQMP. Hunter Water provided the annual Compliance and Performance Report²⁴² as evidence detailing how it addressed its regulatory requirements during the financial year.

Legal and other requirements are captured in a 'Compliance Calendar'. A screenshot of the Compliance Calendar²⁴³ was provided as evidence of a process for recording regulatory obligations. The screenshot included requirements for quarterly exception reporting to NSW Health and recommendations from previous audits. Items were allocated to Hunter Water personnel, and due dates for completion, current status and date finalised were documented where relevant.

Review of regulatory and other obligations is undertaken by Hunter Water as part of the rolling review of the scheme specific RWQMPs. Where a notification of any changes to legislation or other relevant obligations is received, the review is updated. The requirements are then captured in the Compliance Calendar.

Legal requirements for recycled water are identified by those responsible for the RWQMP in Hunter Water.

Partnerships and engagement of stakeholders (including the public)

The Corporate RWQMP details the internal and external stakeholders relevant to recycled water. Hunter Water has established a guideline titled Engagement with External Stakeholders²⁴⁴ for liaising with external stakeholders that includes dealing with government departments, local

²³⁹ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁴⁰ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

²⁴¹ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

²⁴² Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

²⁴³ Hunter Water – Screenshot Compliance Calendar – July 2018.

²⁴⁴ Hunter Water - Guideline – Engagement with External Stakeholders - HW2013-421/1.007 – May 2018.

government, peak bodies, industry groups, educational institutions, business and the community. Minutes of a meeting with NSW Health²⁴⁵ were provided as evidence of engagement.

Hunter Water has established a guideline titled Internal Communication²⁴⁶ for communicating with internal stakeholders. The guideline outlines the processes that are used for internal communications such as Toolbox talks, team meetings and leadership group meetings. Internal stakeholders can include Directors, the Board, Executive Management Team, group managers and leaders, teams and employees in general.

As an example of engagement with both internal and external stakeholders, NSW Health, NSW EPA and internal stakeholders are invited to risk assessment workshops, as detailed in the Risk Workshop Update for the Morpeth WWTW Risk Assessment.²⁴⁷

A memorandum of understanding (MoU) is currently in place between Hunter Water and NSW Health as mentioned in the Corporate RWQMP. Engagement under the MoU includes:

- Reporting;
- Liaison meetings with NSW Health quarterly; and
- Quarterly reporting to NSW Health and incidents that have occurred.

Engagement with recycled water customers includes an annual inspection of customers' sites (bulk water customers). A record of a site inspection²⁴⁸ of the Easts Leisure and Golf Club was provided as evidence and included items that were discussed during the audit with the customer.

Hunter Water is in the process of commencing a dual reticulation supply scheme at Gillieston Heights. Evidence of engagement with the new customers under this scheme included a Factsheet²⁴⁹ with 'Frequently Asked Questions' and information on the recycled water scheme as well as details on who to contact at Hunter Water if further information is required. Additional correspondence titled Contact Centre Advice - Recycled Water: Chisholm, Thornton and Gillieston Heights²⁵⁰ provided further evidence of engagement with new dual reticulation customers.

Recycled water policy

Hunter Water has established a recycled water policy²⁵¹ that is available at the WWTPs and on the Hunter Water website, which was accessed at:

<https://www.hunterwater.com.au/Resources/Documents/Policies/Water/Recycled-Water-Policy.pdf>.

Hunter Water has established a training program²⁵² to promote awareness of the recycled water policy across Hunter Water.

Element 2:

Intended uses and source of recycled water

The risk workshop background notes (Morpeth,²⁵³ Dora Creek,²⁵⁴ Edgeworth²⁵⁵) include a summary of the uses and the sources of recycled water for each scheme and a description of the sewage catchment and relevant trade waste customers.

²⁴⁵ Hunter Water - Hunter Water/NSW Health Liaison Committee – Meeting Minutes - HW2006-1448 - 27th June 2018.

²⁴⁶ Hunter Water - Guideline – Internal Communications - HW2013-421/1.006 – May.

²⁴⁷ Hunter Water - Recycled Water Risk Assessment Update - Morpeth - April 2017.

²⁴⁸ Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

²⁴⁹ Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.

²⁵⁰ Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.

²⁵¹ Hunter Water – Policy – Recycled Water – June 2017.

²⁵² Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.

²⁵³ Hunter Water – Risk Workshop Update Background Information – Morpeth – April 2017.

²⁵⁴ Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.

The trade waste team undertakes ongoing review of the sewer catchment. Any new development includes a hydraulic assessment and developer assessment which considers the treatment plant capabilities, volumes and treatment processes.

The trade waste process includes a standard²⁵⁶ that has generic limits that the customer must meet (e.g. BOD 500 mg/L) and there can be a negotiation if the treatment plant can handle a higher level. An example that was discussed during the audit was that Dora Creek WWTW previously had additional capacity but as time has passed the main customer (Sanitarium) was required to undertake additional treatment prior to discharge to the sewer as the catchment discharges reached the capacity of the WWTW.

It was mentioned that Veolia is involved in trade waste negotiations. The example discussed during the audit was the discharge of leachate from Awabba Landfill to the Dora Creek and Edgeworth WWTWs via tanker. Veolia identified how many tanker loads could be accepted within the capacity of the plants. Veolia test Total Suspended Solids (TSS) in 20% of all tankers and this is included in the Monthly Contract Report to Hunter Water.²⁵⁷ The May 2018 Contract Report²⁵⁸ detailed an ammonia exceedance due to a 'slug' of ammonia entering the WWTW at Branxton due to dewatering of the sludge lagoon.

The Easts Leisure and Golf Score Card²⁵⁹ demonstrates how it makes its customers aware of recycled water use on site. The Easts Leisure and Golf signed agreement²⁶⁰ (extended to 2020) outlines the onsite control measures required, such as restricted access. The Lynch Farm signed agreement²⁶¹ also includes details about onsite control measures, such as restricted access.

Recycled water system analysis

The system analysis is detailed in the risk workshop background notes, including scheme descriptions, aerial photographs of the catchment and process flow diagrams.

Assessment of water quality data

Assessment of water quality data is presented in the risk workshop background notes and includes simple assessment of data and some trending of results. The data assessment is undertaken as part of the risk workshop but also reviewed in monthly operational meetings. Minutes of the August 2018 meeting²⁶² were provided and included details of discussion about water quality. A long-term trend analysis for the Branxton WWTW (2014-2018) was discussed as an example of trending discussed at monthly meeting. This was included as an item in the August 2018 minutes.

Hazard identification and risk assessment

Hazards and hazardous events are identified, and risk is assessed scheme by scheme approximately every 5 years. The Morpeth Risk Assessment Post Workshop Summary Update 2017 Report²⁶³ and Spreadsheet²⁶⁴ detail the outcomes of the risk assessment for Morpeth WWTW. The results of this risk assessment are captured in the Hunter Water and Veolia scheme specific RWQMPs.^{265,266}

²⁵⁵ Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.

²⁵⁶ Hunter Water – Standard – Trace Wastewater – July 2016.

²⁵⁷ Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.

²⁵⁸ Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.

²⁵⁹ Easts Leisure and Golf – 'Scorecard' – undated.

²⁶⁰ Hunter Water – Agreement for the Supply of Recycled Water – East Maitland Bowling Club Trading as Easts Leisure and Golf July 2017.

²⁶¹ Hunter Water – Agreement for the Supply of Recycled Water – Michael and Glenda Lynch - July 2017.

²⁶² Veolia – Minutes - Monthly Recycled Effluent Meeting – 20 August 2018.

²⁶³ Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.

²⁶⁴ Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.

²⁶⁵ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

²⁶⁶ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

The Corporate Risk Driver Analysis Summary Table - Inability to manage recycled water²⁶⁷ outlines the level of risk associated with a range of identified hazardous events for Hunter Water as an organisation. This summary includes Hunter Water's risk appetite for each hazard and a risk treatment plan to document the path to meeting the identified risk appetite.

Hunter Water provided additional documentation relating to assessment of risk including a report about Helminth controls for Hunter Water's recycled water schemes²⁶⁸ which details the risk associated with helminths in recycled water and identification of control measures including lagoon holding times and silage.

It was noted that the risk assessment spreadsheet contains a column for uncertainty which was predominantly left blank. It was discussed that uncertainty is assessed during the risk assessment and this cell is only populated when uncertainty has been identified and needs to be captured. If the assessment of the risk is well understood and there is a high level of certainty in the assessment outcome, the cell is left blank. **OFI-HWC-2017/18-17:** It is suggested that Hunter Water documents the process for the assessment of uncertainty and includes documentation to confirm that it has been assessed; for example, notations in the risk assessment.

Element 3:

Preventive measures and multiple barriers

Preventive measures are detailed in the Risk Assessment Post Workshop Update Summary 2017 Report²⁶⁹ and Spreadsheet²⁷⁰ (documentation from the Morpeth workshop was provided as evidence). Identified preventive measures include wastewater treatment, standard operating procedures (SOPs), SCADA monitoring, alarms and automatic interlocks.

The risk assessment identifies control measures that must be implemented on customer sites to prevent exposure to recycled water, including restricting access during irrigation, withholding periods and spray drift control. Hunter Water confirms the implementation of the onsite controls through supply contracts and during annual inspections of the customer sites.^{271,272}

Critical control points

The critical treatment processes have been assessed and critical control points (CCPs), critical limits and interlocks have been established.

CCPs have been documented in the scheme specific RWQMPs^{273,274} prepared by Hunter Water and Veolia. Tables have been included in the RWQMPs and include the process step, parameters to be monitored, location, frequency, unit, target limits, critical limit and corrective actions to be taken. Assessment of the effectiveness of the barriers was undertaken during validation testing and documented in the validation report.²⁷⁵

The site specific RWQMPs do not include a time delay for CCP1, Secondary Treatment Processes. During the site visit to Morpeth WWTW, it was observed that Veolia implements a 5 minute time delay for this CCP. Whilst implementing a time delay is a practical approach to avoid excessive alarms due to very short excursions, it is not documented in the RWQMP.

The Veolia RWQMP for Morpeth identifies the critical limit for the UV System (CCP2) as 'Must be ≥ 32 mJ/cm² with UV transmissivity (UVT) at 40% and ADWF of 10 ML/d when the valve

²⁶⁷ Hunter Water - Corporate Risk Driver Analysis Summary Table - Inability to Manage Recycled Water – February 2018.

²⁶⁸ Hunter Water - Helminth controls for Hunter Water's recycled water schemes – 24 July 2018.

²⁶⁹ Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.

²⁷⁰ Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.

²⁷¹ Hunter Water – Michael Lynch Annual Site Inspection – 19 June 2018.

²⁷² Hunter Water – Easts Leisure and Golf Annual Site Inspection – 19 June 2018.

²⁷³ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

²⁷⁴ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

²⁷⁵ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

to the maturation pond is open' whereas the Hunter Water RWQMP for Morpeth identifies the critical limit for CCP2 as 'There must be $\geq 35 \text{ mJ/cm}^2$ UV dose when water is being supplied to the maturation pond.' There is a discrepancy between the critical dose and the application of a limit on UVT.

REC-HWC-2017/18-05: By 30 June 2019, Hunter Water should ensure that critical limits are documented accurately in the RWQMP, including any time delays; ensure that the location of where the critical limit applies is accurately documented; and ensure that they are consistently documented across Hunter Water and Veolia documentation.

Element 4:

Operational procedures

The risk assessment identifies a number of operational procedures that are linked to preventive measures and these are carried over to the site specific RWQMPs^{276,277} prepared by Hunter Water and Veolia. The Hunter Water RWQMP states that the detailed Standard Operating Procedures (SOPs) for CCPs are held by Veolia. The Veolia site specific RWQMP for Morpeth includes CCP response charts detailing the actions to take when an alert or critical limit is exceeded.

The Morpeth Risk Assessment Spreadsheet identifies the SOP for Response Call Out as the preventive measure for managing a UV failure at Morpeth. In the Veolia Morpeth RWQMP there is a table that outlines corrective actions for the UV CCP.

The Morpeth Risk Assessment Spreadsheet identifies that the preventive measures for 'Algal Blooms on Storage Ponds' is an 'SOP for situation'. The Blue Green Algae Management Response Plan²⁷⁸ was shown during the audit as evidence of the establishment of this SOP.

Veolia has established Operations and Maintenance Manuals that detail the operation of the treatment processes, trouble shooting and corrective actions. The Plant Operating Manual Morpeth WWTW²⁷⁹ was provided as evidence of established SOPs.

Operational monitoring

Operational monitoring of CCPs is detailed in site specific RWQMPs prepared by Hunter Water and Veolia. The Morpeth RWQMPs were provided as evidence. Online monitoring as detailed in the site specific RWQMP is controlled through SCADA, which has alarms and interlocks to prevent the supply of compromised recycled water to customers. During the site inspection of the Morpeth WWTW, it was mentioned that additional testing of operational parameters is also undertaken, to assist in the operation of the WWTW. The risk assessment for Morpeth WWTW identifies ultra violet transmissivity (UVT) testing as a control measure for 'loss of UV disinfection for the plant'. The risk assessment states that the control measure is 'Online analyser, SCADA system and alarms (lamp failure, low dose and low UVT)'. Additionally, the validation report for the UV system indicates that the Morpeth UV system is only validated for a UVT of greater than 45%. The RWQMPs for Morpeth WWTW do not identify operational monitoring of UVT or a critical limit for UVT, however the Veolia RWQMP for Morpeth (Table 7-1) identifies the critical limit for the UV system as UV Dose 'must be $> \text{or} = 32 \text{ mJ/cm}^2$ with UVT at 40% and ADWF if 10 ML/day when the valve to the maturation pond is open.'

REC-HWC-2017/18-06(a): By 30 June 2019, Hunter Water should include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection. It should be noted that the limit implemented in SCADA at Morpeth WWTW is 35 mJ/cm^2 , consistent with the Hunter Water Morpeth RWQMP.

²⁷⁶ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁷⁷ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

²⁷⁸ Hunter Water – Blue Green Algae - Management Response Plan – Sewage Lagoons – Receiving Waters - 7 September 2018.

²⁷⁹ Veolia - Plant Operating Manual Morpeth WWTW – 19 June 2018.

The Morpeth Sampling Guide Sheet²⁸⁰ details additional weekly, fortnightly, monthly, quarterly, six monthly and annual process monitoring undertaken by Veolia.

Operational corrections

The risk assessment spreadsheet and the Hunter Water and Veolia RWQMPs for Morpeth state that when critical limits are exceeded, flows are diverted to the environmental discharge location to ensure out of specification recycled water is not supplied to customers. The Plant Operating Manual Morpeth WWTW includes detailed procedures for operational correction in response to operational issues at the WWTW.

Equipment capability and maintenance

Hunter Water has scheduled electrical and mechanical maintenance for each recycled water scheme. These schedules are stored within the maintenance module of Hunter Water's 'Ellipse' system. The Ellipse system was demonstrated during the audit and included a record of maintenance actions raised.

Materials and chemicals

Hunter Water approved products website outlines the process for having products approved for use in the Hunter Water area of operations and there is a list of approved chemicals and equipment. Veolia has its own process for procuring and receiving water treatment chemicals.^{281,282} Veolia went out to tender for its chemical supply in 2015 and has primary and secondary backup supply of chemicals. When Veolia commenced the contract to operate Hunter Water's treatment plants, there were existing contracts between Hunter Water and its chemical suppliers. These have now been updated by Veolia as the contracts expired. The Veolia specification matched the original Hunter Water contracts and the technical specifications are in the contracts and novated to Hunter Water. It was mentioned during the audit that if a tender is received that is not the usual supplier, Veolia will liaise with Hunter Water to confirm that the details are suitable.

Element 5:

Recycled water quality monitoring

Verification monitoring for all of the Hunter Water recycled water schemes is detailed in the Hunter Water Recycled Water Monitoring Program.²⁸³ The verification monitoring for recycled water schemes is also detailed in the scheme specific RWQMP^{284,285} for example, Table 5-1 of the Hunter Water Morpeth RWQMP states that sampling is undertaken weekly, fortnightly and monthly at the 'end of the UV channel'. Table 7-2 of the Veolia Morpeth RWQMP outlines the parameters for verification testing for the scheme. The frequency of monitoring for each parameter will be determined as per regulatory requirements, professional experience and Hunter Water RWQMP reviews. The frequency of verification monitoring is predominantly weekly, with some parameters fortnightly and monthly. Parameters included in the verification program include microbiological, chemical and physical parameters.

The Veolia RWQMP for Morpeth states the external (NATA) sampling is covered by Morpeth WWTW Sampling Calendar (TEM-2882)²⁸⁶ and Morpeth WWTW Sampling Guide Sheet (TEM-2919).²⁸⁷

²⁸⁰ Veolia - Morpeth WWTW Sampling Guide Sheet – Guide Sheet 15 – 12 June -2018.

²⁸¹ Veolia - Sodium Hypochlorite Solution Ordering, Delivery and Testing WI-HW-20-7847-1 28 May 2015.

²⁸² Veolia - Hydrated Lime Ordering, Delivery and Testing WI-HW-20-7841-1 28 May 2015.

²⁸³ Hunter Water – Corporate Standard – Recycled Water Quality Monitoring Plan – Version 3 – 28 June 2017.

²⁸⁴ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

²⁸⁵ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁸⁶ Veolia - Morpeth WWTW Sampling Calendar - TEM-2882 – 28 June 2018.

²⁸⁷ Veolia - Morpeth WWTW Sampling Guide Sheet – Guide Sheet 15 – 12 June -2018.

Application site and receiving environment monitoring

Recycled water customers are responsible for undertaking sampling of the recycled water application site, as detailed in the Hunter Water scheme specific RWQMP for Morpeth WWTW.

Documentation and reliability

All operational and verification monitoring is undertaken within a QA/QC framework. QC involves conducting the monitoring and calibration tasks, whereas QA involves checking the QC results, analysing and auditing them.

Recycled water user satisfaction

The Hunter Water Corporate RWQMP²⁸⁸ details the process for confirming the satisfaction of recycled water customers. The annual customer audit program is the identified process for specific bulk recycled water customers. Additionally, for the new dual reticulation recycled water scheme at Gillieston Heights, the Factsheet with 'Frequently Asked Questions' includes details on who customers can contact at Hunter Water with feedback or if further information is required.

Short-term evaluation of results

Short term evaluation of results is described in the Hunter Water Recycled Water Quality Monitoring and Communication Standard,²⁸⁹ which details the responsibilities for monthly reporting by Hunter Water and Veolia on recycled water quality performance. Short term evaluation of results is also undertaken as part of the contractual reporting and meetings between Hunter Water and Veolia as well as Drinking Water and Recycled Water Quality Exceptions Reporting to NSW Health.

Corrective responses

The Hunter Water Corporate RWQMP states that corrective responses to non-conformance will vary depending on the level and type of event. As a minimum, treatment processes will be monitored and inspected to ensure normal operation and, if required, further sampling will be carried out.

Corrective responses to CCP exceedances include alarms and interlocks through SCADA, as detailed in the scheme specific RWQMPs.

Hunter Water's Integrum system is a risk, compliance and business optimisation platform which provides a process for documenting and tracking corrective responses to identified issues.

Element 6:

Communication

The Hunter Water Corporate RWQMP²⁹⁰ identifies the relevant documentation for communication during an incident or emergency, including its overarching Incident Response Management Plan and the Corporate Emergency Management Plan.²⁹¹ The Corporate RWQMP also identifies the specific recycled water documentation for managing recycled water incidents and emergencies including the Recycled Water Quality Incident Response procedure.²⁹²

The Veolia Morpeth RWQMP²⁹³ states that emergency communications are under Hunter Water control and Veolia will only assist where required or under the existing Practice Note PN113.²⁹⁴

²⁸⁸ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁸⁹ Veolia – Standard - Recycled Water Quality Monitoring and Communication - HW2008-1592/6/1.019 – 28 June 2017.

²⁹⁰ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁹¹ Hunter Water – Corporate Emergency Management Plan – August 2017.

²⁹² Hunter Water – Procedure - Recycled Water Incident Notification & Response - HW2008-1592/8/2.002 – 28 June 2017.

²⁹³ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁹⁴ Hunter Water – Practice Note – Communication Protocol – HWC-PN113.

Incident and emergency response protocols

Under the Corporate Emergency Response Plan, Hunter Water undertakes exercises to test the emergency protocols. The Recycled Water Incident Notification & Response procedure details the steps that should be followed when responding to recycled water quality events, notifiable events and incidents.

The MoU between NSW Health and Hunter Water requires that any event that may adversely affect public health must immediately be reported to NSW Health. All notifiable recycled water quality events are reported to the Hunter Water Team Leader Recycled Water as soon as possible to ensure all events are reported as required.

Veolia has established an Incident and Emergency Management Manual²⁹⁵ and an Incident and Emergency Response Procedure²⁹⁶ that details the Veolia process for managing incidents.

Element 7:

Operator, contractor and end user awareness and involvement

Training requirements for Hunter Water and Veolia in relation to the WWTW and the recycled water schemes as a whole are discussed in the Corporate RWQMP.²⁹⁷ The training framework includes: induction programs; risk workshops; guidelines and manuals; divisional updates; SOPs; RWQMPs; meetings; and committees.

Specific training for operators, contractors and end users include awareness of the Recycled Water Policy; principles of risk management; the recycled water supply system; regulatory and legislative requirements; the roles and responsibilities of employees and departments; and their involvement in recycled water quality.

All sections within Hunter Water are required to ensure that new employees undertake an induction program that covers (at a minimum) standard safety procedures relevant to their section. This induction includes emergency response and evacuation processes and where necessary, an asset-specific induction, for example at a WWTW. All recycled water operators receive appropriate training in how to manage recycled water quality and are made fully aware of SOPs, the RWQMPs, and relevant policies. Relevant evidence of the training framework for recycled water includes the Veolia Training Matrix,²⁹⁸ Recycled Water Awareness Training Presentation²⁹⁹ and the Hunter Water Edmore eLearning Package - Recycled Water Awareness Training.³⁰⁰

Element 8:

Consultation with users of recycled water and the community

The wider community is kept informed using updates via the Hunter Water website, newsletters and direct contact with interested community groups. Hunter Water has a customer contact centre and an email enquiries system to provide answers to any questions the public may have. Hunter Water's website provides information to the public on recycled water schemes, quality and developments.

Hunter Water has developed a framework for consulting with recycled water bulk customers through the annual site audit framework,³⁰¹ and with residential recycled water customers through factsheets^{302,303,304} and letters.³⁰⁵

²⁹⁵ Veolia - Incident and Emergency Management Manual - PL-HW-9-7101-4 – 12 May 2017.

²⁹⁶ Veolia – Incident and Emergency Response Procedure - PR-HW-9-7123-2 - 12 May 2017.

²⁹⁷ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

²⁹⁸ Veolia – Spreadsheet – Training Needs Matrix – Review date November 2018.

²⁹⁹ Veolia – Presentation – Recycled Water Awareness Training – undated.

³⁰⁰ Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.

³⁰¹ Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

Element 9:

Validation of processes

Hunter Water has identified triggers for re-validation in the Corporate RWQMP.³⁰⁶

Hunter Water developed a Validation Testing Program for Water Recycling Schemes – July 2018 Report³⁰⁷ for its recycled water schemes and commenced the validation of the schemes during the audit period. The validation program relies on manufacturers' guarantees of treatment performance for the UV systems and testing for microbiological indicator organisms to provide evidence relating to pathogen reduction at wastewater treatment works.

Hunter Water provided the Validation Testing Program for Water Recycling Schemes – July 2018 Report as evidence. The results of the validation have been considered in the implementation of the critical control points, and this was observed at the Morpeth WWTW; however, the UV disinfection unit is validated to a minimum UVT of 45%, which is detailed in an email from the manufacturer provided in section 7 of the validation report. The actual unit validation report was not made available by the manufacturer. The Hunter Water Morpeth RWQMP³⁰⁸ does not mention UVT as an operational monitoring parameter, and the Veolia Morpeth RWQMP³⁰⁹ identifies UVT as a component of the critical limit for UV dose but at 40%. It was discussed that UVT is a parameter included in the calculation of UV dose by the UV unit; however, the operational processes should consider the validated operational envelope of the unit and be consistent with the validated range. Whilst the documentation does not consistently detail the application of a critical limit for UVT, operational data³¹⁰ showed that recycled water was not supplied to customers when UVT was below 45%. **REC-HWC-2017/18-06:** Hunter Water should:

- a) include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection [refer discussion in respect of Operational monitoring under Element 4];
- b) confirm that critical limits (for example UVT) are set in accordance with the available validation information;
- c) for schemes that have online monitoring of UVT, implement an alarm and or shut down for when UVT falls outside the validated operational range for the UV system (e.g. 45% at Morpeth WWTW); and
- d) for schemes that do not have online monitoring of UVT, establish appropriate monitoring processes, such as regular grab samples with identified corrective actions for when UVT falls outside the validated operational range specified by the manufacturer.

By 30 June 2020, Hunter Water should:

- e) investigate the establishment of online monitoring of UVT with alarms and or shutdowns at all sites that rely on UV disinfection for primary disinfection of recycled water.

The validation program³¹¹ for the new water recycling scheme at Gilleston Heights was provided as evidence of a framework for the design of new equipment and it was mentioned that the sampling for this scheme would commence the day after the onsite audit of the Morpeth

³⁰² Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.

³⁰³ Hunter Water – Factsheet – General information for Recycled Water Users – undated.

³⁰⁴ Hunter Water – Factsheet – Recycled Water for Homes – undated.

³⁰⁵ Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

³⁰⁶ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

³⁰⁷ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

³⁰⁸ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁰⁹ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³¹⁰ Veolia – Spreadsheet – Morpeth UVT Data July 18-Oct18.

³¹¹ Hunter Water - Chisholm and Gillieston Heights Recycled Water Schemes Validation Report (Draft) – November 2017.

WWTW.

Design of equipment

The Validation Report³¹² for the new water recycling scheme at Gileston Heights was provided as evidence of a framework for the design of new equipment.

Investigative studies and research monitoring

Examples of investigative studies and research programs include the investigation into helminth control for recycled water schemes.³¹³ Hunter Water is a member of Water Research Australia, Biosolids working group. Hunter Water has recently established a new corporate structure to promote innovation by establishing an Innovation Committee. The Veolia Technical Team Manager attends meetings of this committee. Hunter Water has Science and Innovation, Water Resilience and Sustainable Wastewater teams which sit under the Chief Investment Officer.

Element 10:

Management of documentation and records

Hunter Water has an established Corporate Document Control Procedure³¹⁴ which outlines the framework for managing documents and records for Hunter Water. Veolia provided a screenshot³¹⁵ of its document portal for operators requiring access to shared documents between Hunter Water and Veolia.

Reporting

The Compliance and Performance Report 2017-18³¹⁶ outlines Hunter Water's performance over the financial year and provides evidence of a framework for reporting of performance of recycled water schemes. Hunter Water Exception Report to NSW Health Drinking Water and Recycled Water 1st January to 31st March 2018³¹⁷ outlines the framework for reporting exceedances to NSW Health under the MoU.

Veolia reports on performance under the contract to Hunter Water on a monthly basis. The Hunter Water Operations Monthly Contract Report³¹⁸ for May 2018 provides evidence of a framework for reporting under the contract.

Element 11:

Long-term evaluation of results

Long term review of performance is undertaken in the Integrated Management System Review process. An Integrated Management System review report³¹⁹ that was circulated prior to the Review Meeting provides evidence of long-term evaluation of performance and monitoring results.

Audit of recycled water quality management

Hunter Water provided evidence of an internal audit of the recycled water management system using the 'Requality' template³²⁰ developed by Water Services Association of Australia (WSAA). Hunter Water also undertakes contract audits of Veolia's compliance with the service contract and

³¹² Hunter Water - Chisholm and Gillieston Heights Recycled Water Schemes Validation Report (Draft) – November 2017.

³¹³ Hunter Water - Helminth controls for Hunter Water's recycled water schemes – 24 July 2018.

³¹⁴ Hunter Water – Procedure – Manage Document Control - HW2012-441/9/1.002 – 21 July 2015.

³¹⁵ Veolia – Screenshot – Hunter Water Portal Document Control and Access for Operators – undated.

³¹⁶ Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

³¹⁷ Hunter Water - Hunter Water Exception Report to NSW Health Drinking Water and Recycled Water 1st January to 31st March 2018.

³¹⁸ Veolia - Hunter Water Operations Monthly Contract Report – May 2018.

³¹⁹ Hunter Water – Management Systems Review Report – August 2017.

³²⁰ Hunter Water – Spreadsheet – Requality Summary 2018.

audits of the recycled water customer's compliance with the supply contract.

Element 12:

Review by senior managers

Integrated Management System Review Meeting Minutes³²¹ provide details of the discussions of the management review. The Integrated Management System Review Meeting Presentation³²² provides the details of the review meeting. The Integrated Management System report includes a discussion of process performance, non-compliances, results of audits and any changes in risk.

Recycled water quality management improvement plan

Hunter Water captures its improvement plan in the Integrum risk, compliance and business optimisation platform. A screenshot of the Integrum system³²³ showed how Hunter Water progressed improvements and how corrective actions from audits and incidents are captured, with due dates and responsible person.

Recommendations

The following recommendations have been made in respect of this sub-clause.

- **REC-HWC-2017/18-05:** By 30 June 2019, Hunter Water should ensure that critical limits are documented accurately in the RWQMP, including any time delays; ensure that the location of where the critical limit applies is accurately documented; and ensure that they are consistently documented across Hunter Water and Veolia documentation.
- **REC-HWC-2017/18-06:** By 30 June 2019, Hunter Water should:
 - a) include the monitoring of UVT in the operational monitoring detailed in the site specific RWQMPs for recycled water schemes that rely on UV disinfection for primary disinfection;
 - b) confirm that critical limits (for example UVT) are set in accordance with the available validation information;
 - c) for schemes that have online monitoring of UVT, implement an alarm and or shut down for when UVT falls outside the validated operational range for the UV system (e.g. 45% at Morpeth WWTW); and
 - d) for schemes that do not have online monitoring of UVT, establish appropriate monitoring processes, such as regular grab samples with identified corrective actions for when UVT falls outside the validated operational range specified by the manufacturer.

By 30 June 2020, Hunter Water should:

- e) investigate the establishment of online monitoring of UVT with alarms and or shutdowns at all sites that rely on UV disinfection for primary disinfection of recycled water.
-

Opportunities for improvement

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


- **OFI-HWC-2017/18-17:** It is suggested that Hunter Water documents the process for the assessment of uncertainty and includes documentation to confirm that it has been assessed for example, notations in the risk assessment.
-

³²¹ Hunter Water – Minutes - Management System Review Meeting Minutes - HW2013-1447/2.025 - 14 August 2017.

³²² Hunter Water – Presentation – Management Systems Review Meeting – August 2017.

³²³ Hunter Water – Screenshot – Integrum example – undated.

Table 3.9 Recycled Water (sub-clause 3.2.2)

Sub-clause	Requirement	Compliance Grade
3.2.2	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 Recycled Water Quality Management System, and to the satisfaction of NSW Health.	 Compliant

Risk

If the Recycled Water Quality Management System is not fully implemented, there is a high risk that Hunter Water may not be able to effectively manage risks to recycled water quality, thereby posing risks to both public health and the environment.

Target for Full Compliance

Evidence that the Recycled Water Quality Management System is fully implemented and that all relevant activities are carried out in accordance with the System, and to the satisfaction of NSW Health.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.

Evidence sighted for each AGWR Element is listed in the following.

Element 1:

- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.
- Hunter Water – Agreement for the Supply of Recycled Water – East Maitland Bowling Club Trading as Easts Leisure and Golf July 2017.
- Hunter Water – Agreement for the Supply of Recycled Water – Michael and Glenda Lynch - July 2017.
- Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.
- Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.
- Hunter Water - Compliance and Performance Report 2017-18 – September 2018.
- Hunter Water – Screenshot Compliance Calendar – July 2018.
- Hunter Water - Hunter Water/NSW Health Liaison Committee – Meeting Minutes - HW2006-1448 - 27th June 2018.
- Hunter Water - Recycled Water Risk Assessment Update - Morpeth -April 2017.
- Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.

Element 2:

- Hunter Water – Risk Workshop Update Background Information –Morpeth – April 2017.
- Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.
- Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.
- Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.
- Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.
- Veolia – Minutes - Monthly Recycled Effluent Meeting – 20 August 2018.
- Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.
- Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water - Corporate Risk Driver Analysis Summary Table - Inability to Manage Recycled Water – February 2018.

Element 3:

- Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.
- Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia – SCADA Change Request – SC0228-WW-MOR – 17 May 2017.
- Veolia – SCADA Change Request – SC0261-WW-MOR – 22 September 2017.
- Veolia – Monthly Contract Report - March 2018.
- Unknown – Spreadsheet – CCP Alarm Report – 18 June 2018.

Element 4:

- Hunter Water – Blue Green Algae - Management Response Plan – Sewage Lagoons – Receiving Waters - 7 September 2018.
 - Veolia - Plant Operating Manual Morpeth WWTW – 19 June 2018.
 - Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.
 - Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
 - Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
 - Veolia – Spreadsheet – Morpeth WWTW Plat Spreadsheet – populated to 24 September 2018.
 - Veolia – Monthly Contract Report – June 2018.
 - Veolia – Work Order - ST-MOR-UVT Calibration [3 Months] – printed 9 November 2018.
 - Veolia – Monthly Contract Report - March 2018.
-

Element 5:

- Hunter Water – Corporate Standard – Recycled Water Quality Monitoring Plan – Version 3 – 28 June 2017.
- Veolia - Morpeth WWTW Sampling Calendar - TEM-2882 – 28 June 2018.
- Veolia – Morpeth WWTW Sampling Guide Sheet – TEM-2919 – 28 June 2018.
- Hunter Water – Spreadsheet - Morpeth WWTW Sampling Schedule – Lab Contract – undated.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Veolia – Spreadsheet - Morpeth E. coli Mat Pond Valve Data Spreadsheet – July 2017 – September 2018.
- Easts Leisure and Golf Club – Soil Analysis – 26 July 2017.
- Hunter Water – Michael Lynch Annual Site Inspection – 19 June 2018.
- Hunter Water – Easts Leisure and Golf Annual Site Inspection – 19 June 2018.
- Veolia – Monthly Contract Report – June 2018.
- Veolia – Monthly Contract Report - May 2018.
- Hunter Water – Screenshot – Integrum example – undated.

Element 6:

- Hunter Water – Practice Note – Communication Protocol – HWC-PN113.
- Veolia – Recycled Water Quality Incident/Early Warning Report – Branxton Elevated Turbidity - 6 September 2018.
- Janellis – Master Sequence of Events - Exercise – Hunter Water Corporation - 13th September 2018.
- Veolia - Recycled Water Quality Incident/Early Warning Report – Kurri Kurri Bypass Incident - 20 February 2018.
- Hunter Water – Integrum record – Notification to NSW Health – 15 March 2018.
- Hunter Water – Spreadsheet – Business Resilience Emergency Participants 2018.
- Hunter Water - Business Resilience Training Course Attendance – 30 August 2018.

Element 7:

- Hunter Water – Spreadsheet – QMS RASCI Matrices Spreadsheet – undated.
- Hunter Water Veolia Training Register Extract – undated.
- Hunter Water – Screenshot – TRIM Training – undated.

Element 8:

- Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.
 - Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.
 - Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.
 - Hunter Water – Factsheet – General information for Recycled Water Users – undated.
 - Hunter Water – Factsheet – Recycled Water for Homes – undated.
-

Element 9:

- Hunter Water - Testing Program for Water Recycling Schemes – July 2018.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia – Spreadsheet – Morpeth UVT Data July 2017 – Oct 2018.
- Veolia – Spreadsheet – MOR E. coli Mat Pond Valve Data Aug 2017 – Oct 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.
- Hunter Water - Chisholm and Gillieston Heights Recycled Water Schemes Validation Report (Draft) – November 2017.
- Hunter Water - Helminth controls for Hunter Water’s recycled water schemes – 24 July 2018.
- Veolia – Monthly Contract Report – March 2018.

Element 10:

- Hunter Water – Screenshot – Reservoir - Recycled Water Workspace – undated.
- Hunter Water – Screenshot – Recycled Water location.
- Hunter Water – Screenshot – TRIM Support Workspace – undated.
- Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

Element 11:

- Hunter Water – Integrated Management System Review – Agenda - 14 August 2017.
- Hunter Water – Integrated Management System Review – Report - August 2017.
- Hunter Water – Integrated Management System Review – Minutes- 14 August 2017.
- Hunter Water – Risk Workshop Update Background Information –Morpeth – April 2017.
- Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.
- Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.
- Hunter Water – Screenshot – Compliance and Commitments Register – July 2018.
- Hunter Water – Spreadsheet – Requality Summary – 2018.

Element 12:

- Hunter Water – Integrated Management System Review – Agenda - 14 August 2017.
- Hunter Water – Integrated Management System Review – Report - August 2017.
- Hunter Water – Integrated Management System Review – Minutes- 14 August 2017.
- Hunter Water – Screenshot – Integrum example – undated.

Summary of reasons for grade

Hunter Water has demonstrated full compliance with the requirement to ensure that the Recycled Water Quality Management System (RWQMS) is fully implemented and that all relevant activities are carried out in accordance with the RWQMS, and to the satisfaction of NSW Health.³²⁴ Hunter Water has demonstrated that it has established processes for implementing the RWQMS and provided evidence to prove that it is implementing those processes. Veolia, as the operator of Hunter Water’s WWTWs also provided evidence that it is implementing the RWQMS. The audit noted that there is good integration between the two organisations, and there are processes to ensure that the implementation of the RWQMS is ‘business as usual’.

³²⁴ Hunter New England Population Health – Letter – Hunter Water Corporation 2017 – 2018 Operational Audit.

As noted in the assessment of the previous licence clause, documentation of the monitoring of UVT and establishment of a critical limit for UVT is an area for improvement. The implementation of processes for monitoring UVT can also be improved. At present Hunter Water is monitoring UVT, but it is not used as a trigger to cease operation when the UVT varies outside the validated range. Opportunities for improvement have been provided in relation to this and other identified minor discrepancies.

Discussion and notes

Hunter Water demonstrated that it is implementing its RWQMS as detailed in the Corporate RWQMP³²⁵ and scheme specific RWQMPs^{326,327} prepared by Hunter Water and Veolia. The implementation of the recycled water management system is discussed below by AGWR Element.

Element 1:

Responsible use of recycled water

The Corporate RWQMP,³²⁸ scheme specific RWQMPs^{329,330} and supporting documents are the overarching framework implemented by Hunter Water and Veolia to ensure the responsible use of recycled water.

To ensure customers use recycled water responsibly, Hunter Water has established supply agreements with the bulk recycled water customers and undertakes annual audits of the sites to confirm compliance with the contract. Evidence of the implementation of these processes include a record of a site inspection³³¹ of the Easts Leisure and Golf Club, Easts Leisure and Golf signed agreement³³² (extended to 2020) and the Lynch Farm signed agreement.³³³

For residential recycled water customers, Hunter Water has developed fact sheets and correspondence to educate residential customers on the responsible use of recycled water. Evidence of the implementation of these processes includes a Factsheet³³⁴ with 'Frequently Asked Questions' and Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights.³³⁵

Regulatory and formal requirements

The annual Compliance and Performance Report³³⁶ prepared by Hunter Water details how it complies with its regulatory requirements during the financial year. Regulatory obligations, such as reporting are progressed and tracked using the Compliance Calendar.³³⁷

Partnerships and engagement of stakeholders (including the public)

Evidence of implementation of Hunter Water's stakeholder engagement framework include:

³²⁵ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

³²⁶ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³²⁷ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³²⁸ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018.

³²⁹ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³³⁰ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³³¹ Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

³³² Hunter Water – Agreement for the Supply of Recycled Water – East Maitland Bowling Club Trading as Easts Leisure and Golf July 2017.

³³³ Hunter Water – Agreement for the Supply of Recycled Water – Michael and Glenda Lynch - July 2017.

³³⁴ Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.

³³⁵ Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.

³³⁶ Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

³³⁷ Hunter Water – Screenshot Compliance Calendar – July 2018.

-
- Minutes of a meeting with NSW Health.³³⁸
 - Risk Workshop Update for members of the Morpeth WWTW Risk Assessment³³⁹ team.
 - Factsheet 'Frequently Asked Questions' and Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston.

Recycled water policy

Hunter Water has established a training program³⁴⁰ which is delivered to all new starters with responsibilities for recycled water. The recycled water policy is available on the Hunter Water Website <https://www.hunterwater.com.au/Resources/Documents/Policies/Water/Recycled-Water-Policy.pdf>.

Element 2:

Intended uses and source of recycled water

The Hunter Water recycled water management framework includes risk assessments to assess the risks associated with the supply of recycled water. The risk assessments include assessment of intended uses and recycled water sources. During the audit period, Hunter Water undertook risk assessments for the Morpeth, Dora Creek and Edgeworth WWTWs. The evidence of assessment of the intended uses and sources is documented in the risk workshop background notes for each WWTW; Morpeth,³⁴¹ Dora Creek³⁴² and Edgeworth.³⁴³

Recycled water sources include industrial and commercial trade waste. Hunter Water and Veolia have developed a process for assessing trade waste impacts including assessing new customers and the proposed discharges to the sewers, sampling and monitoring in the sewer network. Examples providing evidence of implementation of these processes include: Veolia's Monthly Contract Report to Hunter Water September 2018³⁴⁴ and the May 2018 Contract Report³⁴⁵ which detail results of monitoring and investigations relating to the sewer network and sources of recycled water.

The bulk recycled water customer contracts and the correspondence sent to residential recycled water customers provides evidence of the intended uses of recycled water and the necessary onsite controls required to ensure that the recycled water is fit for the expected exposure associated with the intended uses.

Recycled water system analysis

The system analysis is detailed in the risk workshop background notes for the risk assessment for Morpeth, Dora Creek and Edgeworth that were undertaken in the audit period. The risk workshop background notes include assessment of recycled water sources, intended and unintended uses, routes of exposure, system descriptions, monitoring and process control, licence requirements and water quality objectives. During the site inspection of the Morpeth WWTW, the scheme description and flow diagram were reviewed against the system characteristics, treatment processes and monitoring points that were able to be observed. It was noted that the Morpeth background notes accurately described the recycled water system.

³³⁸ Hunter Water - Hunter Water/NSW Health Liaison Committee – Meeting Minutes - HW2006-1448 - 27th June 2018.

³³⁹ Hunter Water - Recycled Water Risk Assessment Update - Morpeth - April 2017.

³⁴⁰ Hunter Water – Edmore eLearning Package – Recycled Water Awareness Training- undated.

³⁴¹ Hunter Water – Risk Workshop Update Background Information –Morpeth – April 2017.

³⁴² Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.

³⁴³ Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.

³⁴⁴ Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.

³⁴⁵ Veolia – Monthly Contract Report - Section 4 Wastewater Treatment Performance – September 2018.

Assessment of water quality data

Assessment of water quality data was undertaken for the Morpeth, Dora Creek and Edgeworth recycled water schemes during the audit period and the results are documented in the workshop background notes for each respective scheme.

Minutes of the Monthly Operational Meeting held in August 2018³⁴⁶ were provided as additional evidence of ongoing assessment of water quality data undertaken during the audit period.

Hazard identification and risk assessment

Hazards and hazardous events are identified, and risk is assessed scheme by scheme approximately every 5 years. The Morpeth Risk Assessment Post Workshop Summary Update 2017 Report³⁴⁷ and Spreadsheet³⁴⁸ detail the outcomes of the risk assessment for Morpeth WWTW which was undertaken during the audit period. The results of this risk assessment are captured in the Hunter Water and Veolia scheme specific RWQMPs.^{349,350}

During the site inspection to the Morpeth WWTW and the Easts Leisure and Golf Club, the hazards and the hazardous events identified in the risk assessment were reviewed against what could be observed 'on the ground'. The risk assessment appeared to comprehensively cover the hazards and hazardous events that would reasonably be expected to be relevant to the Morpeth WWTW recycled water scheme.

The Corporate Risk Driver Analysis Summary Table - Inability to manage recycled water³⁵¹ provides evidence that Hunter Water reviewed the outcomes of the scheme specific risk assessments against the Corporate risk appetite statements.

Element 3:

Preventive measures and multiple barriers

Preventive measures are detailed in the Risk Assessment Post Workshop Update Summary³⁵² and risk assessment spreadsheet³⁵³ (Morpeth provided as evidence). Identified preventive measures include wastewater treatment, standard operating procedures (SOPs), SCADA monitoring, alarms and automatic interlocks.

The site visit to the Morpeth WWTW included confirmation that the identified preventive measures are implemented and are adequate to manage the associated risk. The primary preventive measure for the Morpeth WWTW is the ability to divert recycled water to the licenced plant discharge point, thereby stopping the supply of recycled water to the customers in the event of an issue with water quality. During the site inspection, the arrangement of the bypasses, lagoon and licence point discharges were discussed and observed and were consistent with the scheme description and details in the risk assessment spreadsheet. Diversion of recycled water to the licenced discharge point is automatically triggered when plant flow is above the critical limit and this arrangement was observed in the SCADA system.

The risk assessment identifies control measures that must be implemented on customer sites to prevent exposure to recycled water, including restricting access during irrigation, withholding periods and spray drift control. During the audit, the Easts Leisure and Golf Club was visited, and the onsite preventive measures inspected. Signage warning golfers and visitors that recycled water was used on the site was in place at relevant areas and around the storage pond. Fencing

³⁴⁶ Veolia – Minutes - Monthly Recycled Effluent Meeting – 20 August 2018.

³⁴⁷ Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.

³⁴⁸ Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.

³⁴⁹ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁵⁰ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³⁵¹ Hunter Water - Corporate Risk Driver Analysis Summary Table - Inability to Manage Recycled Water – February 2018.

³⁵² Hunter Water – Recycled Water Quality Risk Assessment Update Summary – Morpeth – April 2017.

³⁵³ Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.

and restricted access was observed. Some examples of purple coloured pipe were observed; however, it was mentioned that historically purple pipes were not always installed, and the Club is in the process of implementing a major upgrade to the irrigation system, which will include the installation of designated non-potable pipes and fittings where possible. Spray drift prevention is also included as a preventive measure to address inhalation of aerosols. It was observed on the Easts Leisure and Golf Club that there is a fountain in the recycled water pond, which is a potential source of aerosols that may drift during windy conditions. **OFI-HWC-2017/18-18:** It is suggested that Hunter Water include a requirement in the customer contract for the Easts Leisure and Golf Club, and any other customers with fountains, to cease using fountains associated with recycled water in windy conditions to avoid spray drift.

Critical control points

The implementation of the critical control points for the Morpeth WWTW was audited during the site inspection through observation of the SCADA monitoring and the critical limits set in SCADA.

Table 4-1 of Morpeth RWQMP³⁵⁴ details the CCPs for the scheme. The audit confirmed that Veolia is implementing the CCPs as detailed in the RWQMP however:

- Review of the SCADA critical limits for CCP1 Secondary Treatment Processes noted a time delay of 5 minutes, which is not mentioned in the RWQMP. Whilst implementing a time delay is a practical approach to avoid excessive alarms due to very short excursions, it is not documented in the RWQMP.
- The RWQMP identifies the monitoring point for CCP3 Maturation Pond as the 'inlet flow rate' at the 'exit of Maturation Pond 3'; however, it was mentioned that this is actually measured at the overflow to maturation pond.

Recommendations have been provided in the audit of the previous clause (refer **Table 3.8**) to ensure that critical limits are documented accurately in the RWQMP, including any time delays and to ensure the locations where critical limits are applied are accurately documented.

A SCADA change request process has been established to confirm that any changes to CCPs are documented and approved. SCADA change requests^{355,356} were provided as evidence to demonstrate that changes to SCADA are approved, however in the examples provided for this audit, the SCADA change requests were requested by Veolia and signed off by a Veolia Supervisor. The examples provided as evidence document the process for Veolia to request a SCADA change to be implemented by Hunter Water and demonstrate that the SCADA alarms are protected by an established process.

The Monthly Contract Report³⁵⁷ for March 2018 shows how CCP exceedances are reviewed and reported to Hunter Water. CCP Alarm Report 18062018³⁵⁸ details critical limits exceeded during June 2018 which includes details about the alarm acknowledgement and some comments on actions, for example who was notified.

Element 4:

Operational procedures

The Blue Green Algae Management Response Plan³⁵⁹ was shown during the audit as evidence of the establishment of the SOP for managing algal blooms. In the Monthly Contract Report for March 2018, details of algae monitoring in WWTW ponds and visual inspections are included, as

³⁵⁴ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁵⁵ Veolia – SCADA Change Request – SC0228-WW-MOR – 17 May 2017.

³⁵⁶ Veolia – SCADA Change Request – SC0261-WW-MOR – 22 September 2017.

³⁵⁷ Veolia – Monthly Contract Report - March 2018.

³⁵⁸ Unknown – Spreadsheet – CCP Alarm Report – 18 June 2018.

³⁵⁹ Hunter Water – Blue Green Algae - Management Response Plan – Sewage Lagoons – Receiving Waters - 7 September 2018.

well as any actions taken, such as increased monitoring, follow up testing and corrective responses such as flushing of ponds.

The Plant Operating Manual Morpeth WWTW³⁶⁰ was provided as evidence of established SOPs at the WWTW at Morpeth.

In the risk assessment for Morpeth,³⁶¹ there is reference to a procedure relating to valve operation as a preventive measure. It was mentioned that this procedure is no longer relevant as the valve is now automated.

Operational monitoring

During the site visit to Morpeth WWTW, the implementation of operational monitoring as detailed in the site specific RWQMPs^{362,363} was confirmed. The audit included observation of online monitoring, controlled through SCADA, and the details of alarms and interlocks implemented. The Morpeth WWTW Plant Spreadsheet³⁶⁴ contains all of the operational monitoring undertaken for the WWTW, including hours of operation, volumes taken by customers, treatment process monitoring, raw water monitoring and onsite laboratory results. It was discussed that conditional formatting could be implemented to alert an operator when an alert or critical limit is triggered. **OFI-HWC-2017/18-19:** Veolia should consider including conditional formatting in the Plant Spreadsheet to highlight results that are outside of the validated range.

Results are also trended on SCADA and this was observed during the audit. It was noted that on 20 June 2018, a low UVT was recorded. It was discussed that the valve was shut during this time and the Monthly Contract Report June 2018³⁶⁵ Section 12 confirmed that the maturation valve was shut and no reuse from the pond occurred.

A recommendation (**REC-HWC-2017/18-06**) has been provided in the audit of clause 3.2.1 (refer **Table 3.8**) to implement an alarm for when UVT falls below the validated range (e.g. 45% at Morpeth WWTW) and to include conditional formatting in the Plant Spreadsheet to highlight results that are outside of the validated range.

Operational corrections

The Monthly Contract Reports for May and June 2018 were provided as evidence of the operational corrections undertaken and of record keeping of the corrections taken.

Equipment capability and maintenance

Veolia is responsible for maintenance and calibration of the relevant equipment at the WWTW. The record³⁶⁶ of the calibration of the UVT meter at Morpeth WWTW shows the process, including initial calibration that failed the test, and was later calibrated in June 2018. A subsequent calibration in July again failed the test. This triggered an overhaul of the meter that was sent to Xylem in August 2018 and completed on 27 August 2018.

Materials and chemicals

The Veolia Monthly Contract Report³⁶⁷ for March 2018 details how Veolia tracks and reports on chemical usage for its WWTWs. Where relevant, details of chemical contracts are included in the Contract Report.

³⁶⁰ Veolia - Plant Operating Manual Morpeth WWTW – 19 June 2018.

³⁶¹ Hunter Water – Spreadsheet – Morpeth Risk Assessment – 2017.

³⁶² Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁶³ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³⁶⁴ Veolia – Spreadsheet – Morpeth WWTW Plat Spreadsheet – populated to 24 September 2018.

³⁶⁵ Veolia – Monthly Contract Report – June 2018.

³⁶⁶ Veolia – Work Order - ST-MOR-UVT Calibration [3 Months] – printed 9 November 2018.

³⁶⁷ Veolia – Monthly Contract Report - March 2018.

Element 5:

Recycled water quality monitoring

Verification monitoring for all of the Hunter Water recycled water schemes is detailed in the Hunter Water Recycled Water Monitoring Program,³⁶⁸ the Veolia Morpeth WWTW Sampling Calendar (TEM-2882)³⁶⁹ and Morpeth WWTW Sampling Guide Sheet (TEM-2919).³⁷⁰

The Morpeth WWTW Sampling Schedule – Lab Contract³⁷¹ details the parameters and number of annual samples to be analysed. The number of samples for *E. coli* for the year indicated on the spreadsheet is 52, which is consistent with weekly testing as detailed in the site specific RWQMPs.^{372,373}

The Morpeth *E. coli* Mat Pond Valve Data Spreadsheet³⁷⁴ provides an extract of data requested during the audit. This spreadsheet shows that *E. coli* sampling was undertaken weekly during the audit period from July 2017 – September 2018.

Application site and receiving environment monitoring

Recycled water customers are responsible for undertaking sampling of the recycled water application site; the Soil and Water Analysis³⁷⁵ undertaken by Easts Leisure and Golf Club was provided as an example.

Satisfaction of users of recycled water

Audits of the recycled water customer sites were undertaken annually during the audit period. Records of audits of Morpeth WWTW customers were provided as evidence of the implementation of annual inspections of the customer sites.^{376,377} The audit report includes a tick box for ‘user satisfied with recycled water’.

Short-term evaluation of results

Monthly contract reports were provided as evidence of implementation of processes for short term evaluation of results. The Monthly Contract Reports for June 2018³⁷⁸ and March 2018³⁷⁹ were sighted.

Corrective responses

Corrective responses taken by Veolia in response to a critical limit exceedance or operational issue are detailed in the monthly contract reports. For example, in the Contract Report March 2018, an issue identified as ‘On the 8th November 2017, a combination of effluent and potable water may have been discharged through Monitoring Point 3 without UV disinfection while inflows were less than 44 L/s; the corrective response is also documented as ‘Operator isolated the decant and notified the Veolia supervisor. Updated report has been submitted to Hunter Water.’

Hunter Water provided an example of corrective responses undertaken and recorded in Integrum³⁸⁰ which showed items relating to UV issues at Kurri Kurri and filter issues at Branxton that were captured and allocated to a Hunter Water officer with the due date for completion.

³⁶⁸ Hunter Water – Corporate Standard – Recycled Water Quality Monitoring Plan – Version 3 – 28 June 2017.

³⁶⁹ Veolia – Morpeth WWTW Sampling Calendar - TEM-2882 – 28 June 2018.

³⁷⁰ Veolia – Morpeth WWTW Sampling Guide Sheet – TEM-2919 – 28 June 2018.

³⁷¹ Hunter Water – Spreadsheet - Morpeth WWTW Sampling Schedule – Lab Contract – undated.

³⁷² Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁷³ Veolia – Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³⁷⁴ Veolia – Spreadsheet - Morpeth *E. coli* Mat Pond Valve Data Spreadsheet – July 2017 – September 2018.

³⁷⁵ Easts Leisure and Golf Club – Soil Analysis – 26 July 2017.

³⁷⁶ Hunter Water – Michael Lynch Annual Site Inspection – 19 June 2018.

³⁷⁷ Hunter Water – Easts Leisure and Golf Annual Site Inspection – 19 June 2018.

³⁷⁸ Veolia – Monthly Contract Report – June 2018.

³⁷⁹ Veolia – Monthly Contract Report - May 2018.

³⁸⁰ Hunter Water – Screenshot – Integrum example – undated.

Element 6:

Communication

Emergency communications are under Hunter Water control and Veolia assist where required or under the relevant Practice Note PN113.³⁸¹

Veolia provided a record of a Branxton WWTW elevated turbidity incident report³⁸² which detailed the communication undertaken and the subsequent sign-off by Veolia's manager (or proxy) and Hunter Water's Recycled Water Manager. It is also noted that this event was captured in the Integrum example provided by Hunter Water detailing how Hunter Water captured and tracked issues.

Hunter Water provided a record³⁸³ of an emergency exercise taken in September 2018 which included testing of communication protocols for emergencies.

Incident and emergency response protocols

The Branxton WWTW elevated turbidity incident report details the reporting associated with an early warning notification made by Veolia from 6 September 2018. The report details trending undertaken to understand the change in water quality and an assessment of the severity of the incident. The form includes a section where any follow up is flagged, for example notification to NSW Health.

The Kurri WWTW bypass incident report³⁸⁴ provided an example of how Hunter Water manages incidents, and this was consistent with the Integrum screenshot. Record of the notification³⁸⁵ to NSW Health was shown during the audit.

Business Resilience Emergency Exercises Participants 2018 Spreadsheet³⁸⁶ outlines the training undertaken in relation to the emergency management protocols. Business Resilience Training Course Attendance sheet (30/8/18)³⁸⁷ was also provided as evidence of training undertaken by Hunter Water.

Element 7:

Hunter Water has developed a new system for identifying and tracking recycled water training and there will be a new program when the dual reticulation network comes online. The Hunter Water QMS RASCI Spreadsheet³⁸⁸ outlines the roles and responsibilities for all staff with roles under the recycled water framework and it was mentioned that this will be used to identify and deliver required training. Veolia provided an extract³⁸⁹ from its Training Register as evidence of having delivered training to wastewater staff. Hunter Water provided a screenshot³⁹⁰ of training delivered in relation to using the document control system TRIM.

³⁸¹ Hunter Water – Practice Note – Communication Protocol – HWC-PN113.

³⁸² Veolia – Recycled Water Quality Incident/Early Warning Report – Branxton Elevated Turbidity - 6 September 2018.

³⁸³ Janellis – Master Sequence of Events - Exercise – Hunter Water Corporation - 13th September 2018.

³⁸⁴ Veolia - Recycled Water Quality Incident/Early Warning Report – Kurri Kurri Bypass Incident - 20 February 2018.

³⁸⁵ Hunter Water – Integrum record – Notification to NSW Health – 15 March 2018.

³⁸⁶ Hunter Water – Spreadsheet – Business Resilience Emergency Participants 2018.

³⁸⁷ Hunter Water - Business Resilience Training Course Attendance – 30 August 2018.

³⁸⁸ Hunter Water – Spreadsheet – QMS RASCI Matrices Spreadsheet – undated.

³⁸⁹ Hunter Water Veolia Training Register Extract – undated.

³⁹⁰ Hunter Water – Screenshot – TRIM Training – undated.

Element 8:

Consultation with users of recycled water and the community/ Communication and education

Hunter Water provided evidence of consultation with recycled water users including:

- Gillieston Heights Factsheet³⁹¹ and 'Frequently Asked Questions';
- Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights;³⁹²
- Site inspection record³⁹³ of the Easts Leisure and Golf Club;
- Hunter Water's website with a dedicated page for recycling (<https://www.hunterwater.com.au/Water-and-Sewer/Recycling--Reuse/Recycling--Reuse.aspx>); and
- Recycled Water Fact Sheets.^{394,395}

Element 9:

Validation of processes and design of equipment

Hunter Water provided the Validation Testing Program for Water Recycling Schemes – July 2018 Report.³⁹⁶ The results of the validation have been considered in the implementation of the critical control points, and this was observed at the Morpeth WWTW; however, the UV disinfection unit is validated to a minimum UVT of 45%, which is detailed in an email from the manufacturer provided in section 7 of the validation report. The actual unit validation report was not made available by the manufacturer. The Hunter Water Morpeth RWQMP³⁹⁷ does not mention UVT as an operational monitoring parameter, and the Veolia Morpeth RWQMP³⁹⁸ identifies UVT as a component of the critical limit for UV dose but at 40%. During the site inspection of Morpeth, the operational lower limit was observed on the SCADA system for UVT at 20%. It was mentioned that UVT is a parameter included in the calculation of UV dose by the UV unit; however, the operational processes should consider the validated operational envelope of the unit and be consistent with the validated range. Veolia provided evidence³⁹⁹ that UVT is monitored and rarely falls below 45%. Additionally, Veolia provided evidence⁴⁰⁰ to demonstrate that recycled water was not provided to the maturation ponds during periods of low UVT, as the CCP1 triggered the interlock of the valve, in compliance with the site specific RWQMPs for Morpeth.

Recommendations have been provided in the audit of the previous clause (refer **Table 3.8**) to confirm that critical limits are set in accordance with the available validation information.

The validation program⁴⁰¹ for the new water recycling scheme at Gillieston Heights was provided as evidence of a framework for the design of new equipment and it was discussed that the sampling for this scheme was due to commence the day after the onsite audit of the Morpeth WWTW.

³⁹¹ Hunter Water – Factsheet - Gillieston Heights FAQ tenants landlords owner occupiers – 2018.

³⁹² Hunter Water - Contact Centre Advice - Recycled water: Chisholm, Thornton and Gillieston Heights - 4 May 2018.

³⁹³ Hunter Water – Municipal Recycled Water Inspection Report – Easts Leisure and Golf Club – 19/06/2018.

³⁹⁴ Hunter Water – Factsheet – General information for Recycled Water Users – undated.

³⁹⁵ Hunter Water – Factsheet – Recycled Water for Homes – undated.

³⁹⁶ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

³⁹⁷ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

³⁹⁸ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

³⁹⁹ Veolia – Spreadsheet – Morpeth UVT Data July 2017 – Oct 2018.

⁴⁰⁰ Veolia – Spreadsheet – MOR *E. coli* Mat Pond Valve Data Aug 2017 – Oct 2018.

⁴⁰¹ Hunter Water - Chisholm and Gillieston Heights Recycled Water Schemes Validation Report (Draft) – November 2017.

Investigative studies and research monitoring

Hunter Water provided a report detailing the investigation into helminth control for recycled water schemes as an example of an investigative study.⁴⁰²

Veolia reports on innovations in the Monthly Contract Report; for example, the March 2018 report⁴⁰³ includes details of investigations into a new method of cleaning sedimentation tank hoppers, jar testing at Cessnock WWTW and the Cessnock Co-Digestion Waste assessment.

Element 10:

Management of documentation and records

Throughout the audit, Hunter Water and Veolia demonstrated the systems in place for managing documentation and records, including demonstrating the location and easy access to recycled water documentation. Examples of systems for managing documentation include:

- Reservoir – Hunter Water’s intranet workspace;⁴⁰⁴
- TRIM – recycled water document location;⁴⁰⁵
- TRIM support workspace.⁴⁰⁶

The benefits of the documentation system were also demonstrated by the ease of retrieval of requested documentation during the audit interviews. Example documents previously referenced in this report were generally within the review dates.

Reporting

The Compliance and Performance Report 2017-18⁴⁰⁷ outlines Hunter Water’s performance over the financial year. Hunter Water Exception Report to NSW Health Drinking Water and Recycled Water 1st January to 31st March 2018 provides evidence of reporting of exceedances to NSW Health. Monthly Contract Reports were provided as evidence of reporting between Hunter Water and Veolia.

Element 11:

Long-term evaluation of results

The Integrated Management System Review Meeting Agenda,⁴⁰⁸ Report⁴⁰⁹ and Minutes⁴¹⁰ include details of the review of long-term performance for recycled water. Results that were evaluated included customer complaints, completion of improvement items and recycled water incidents.

Long term evaluation of recycled water is undertaken as part of the scheme specific risk assessment and this is documented in the risk workshop background notes (Morpeth,⁴¹¹ Dora Creek,⁴¹² Edgeworth⁴¹³).

⁴⁰² Hunter Water - Helminth controls for Hunter Water’s recycled water schemes – 24 July 2018.

⁴⁰³ Veolia – Monthly Contract Report – March 2018.

⁴⁰⁴ Hunter Water – Screenshot – Reservoir - Recycled Water Workspace – undated.

⁴⁰⁵ Hunter Water – Screenshot – Recycled Water location.

⁴⁰⁶ Hunter Water – Screenshot – TRIM Support Workspace – undated.

⁴⁰⁷ Hunter Water - Compliance and Performance Report 2017-18 – September 2018.

⁴⁰⁸ Hunter Water – Integrated Management System Review – Agenda - 14 August 2017.

⁴⁰⁹ Hunter Water – Integrated Management System Review – Report - August 2017.

⁴¹⁰ Hunter Water – Integrated Management System Review – Minutes- 14 August 2017.

⁴¹¹ Hunter Water – Risk Workshop Update Background Information –Morpeth – April 2017.

⁴¹² Hunter Water – Risk Workshop Update Background Information – Dora Creek – June 2018.

⁴¹³ Hunter Water – Risk Workshop Update Background Information – Edgeworth – June 2018.

Audit of recycled water quality management

External Licence Plan audits are conducted by IPART annually. The recommendations from the audits are captured in Hunter Water's improvement processes and tracked in the Compliance and Commitments Tracker. A screenshot⁴¹⁴ of the tracker showed the recommendations from the previous audit, who is responsible for closing out the issue, the date that the issue is due to be completed and the current status. The recommendations from the previous audit are identified as 'on track'. Hunter Water also provided evidence of an internal review of the recycled water framework using the WSSA Requality methodology.⁴¹⁵

Element 12:

Review by senior managers

Integrated Management System Review Meeting Agenda,⁴¹⁶ Report⁴¹⁷ and Minutes⁴¹⁸ provides evidence of management review of the recycled water framework and performance.

Recycled water quality management improvement plan

Hunter Water provided a screen shot from Integrum⁴¹⁹ to show how improvements and corrective actions from audits and incidents are captured and progressed. It was pointed out that the actions are not prioritised, and it is unclear which actions are a higher priority or have an associated higher risk. **OFI-HWC-2017/18-20:** Hunter Water should consider prioritising improvement plan actions based on the associated risk to ensure items that manage high risks are prioritised.

Recommendations

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

Opportunities for improvement

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

- **OFI-HWC-2017/18-18:** It is suggested that Hunter Water include a requirement in the customer contract for the Easts Leisure and Golf Club, and any other customers with fountains, to cease using fountains associated with recycled water in windy conditions to avoid spray drift.
- **OFI-HWC-2017/18-19:** Veolia should consider including conditional formatting in the Plant Spreadsheet to highlight results that are outside of the validated range.
- **OFI-HWC-2017/18-20:** Hunter Water should consider prioritising improvement plan actions based on the associated risk to ensure items that manage high risks are prioritised.

⁴¹⁴ Hunter Water – Screenshot – Compliance and Commitments Register – July 2018.

⁴¹⁵ Hunter Water – Spreadsheet – Requality Summary – 2018.

⁴¹⁶ Hunter Water – Integrated Management System Review – Agenda - 14 August 2017.


⁴¹⁷ Hunter Water – Integrated Management System Review – Report - August 2017.

⁴¹⁸ Hunter Water – Integrated Management System Review – Minutes- 14 August 2017.

⁴¹⁹ Hunter Water – Screenshot – Integrum example – undated.

3.4.3 System Performance Standards

Table 3.10 System Performance Standards (sub-clause 3.3.1)

Sub-clause	Requirement	Compliance Grade
3.3.1	Water Pressure Standard	 Compliant
	<p>a) Hunter Water must ensure that no more than 4,800 Properties experience a Water Pressure Failure in a financial year (Water Pressure Standard).</p> <p>b) A Property is taken to have experienced a Water Pressure Failure at each of the following times:</p> <ol style="list-style-type: none"> 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 when Hunter Water's systems identify that the Property has experienced a Water Pressure Failure. <p>c) Despite clause 3.3.1(b), a Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of:</p> <ol style="list-style-type: none"> a Planned Water Interruption or Unplanned Water Interruption; water usage by authorised fire authorities in the case of a fire; or a short term or temporary operational problem (such as a main break) which is remedied within four days of its occurrence. 	
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a high risk to public health as it would indicate that Hunter Water has failed to maintain an adequate level of service.	Evidence that Hunter Water has achieved its <i>Water Pressure Standard</i> in any financial year within the audit period.	
Evidence sighted		
<ul style="list-style-type: none"> Hunter Water response to 2018 Audit Questionnaire. Hunter Water, <i>Compliance and Performance Report</i>, September 2018 Email dated 13 November 2018 from Hunter Water to IPART and Cobbitty Consulting (re: <i>Water pressure system performance standard</i>). AOMS Work Order records as referenced. Document: <i>File note - LOW WATER PRESSURE REPORT – 35 Miller St Mayfield West (533449).docx</i>. Hunter Water, <i>File Note; Water Network Planning – Annual Water Pressure Failure Assessment Procedures</i>, 5 October 2018. Document: <i>AOMS problem and solution codes.pdf</i>. 		

Summary of reasons for grade

Hunter Water reported that 1,975 Properties had experienced a Water Pressure Failure during the 2017/18 financial year and demonstrated that the process used to determine the number of Properties was in most respects both robust and consistent with the definitions and exclusions set out in the *Operating Licence*. As the number of Properties that had experienced a Water Pressure Failure was less than the specified limit, Hunter Water is assessed to have been fully compliant with this obligation.

It was, however, noted that the process used to determine the number of affected Properties was not initially fully implemented. Whilst the error did not impact compliance with this obligation, the need to fully document the procedure for determining the number of Properties that have experienced Water Pressure Failures pursuant to this obligation has been identified as an opportunity for improvement.

Discussion and notes

In its *Compliance and Performance Report*,⁴²⁰ Hunter Water reported that 2,487 Properties had experienced a Water Pressure Failure, as defined in the *Operating Licence*, during the 2017/18 financial year. However, it subsequently advised^{421,422} that it had identified an error and the correct count was 1,975 Properties (refer further discussion below).

In either case, as this is significantly below the limit of 4,800 Properties, Hunter Water is compliant with this obligation.

In respect of the process for determining the number of Properties that had experienced a Water Pressure Failure, Hunter Water advised that:⁴²³

“Hunter Water records properties with low pressure as a result of the following:

- *Customer contacts*
- *Use of field pressure data loggers*
- *Computer hydraulic modelling of system performance.”*

The definition of a Water Pressure Failure, which was clearly stated, is consistent with the *Operating Licence*.

Hunter Water further advised that:

“Hunter Water utilises a network of pressure and flow instrumentation to monitor system performance (flow and pressure). This instrumentation streams data via Hunter Water’s SCADA system and alerts the Hunter Water Control Centre via alarms. Advice is provided within SCADA in relation to pressure alarms as to possible system issues and associated responses.

We record customers with low pressure in the AOMS database throughout the year. We confirm low-pressure events by field operator visits (in the case of data loggers and customer contacts). The AOMS technical officer audits all confirmed low-pressure events to ensure that the job was processed correctly and that the data recorded accurately. In the case of a discrepancy, the job is corrected, or sent for further investigation to the Water Network Operations team.

At the end of financial year, we undertake system modelling to identify known low-pressure areas based on the actual peak day demand experienced in the year. We then add these customers to AOMS.

We use the AOMS database to extract all confirmed low-pressure customers for our regulatory reporting (system performance standard).”

⁴²⁰ Hunter Water, *Compliance and Performance Report*, September 2018, section 2.3.1.

⁴²¹ Initially advised during the audit interviews.

⁴²² Email dated 13 November 2018 from Hunter Water to IPART and Cobbitty Consulting (re: *Water pressure system performance standard*).

⁴²³ Hunter Water response to 2018 Audit Questionnaire.

Each of the abovementioned contributions to the recording of pressure failures are discussed further, as follows:

- *Customer contacts* – low pressure events identified by Customers are recorded in the AOMS⁴²⁴ database. Each case is then confirmed (or otherwise) in the field and the outcome recorded. An investigation in response to a Customer contact may involve conduct of a bucket test at the first tap on the Property (this may indicate whether the problem lies with Hunter Water or within the internal plumbing (the presence of galvanised piping may also be an indicator)), or the installation of a temporary pressure monitor with data logger to monitor actual performance.

Hunter Water provided sample evidence to demonstrate the response to Customer contacts:

- AOMS Work Order No: 522002 – bucket test, during which the pressure at the supply point was recorded, was undertaken and the problem identified to lie within the internal plumbing; the property owner had been advised accordingly.
- AOMS Work Order No: 533449 – an investigation was undertaken in response to this specific incident. Analysis undertaken to determine the number of properties impacted; however, as this was the result of a short term operational problem, pursuant to paragraph c) iii) there was no count for the purposes of this obligation.⁴²⁵

It is noted that the report recorded that there were no authorised Fire Fighting events that may have caused this low pressure event (which indicates that a check had been made as part of the investigation) and that hydraulic modelling had been used to determine the extent of the impact.

- *Use of field pressure data loggers* – Hunter Water has a series of permanent pressure monitors located across its system, principally at pumping stations. Low pressure events are alarmed via the SCADA and subsequently investigated in the field. Other SCADA data may contribute to identification of the cause and impact of the problem; hydraulic modelling can again be used to determine the extent of impact.
- *Computer hydraulic modelling of system performance* – Hunter Water advised that the majority of its Water Pressure Failures are identified by annual hydraulic modelling in accordance with the *Annual Water Pressure Failure Assessment Procedures*.⁴²⁶ This involves using Hunter Water's water supply system models (for each supply zone) to determine the minimum pressure at each Property on the peak day of the peak week during the assessment period (financial year). The peak day demand is determined using SCADA records of the bulk supply demand throughout the financial year; model calibration is reviewed on the basis of recorded pressures within the network.

The number of Properties that have experienced a Water Pressure Failure is determined using SQL queries to extract a report from each hydraulic model. Properties identified through the modelling process are captured in AOMS (essentially for record purposes).

For reporting purposes, data is extracted from AOMS on the basis of “solution code”,⁴²⁷ which is used to identify reportable events once they have been investigated and confirmed. The solution code is used to identify where the cause of a Water Pressure Failure is the result of a Planned or Unplanned Water Interruption; water usage by authorised fire authorities in the case of fire; a short term or temporary operational problem; or a daily system demand in excess of 370 ML/day.

The CIS (Customer Information System) is used to identify multiple occupancy properties that have been impacted. An adjustment is also made (based on property details) to remove any

⁴²⁴ AOMS (Asset Operations Maintenance System) is the civil maintenance management system in which Customer complaints are also recorded and the action taken into response recorded.

⁴²⁵ Document: *File note - LOW WATER PRESSURE REPORT – 35 Miller St Mayfield West (533449).docx*.

⁴²⁶ Hunter Water, *File Note; Water Network Planning – Annual Water Pressure Failure Assessment Procedures*, 5 October 2018.

⁴²⁷ Document: *AOMS problem and solution codes.pdf*.

duplicate records; i.e. where low pressure events have been identified by both hydraulic modelling and either Customer contact and/or pressure monitoring.

Hunter Water advised that the above referenced reporting error was the result of a double counting, where ad hoc low pressure complaints and system modelled results were double counted in AOMS. It is understood that a process change was required following the introduction of Customer rebates in respect of Water Pressure Failures.

It appears that whilst there are documented procedures in place for determining the number of Properties that have experienced a Water Pressure Failure using Hunter Water's hydraulic models, the remainder of the process is not clearly documented. Hunter Water advised that it has commenced the preparation of a *Reporting and Monitoring Protocol*, which will clearly document the process; however, this has not yet been completed.

Whilst compliance with this obligation (clause 3.3.1) has been demonstrated, the reporting error and absence of fully documented procedures potentially reflects a non-compliance with clause 6.2.2 of the *Operating Licence*, which was not included in the scope of this audit. Therefore, as an opportunity for improvement (**OFI-HWC-2017/18-21**), it is strongly suggested that Hunter Water fully documents its procedure for determining the number of Properties that have experienced Water Pressure Failures pursuant to clause 3.3.1 of the *Operating Licence*.

Recommendations


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

Opportunities for improvement

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

- **OFI-HWC_2018.21:** It is strongly suggested that Hunter Water fully documents its procedure for determining the number of Properties that have experienced Water Pressure Failures pursuant to clause 3.3.1 of the *Operating Licence*.
-

Table 3.11 System Performance Standards (sub-clause 3.3.2)

Sub-clause	Requirement	Compliance Grade
3.3.2	<p>Water Continuity Standard</p> <p>a) Hunter Water must ensure that in a financial year:</p> <p>i) no more than 10,000 Properties experience an Unplanned Water Interruption that lasts more than five continuous hours; and</p> <p>ii) no more than 5,000 Properties experience three or more Unplanned Water Interruptions that each last more than one hour,</p> <p>(Water Continuity Standard).</p> <p>b) For the purposes of clause 3.3.2(a), Hunter Water must use the best available data (taking account of water pressure data where that data is available) to determine:</p> <p>i) whether a Property has experienced an Unplanned Water Interruption; and</p> <p>ii) the duration of the Unplanned Water Interruption.</p> <p>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 clause 3.3.2(a).</p>	<div> Compliant</div>
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a high risk to public health as it would indicate that Hunter Water has failed to maintain an adequate level of service.	Evidence that Hunter Water has achieved its <i>Water Continuity Standard</i> in any financial year within the audit period.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.Hunter Water, <i>Compliance and Performance Report</i>, September 2018.Document: <i>AOMS problem and solution codes.pdf</i>.Hunter Water, Procedure – <i>Discontinuity Assessment and Reporting Procedure</i> (Version 1.0), 26 August 2018.AOMS Work Order records as referenced.Document: <i>Report - Completed Water Continuity Report - 202 Adelaide Street Heatherbrae – 535654.pdf</i>.Document: <i>Procedure - S2 - Unplanned water interruptions 5 continuous hours - Final for 2017-2022 OL.docx</i>.Document: <i>Procedure - S3 – Three or more unplanned water interruptions greater 1 hour - FINAL 2017-2022 OL.docx</i>.		

Summary of reasons for grade

Hunter Water reported that during the 2017/18 financial year 4,284 Properties had experienced an Unplanned Water Interruption for more than five continuous hours and that 3,228 Properties had experienced three or more Unplanned Water Interruptions of more than one hour; it also demonstrated that the process used to determine the number of Properties was both robust and consistent with the definitions and exclusions set out in the *Operating Licence*. As the number of Properties that had experienced an Unplanned Water Interruption was less than the specified limits, Hunter Water is assessed to have been fully compliant with this obligation.

It was, however, noted that the end-to-end process for identifying, recording, investigating and reporting in respect of Unplanned Water Interruptions and for reporting against the Water Continuity Standard has not been fully documented. An opportunity for improvement has been identified in respect of this matter.

Discussion and notes

In its *Compliance and Performance Report*,⁴²⁸ Hunter Water reported during the 2017/18 financial year:

- 4,284 Properties had experienced an Unplanned Water Interruption that lasted for more than five continuous hours; and
- 3,228 Properties had experienced three or more Unplanned Water Interruptions that each lasted more than one hour;

as defined in the *Operating Licence*.

Hunter Water provided a detailed description of how it identifies and assesses the number of properties that have experienced an Unplanned Water Interruption for the purposes of reporting against this obligation.⁴²⁹ It notes that:

“A Water Interruption is defined as 0 m head of water pressure at the first cold water tap of the Property.

Unplanned water interruption is when the customer does not receive adequate notice of the interruption (2 days for residential, and 7 days for non-residential) or when a planned interruption extends beyond the notified shutdown time.”

and that:

“Hunter Water is initially made aware of potential water discontinuities from a variety of sources:

- *Schedules and planners planning a job that requires water network shutdown*
- *Notification by field employees*
- *Network monitoring by System Controller or other operations employee (e.g. Water Network Operations Engineer)*
- *Customer call or notification of an issue with water supply (e.g. a ‘no water’ call).”*

Considering network monitoring as a source of identification (for example) in more detail; Hunter Water has a series of pressure monitors and flow meters located across its system, which are used to monitor system performance. Any performance that may be indicative of an interruption to water supply (for example; low pressure, no flow or excessive flow) is alarmed. In the case of pressure alarms, advice is provided regarding possible system issues and associated responses.

All identified Unplanned Water Interruptions are logged and managed in AOMS (Asset Operations Maintenance System). Details as to the source by which the work order (job) was identified (i.e. Customer or Maintenance), the initially assigned “problem” code, the times at which water supply ceased and was reinstated, details of all action taken and the “solution” code

⁴²⁸ Hunter Water, *Compliance and Performance Report*, September 2018, section 2.3.2.

⁴²⁹ Hunter Water response to 2018 Audit Questionnaire.

assigned upon completion of the job (i.e. when water supply has been reinstated) are all recorded. AOMS Work Order No: 545383 was provided as an example; in this case, surface flowing water was identified and reported by a passer-by (Customer).

The extent of impact of a water interruption is determined by undertaking a valve trace in the Hunter Water GIS; hydraulic modelling may also be used for larger shutdowns. Hunter Water provided a *Discontinuity Assessment and Reporting Procedure*,⁴³⁰ which defines the process for undertaking hydraulic assessment and reporting of failures within the water supply network that have resulted in discontinuity of water supply to customers.

As an example, Hunter Water provided documentation in respect of AOMS Work Order No: 535654, which was raised in response to a water main failure.⁴³¹ The documentation included a copy of the AOMS work order record, details of the customer call from which the failure was identified, and a Water Discontinuity Report that detailed the assessment of SCADA data that had been undertaken in order to determine and confirm the extent of the impact. Once the investigation is completed, details are captured in AOMS and the GIS.

For reporting purposes, data is extracted from both AOMS and the CIS (Customer Information System) using SQL queries, details of which have been provided (but not assessed in detail).^{432,433}

It appears that whilst there are documented procedures in place for undertaking hydraulic assessment and reporting of failures that have resulted in Unplanned Water Interruptions and for extracting data for the purposes of reporting against the Water Continuity Standard, the remainder of the process is not clearly documented. The detail presented in Hunter Water's response to the Audit Questionnaire is more extensive and, used in conjunction with the existing documentation, provides a good description of the process that should be more formally captured. Accordingly, as an opportunity for improvement (**OFI-HWC-2017/18-22**), it is strongly suggested that Hunter Water fully documents the end-to-end process for identifying, recording, investigating and reporting in respect of Unplanned Water Interruptions and for reporting against the Water Continuity Standard pursuant to clause 3.3.2 of the *Operating Licence*.

Recommendations

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

Opportunities for improvement

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

- **OFI-HWC-2017/18-22:** It is strongly suggested that Hunter Water fully documents the end-to-end process for identifying, recording, investigating and reporting in respect of Unplanned Water Interruptions and for reporting against the Water Continuity Standard pursuant to clause 3.3.2 of the *Operating Licence*.


⁴³⁰ Hunter Water, Procedure – *Discontinuity Assessment and Reporting Procedure* (Version 1.0), 26 August 2018.

⁴³¹ Document: *Report - Completed Water Continuity Report - 202 Adelaide Street Heatherbrae – 535654.pdf*.

⁴³² Document: *Procedure - S2 - Unplanned water interruptions 5 continuous hours - Final for 2017-2022 OL.docx*.

⁴³³ Document: *Procedure - S3 – Three or more unplanned water interruptions greater 1 hour - FINAL 2017-2022 OL.docx*.

Table 3.12 System Performance Standards (sub-clause 3.3.3)

Sub-clause	Requirement	Compliance Grade
3.3.3	<p>Wastewater Overflow Standard</p> <p>a) Hunter Water must ensure that in a financial year:</p> <p>i) no more than 5,000 Properties experience an Uncontrolled Wastewater Overflow in dry weather; and</p> <p>ii) no more than 45 Properties experience three or more Uncontrolled Wastewater Overflows in dry weather,</p> <p>(Wastewater Overflow Standard).</p>	<div> Compliant</div>
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a high risk to public health and/or the environment as it would indicate that Hunter Water has failed to maintain an adequate level of service.	Evidence that Hunter Water has achieved its <i>Wastewater Overflow Standard</i> in any financial year within the audit period.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.Hunter Water, <i>Compliance and Performance Report</i>, September 2018Email dated 24 October 2018 from Hunter Water to IPART and Cobbitty Consulting (re: <i>Wastewater overflow system performance standard</i>).AOMS Work Order record as referenced.Document: <i>HW2009-1194 14 4.012 Procedure – S4 – Uncontrolled Dry weather waste water overflow – Final 2017-2022 OL (2).docx</i>.Document: <i>HW2009-1194 14 4.012 Procedure – S3 – 3 or more uncontrolled waste water overflows – Final 2017-2022 OL (3).docx</i>.		
Summary of reasons for grade		
<p>Hunter Water reported that during the 2017/18 financial year 3,347 Properties had experienced an Uncontrolled Wastewater Overflow in dry weather and that 22 Properties had experienced three or more Uncontrolled Wastewater Overflow in dry weather. It also demonstrated that the number of Properties was both robust and consistent with the definitions and exclusions set out in the <i>Operating Licence</i>. As the number of Properties that had experienced an Uncontrolled Wastewater Overflow(s) was less than the specified limits, Hunter Water is assessed to have been fully compliant with this obligation.</p> <p>It was, however, noted that the process used to determine the number of affected Properties was not always fully/correctly implemented. Whilst the error did not impact compliance with this obligation, the need to review and fully document the procedure for determining the number of Properties that have experienced Uncontrolled Wastewater Overflows pursuant to this obligation has been identified as an opportunity for improvement.</p>		

Discussion and notes

In its *Compliance and Performance Report*,⁴³⁴ Hunter Water reported during the 2017/18 financial year:

- 3,352 Properties had experienced an Uncontrolled Wastewater Overflow in dry weather; and
- 22 Properties had experienced three or more Uncontrolled Wastewater Overflows in dry weather;

as defined in the *Operating Licence*.

However, it subsequently advised⁴³⁵ that it had identified a minor inconsistency in the manner in which multiple occupancy properties had been treated; under certain conditions, the inconsistency had resulted in double counting of multiple occupancies. The corrected figures for the 2017/18 financial year are as follows:

- 3,347 Properties had experienced an Uncontrolled Wastewater Overflow in dry weather, a reduction of 5 Properties; and
- 22 Properties had experienced three or more Uncontrolled Wastewater Overflows in dry weather, i.e. no change.

Hunter Water also noted that the correction resulted in small reductions in the numbers previously reported in respect of the 2014/15 and 2015/16 financial years.

Hunter Water noted that:

“All reports of sewer surcharges received from public or internally are recorded in the AOMS database.

A field operative will respond to a report of a sewer surcharge and verify that an overflow has occurred. The field operative collects data including the asset type, cause, action taken, wet weather and affected properties. This data is logged in the AOMS system.

Where it is difficult to identify the precise location of the problem, field staff have been instructed to err on the side of nominating it as a Hunter Water problem and therefore is included in the licence count.

The field staff also assess if it is a wet weather overflow. If roots, rags or fats etc contribute to the overflow it is considered a dry weather overflow and therefore is included in the licence count.”

Most overflows are reported by the public via the Customer Centre. Once entered into AOMS (Asset Operations Maintenance System) database, they are assigned for investigation. The first responder confirms whether there has been an actual sewer overflow and, if so, whether it is deemed a dry weather overflow (caused by a choke). The number of properties is assessed by field staff.

AOMS Work Order No: 522159 was provided as an example record. In this case, an overflow had been reported by a Customer; a sewer choke caused by roots was identified as the cause of the surcharge. The properties affected by the overflow were identified.

For reporting purposes, data is extracted from AOMS using SQL queries for both the number of Properties that had experienced uncontrolled overflows⁴³⁶ and the number of properties that had experienced multiple overflows⁴³⁷ based on the “solutions” code,⁴³⁸ although details of the queries have not been assessed.

Whilst a process for determining the number of properties affected by Uncontrolled Wastewater Overflows in dry weather is being implemented, the abovementioned reporting inconsistency

⁴³⁴ Hunter Water, *Compliance and Performance Report*, September 2018, section 2.3.3.

⁴³⁵ Email dated 24 October 2018 from Hunter Water to IPART and Cobbitty Consulting (re: *Wastewater overflow system performance standard*).

⁴³⁶ Document: *HW2009-1194 14 4.012 Procedure – S4 – Uncontrolled Dry weather waste water overflow – Final 2017-2022 OL (2).docx*.

⁴³⁷ Document: *HW2009-1194 14 4.012 Procedure – S3 – 3 or more uncontrolled waste water overflows – Final 2017-2022 OL (3).docx*.

⁴³⁸ The “solution code” is used to identify the nature of the problem to which a work order relates and the action taken to address it.

suggests that it has not always been fully/correctly implemented. As an opportunity for improvement (**OFI-HWC-2017/18-23**), it is suggested that the Hunter Water reviews and fully documents the procedure for determining the number of properties that have experienced Uncontrolled Wastewater Overflows pursuant to clause 3.3.3 of the Operating Licence.

Recommendations

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

Opportunities for improvement


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

- **OFI-HWC-2017/18-23:** It is suggested that the Hunter Water reviews and fully documents the procedure for determining the number of properties that have experienced Uncontrolled Wastewater Overflows pursuant to clause 3.3.3 of the *Operating Licence*.
-

3.5 Organisational systems standards

3.5.1 Asset management system

Table 3.13 Asset management system (sub-clause 4.1.1)

Sub-clause	Requirement	Compliance Grade
4.1.1	By 31 December 2017, Hunter Water must develop a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian Standard AS ISO 55001:2014 Asset management - Management systems - Requirements, or other standard approved by IPART on request by Hunter Water (the Asset Management System).	 Compliant
Risk		Target for Full Compliance
Failure to develop its Asset Management System to be consistent with ISO 55001:2014 presents a risk that Hunter Water may not be able to effectively manage the safe and reliable performance of its assets consistent with contemporary asset management practices.		Evidence that Hunter Water has developed its Asset Management System such that it is consistent with ISO 55001:2014.
Evidence sighted		
<ul style="list-style-type: none"> Hunter Water response to 2018 Audit Questionnaire. <i>Certification awarded to Hunter Water Corporation</i> certifying management system in accordance with ISO 55001:2014, issued by Bureau Veritas, 11 July 2018. <i>IQ-AM, Hunter Water; ISO55001 – Asset Management System Conformity Assessment Review Stage 1</i>, August 2017. Hunter Water, <i>Asset Management Policy</i> (Version 3), June 2018. Hunter Water, <i>Asset Management Policy</i> (Version 2), June 2016. Hunter Water, <i>Strategic Asset Management Plan</i> (Version 2.0), June 2018. 		
Summary of reasons for grade		
<p>Hunter Water demonstrated that it had developed its Asset Management System to be consistent with ISO 55001 by 31 December 2017. The Asset Management System has subsequently (July 2018) been certified as being so.</p> <p>Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>Hunter Water advised that its Asset Management System (AMS) has been developed and was certified as being consistent with ISO 55001 by July 2018. The certification audit was conducted in June 2018 and certification was approved on 11 July 2018.⁴³⁹</p> <p>To demonstrate that its Asset Management System was consistent with ISO 55001 prior to 31 December 2017, Hunter Water provided the Executive Summary from the report on a <i>Conformity Assessment Review</i>⁴⁴⁰ completed in August 2017. The summary of findings indicated that:</p>		

⁴³⁹ *Certification awarded to Hunter Water Corporation* certifying management system in accordance with ISO 55001:2014, issued by Bureau Veritas, 11 July 2018.

“In summary, Hunter Water demonstrates a good level of conformance with the Standard [AS/ISO 55001], both in absolute terms and relative to selected benchmark organisations.

A number of gaps were identified for further action; however, these were such that the development of the asset management system could be considered to be substantially complete at that time.

Hunter Water also provided a portfolio of documentation to demonstrate that the Asset Management System had been developed by 31 December 2017. This included:

- *Asset Management Policy* – which demonstrates Hunter Water’s commitment to the management of its assets; both the latest (June 2018)⁴⁴¹ and the previous (June 2016)⁴⁴² versions were provided; and
- *Strategic Asset Management Plan*⁴⁴³ – this sets out Hunter Water’s strategy for the management of its assets.

It is noted that both of these overarching documents have been updated/prepared subsequent to 31 December 2017, which demonstrates the ongoing development of the system. Other documentation (which is not specifically identified at this point) included a sample of Asset Management Plans (Civil and Electrical), training records (in relation to the new Asset Management System) and details of the asset creation process, some of which is discussed in **Table 3.14** and **Table 3.15**.

On the basis of the evidence provided, it is apparent that Hunter Water had developed its Asset Management System to be consistent with ISO 55001 by 31 December 2017.

Recommendations

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

Opportunities for improvement

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


⁴⁴⁰ IQ-AM, *Hunter Water; ISO55001 – Asset Management System Conformity Assessment Review Stage 1*, August 2017.

⁴⁴¹ Hunter Water, *Asset Management Policy* (Version 3), June 2018.

⁴⁴² Hunter Water, *Asset Management Policy* (Version 2), June 2016.

⁴⁴³ Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.

Table 3.14 Asset management system (sub-clause 4.1.2)

Sub-clause	Requirement	Compliance Grade
4.1.2	By 1 July 2018, Hunter Water must ensure that the Asset Management System is fully implemented and must, from that date, ensure that all relevant activities are carried out in accordance with the Asset Management System.	 Compliant

Risk

Failure to fully implement its Asset Management System presents a high level of operational risk that Hunter Water may not be able to effectively manage the safe and reliable performance of its assets as required to meet its business objectives.

Target for Full Compliance

Evidence that that Hunter Water has fully implemented its Asset Management System and that all relevant activities are carried out in accordance with the Asset Management System by 1 July 2018.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.
- Hunter Water, *Stormwater Asset Class Management Plan* (Issue 2), 17 November 2015.
- hunterh₂O, Hunter Water Corporation; *Chichester Trunk Gravity Main; Asset Management Plan* (Revision C), 20 May 2016.
- Hunter Water, *Asset Management Plan; Grahamstown Dam* (Issue 4), 11 June 2014.
- Wiser Analysis, *Hunter Water: Development of PARMS Deterioration Curves* (Final), October 2018).
- Hunter Water, *Asset Class Plan – Pressure Equipment* (Version 1.0), undated.
- Hunter Water, *Compliance and Performance Report*, September 2018.
- Hunter Water, *Asset Management Policy* (Version 3), June 2018.
- Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.
- Hunter Water, *Risk Appetite Statement* (Version 2.0), undated.
- Hunter Water, *Compliance and Performance Report*, September 2018.
- Metropolitan Water Directorate, *Lower Hunter Water Plan*, 2014.
- Document: *Civil records (field audit examples).pdf*.
- Hunter Water, *Reservoir Inspection* (form), undated.
- Hunter Water, *Process for Reservoir Inspections*, undated.
- Hunter Water, *Work Instruction 011 – Working on Reservoirs and High Level Tanks* (Version 1.0), December 2018.
- Document: *Reservoir Inspection Form NEW APP - Nth Lambton 1 res 23-10-18.pdf*.
- Water Infrastructure Services, *Hunter Water; Cessnock No 2 (Bellbird 2) Reservoir; Reservoir Inspection Report*, 22 November 2017.
- Document: *Integrum Form - LMAE-102204 North Lambton 1 Res 26-10-18.pdf*.
- hunterh₂O, *Reservoir Roof Structural Condition Survey and Assessment; North Lambton 1; Hunter Water Corporation*, November 2017.
- Email dated 26 October 2018 from Hunter Water to hunterh₂O and response dated 29 October 2018 (re: *North Lambton Roof Hazard Near Miss*).

-
- Email dated 16 November 2018 from Hunter Water to Cobbitty Consulting and IPART (re: *North Lambton reservoir roof*).
 - Hunter Water, *Work Instruction 001 – Working on Potable Water Mains and Fittings* (Version 2), 14 March 2018.
 - Document: *Form - Work Instruction WI001 - Theory Competency Assessment - 11 October 2016.pdf*.
 - Document: *Elder Street Lambton.pdf*.
 - Hunter Water, *Project Development Plan for Contract CS0341 Minor Capital Works* (for STMOR-AB1 BLOWER 1, BIOREACTOR – 000000030404), Version 1.1), 2 November 2018.
 - Veolia document: *TEM-3126 HW - Morpeth WWTW Weekly Duties – 1.pdf*.
 - MS Excel workbook: *Maint Regime - Morpeth WWTW UV.xlsx*.
 - MS Excel workbook: *Morpeth UV System WOs 2017 2018.xlsx*.
 - MS Excel workbook: *Morpeth Odour Control WOs 2017 2018.xlsx*.
 - Veolia document: *TEM-2826 HW - Dungog WTP Weekly PMT Duties - 1.pdf*.
 - MS Excel workbook: *Maint Regime - Dungog WTP Backwash Pump.xlsx*.
 - MS Excel workbook: *Morpeth UV System WOs 2017 2018.xlsx*.
 - Hunter Water, *Treatment Plant Maintenance Audit; Toronto WWTW*, 17 October 2018.
 - Email dated 7 November 2018 from Hunter Water to Cobbitty Consulting and IPART (re: *Veolia KPI reports for IPART audit*).
 - MS Excel workbook: *D02 Asset Deficiency Register (WIP) - Oct 2018.xlsx*.
-

Summary of reasons for grade

On the basis of the observations made and evidence reviewed, it is apparent that as it has transitioned its Asset Management System to be ISO 55001 compliant, Hunter Water has continued to implement appropriate asset management practices. Furthermore, it has continued to implement improvement initiatives to further develop the system.

Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.

Discussion and notes

In defining the scope of the 2018 Operational Audit, IPART noted that:⁴⁴⁴

“NSW Health notes that defects to a reservoir had not been rectified when an incident was notified in April 2018. It notes a previous audit recommendation regarding training of personnel undertaking inspections to understand the importance of completing reservoir inspections accurately. Auditor to review and assess training records for reservoir inspection staff and progress on Recommendation 2016-17-04.”

Overview:

Assessment of compliance in respect of this obligation has involved review of Hunter Water’s approach to the management of its assets under its ISO 55001 consistent Asset Management System. As reported in **Table 3.13**, the Asset Management System in its current form was independently certified as being consistent with ISO 55001 in July 2018.

The process of transitioning from Hunter Water’s previous Asset Management System that was consistent with the WSAA Aquamark framework to be ISO 55001 consistent was one of continual improvement, which involved enhancement of specific aspects of the system. It is therefore difficult to assess at what stage the ISO 55001 consistent system can be deemed to have been implemented. Accordingly, for the purposes of this audit (and as acknowledged in **Table 3.15**), implementation of the Asset Management System has been assessed in detail under this obligation.

⁴⁴⁴ Refer **Appendix A**.

In addition to the overall approach, consideration has been given to a sample of the improvement initiatives implemented during the audit period and the field implementation of asset management practices. This assessment has been based on observations made during the field verification site visits, an overview of which is provided in **Section 2**.

As noted in **Section 2.1**, Hunter Water has contracted Veolia to provide operation and maintenance (mechanical and electrical) services at all of its treatment facilities. Accordingly, some consideration has been given to these arrangements as they relate to management of the assets.

It is noted that progress in addressing previous recommendation 2016/17-04, which relates to training of personnel who undertake reservoir roof inspections, is addressed primarily in **Table 4.5**.

Asset Management System documentation:

Hunter Water advised that, in the process of reviewing and updating its Asset Class Management Plans as part of its transition to an ISO 55001 consistent Asset Management System, it had reviewed the structure of the plans (and its asset management documentation from a broader perspective) to ensure that they are adding value to the business. More specifically, Hunter Water outlined the program that it had been implementing to update its Asset Class Management Plans, which comprises:⁴⁴⁵

- *Phase 1 – Involves updating the strategy analysis to determine the optimum balance between capital and maintenance investment to meet or improve performance and service standards. These are incorporated into the G1 business cases, which have been prepared for the 2020-25 price submissions (see the water network, structures and network mechanical-electrical renewals business cases).*
- *Phase 2 – Involves reviewing the template for the Standard Asset Class Management, which has been completed.*
- *Phase 3 – Involves reviewing the structure of the Asset Class Plans to ensure they are adding value to the business. This has been completed, which has determined that the optimum methodology is to rationalise the plans into a:*
 - *Product Asset Management Plan, which captures and monitors the strategic and operational requirements of the assets.*
 - *State of the Assets dashboard, which is a live report of the state of the assets and their performance. This is work in progress, but with a functional specification for trunk water mains.*
 - *Review and analysis of the detailed asset class strategies for investment, performance and risk (see above).*
 - *Consolidation of the facility management plans for the super critical facilities (see the Chichester Trunk Gravity Main, CTGM).*

Review of the structure of its asset management documentation and specifically the Asset Class Management Plans from the perspective of value adding is strongly supported. The revised structure comprises:

- *Strategic Asset Management Plan,⁴⁴⁶ which is the overarching document in which Hunter Water's strategy for the management of its assets is outlined;*
- *Asset Management Plans/Asset Class Management Plans for each product, specifically for Water Source, Water Treatment, Water Network, Wastewater Network, Wastewater Treatment, Stormwater Network, and Enabling Network;*
- *Facility Plans for specific facilities or system components as deemed necessary (based on risk and criticality);*

⁴⁴⁵ Hunter Water response to 2018 Audit Questionnaire.

⁴⁴⁶ Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.

-
- Asset Strategies which detail the strategic approach to each asset class or facility as appropriate; these strategies are intended to capture the body of development work undertaken to determine the most effective approach to achieving the long-term service objectives for each asset class/group and will underpin business cases for strategy and funding (implementation) approval; and
 - Fatal Asset Strategies which address assets from the perspective of safety management; strategies are to be developed in respect of Dam Safety, Electrical, Pressure Vessels, Lifting Equipment, Machine Guarding, Hazardous Chemicals, Fall Prevention and Structural Integrity.

Hunter Water provided an example of each of these document types for review, as follows:

- Asset Management Plan – *Stormwater Asset Class Management Plan*;⁴⁴⁷
- Facility Plan – *Chichester Trunk Gravity Main; Asset Management Plan*;⁴⁴⁸
- Facility Plan – *Asset Management Plan; Grahamstown Dam*;⁴⁴⁹
- Asset Strategies – *Hunter Water: Development of PARMS [Pipeline Asset and Risk Management System] Deterioration Curves* (which has informed the asset strategy for reticulation mains);⁴⁵⁰ and
- Fatal Asset Strategies – *Asset Class Plan – Pressure Equipment*.⁴⁵¹

It is noted that, whilst the document structure/hierarchy has been revised, in many cases existing plans are consistent with this approach and do not require redevelopment.

On the basis of the explanation provided during the audit interviews, this structure presents a rational basis for documentation of Hunter Water's approach to the management of the assets. This arrangement should minimise the need for ongoing update and change documentation; once fully put in place, the Asset Strategies are expected to be the primary area of ongoing focus.

Improvement initiatives:

In its *Compliance and Performance Report*,⁴⁵² Hunter Water outlined a number of initiatives that it had implemented during the audit period (principally during the 2017/18 financial year). A selection of these were discussed during the audit, as follows:

- *Asset Management System/ Asset management leadership:*

Hunter Water updated its *Asset Management Policy*⁴⁵³ and finalised its *Strategic Asset Management Plan*⁴⁵⁴ during the audit period. As previously noted, the *Asset Management Policy* demonstrates Hunter Water's organisational commitment to the management of its assets whilst the *Strategic Asset Management Plan* sets out its approach to the management of its assets from an organisational perspective. The *Strategic Asset Management Plan* also provides the basis for alignment with Hunter Water's *2017+3 Corporate Strategy*, which encapsulates revised objectives based on a proactive approach to engagement with stakeholders.

Hunter Water has initiated an asset management review process (at executive manager level) in which the strategic elements of the Asset Management System are reviewed and improvement initiatives assessed and implemented. An asset management steering committee (comprising group managers) is maintained and continues to review key areas for

⁴⁴⁷ Hunter Water, *Stormwater Asset Class Management Plan* (Issue 2), 17 November 2015.

⁴⁴⁸ hunterh₂O, Hunter Water Corporation; *Chichester Trunk Gravity Main; Asset Management Plan* (Revision C), 20 May 2016.

⁴⁴⁹ Hunter Water, *Asset Management Plan; Grahamstown Dam* (Issue 4), 11 June 2014.

⁴⁵⁰ Wisar Analysis, *Hunter Water: Development of PARMS Deterioration Curves* (Final), October 2018).

⁴⁵¹ Hunter Water, *Asset Class Plan – Pressure Equipment* (Version 1.0), undated.

⁴⁵² Hunter Water, *Compliance and Performance Report*, September 2018.

⁴⁵³ Hunter Water, *Asset Management Policy* (Version 3), June 2018.

⁴⁵⁴ Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.

improvement at a technical level.

As noted above and in **Table 3.13**, Hunter Water achieved certification that its Asset Management System is consistent with ISO 55001 during the audit period. This has added rigour to drive ongoing improvement.

- *Asset Management System/Enterprise risk management:*

Hunter Water has improved its enterprise risk management framework with inclusion of risk appetite statements for the nominated risk profiles. Nine of the fourteen identified risk profiles relate to the management of the assets.⁴⁵⁵ The Asset Management System has reviewed and incorporated these objectives within its approach to asset risk management (as discussed in respect of asset criticality in **Table 4.12**).

- *Asset planning/Water resilience program:*

Hunter Water advised⁴⁵⁶ that: “We are improving our planning for water security by expanding the planning philosophy from traditional engineering assessment to incorporating adaptive planning, scenario planning, systems thinking and opportunity thinking principles related to water conservation, integrated water cycle management and water source augmentations.”

Hunter Water’s water supply planning, which is taking a more holistic approach, is closely linked to the next iteration of the *Lower Hunter Water Plan*.⁴⁵⁷ The *2017+3 Corporate Strategy* provides direction to engage with stakeholders and understand their values in respect of resilience.

Hunter Water’s goal is to understand what it must do now and what can be delayed into the future whilst ensuring that the supply/demand balance is maintained. It also seeks to ensure that the whole of government is aware of, understands, and buys into Hunter Water’s approach.

- *Asset maintenance/Works management:*

Hunter Water revised its maintenance works management process and procedures including work flows, procedures and templates during the audit period. This involved standardisation of approach and a move to undertaking maintenance on the basis of risk.

Hunter Water indicated that this work constituted the most significant change from a field perspective.

Update of maintenance work instructions is discussed in **Table 4.13**.

- *Asset information/Information process:*

Hunter Water revised its asset information collection and management process and procedures, including work flows and templates. Although specific examples were not sighted during the audit, as reported in **Section 2.6.3**, it was noted that the asset register for the Morpeth WWTW (for example) was currently being updated to ensure that all assets are captured and appropriately assigned.

During the audit interviews, Hunter Water demonstrated an online “State of the Assets Dashboard” which is currently being developed. Once fully operational, this dashboard will enable the “live” extraction of current information in relation to a class of assets.

These initiatives demonstrate ongoing development and improvement of a range of aspects of the Asset Management System.

⁴⁵⁵ Hunter Water, *Risk Appetite Statement* (Version 2.0), undated.

⁴⁵⁶ Hunter Water, *Compliance and Performance Report*, September 2018.

⁴⁵⁷ Metropolitan Water Directorate, *Lower Hunter Water Plan*, 2014.

Field Implementation:

General:

As reported in Section 2, field verification visits were undertaken to a number of sites/facilities to verify how effectively Hunter Water is implementing the requirements of the *Operating Licence* in practice. The notes presented in Section 2 form part of the assessment of compliance with this obligation; however, specific issues or aspects of implementation are discussed in further detail in the following.

Lambton Maintenance Depot:

Further to previous observations in respect of maintenance field audits (refer **Section 2.3**), Hunter Water provided a sample of completed checklists demonstrating that these audits had addressed risk assessment, vehicles, plant, hot work and confined space entry (for example).⁴⁵⁸

North Lambton Reservoir:

Hunter Water provided a number of documents in relation to reservoir inspections, including:

- *Bi-monthly Reservoir Inspection* form⁴⁵⁹ – this is used as the basis of these reservoir inspections, and identified specific items to be addressed. As reported in **Table 4.5**, an improvement to this form has been recommended.
- *Process for Reservoir Inspections* flowchart⁴⁶⁰ – outlines the process for planning, scheduling, undertaking and (where necessary) responding to any identified issues in relation to reservoir inspections.
- *Work Instruction 011 – Working on Reservoirs and High Level Tanks*,⁴⁶¹ – a work instruction for undertaking reservoir inspections.
- *Reservoir Inspection Report* for North Lambton Reservoir undertaken on 23 October 2018.⁴⁶² Copies of work orders arising from the inspection were provided; these addressed the replacement of missing screws, cleaning of debris and repair of flashings and gutters.
- *Reservoir Inspection Report* for Shepherds Hill Reservoir – completed form for a reservoir inspection. Hunter Water noted that the same bi-monthly inspection form is used; however, the focus of the annual inspections is on safety and security as these inspections are only conducted on offline reservoirs.
- *Reservoir Condition Report* (5-yearly inspection) for Cessnock No 2 Reservoir⁴⁶³ – presents the findings of the inspection including photographs. A series of maintenance work orders arising from the inspection were provided (although not specifically referenced here); these addressed issues including the replacement of missing roof screws and profile edging (foam sealant).

This evidence indicates that arrangements, including procedures, are in place for the inspection of reservoirs; however, as discussed in **Table 4.5**, there remains a need for improvement in respect of the inspection of the sealing of reservoir roofs.

In respect of the structural failure (refer **Section 2.4**), Hunter Water provided documentation including:

- A completed *Hazard Form*⁴⁶⁴ – which detailed the identified roof failure.

⁴⁵⁸ Document: *Civil records (field audit examples).pdf*.

⁴⁵⁹ Hunter Water, *Reservoir Inspection* (form), undated.

⁴⁶⁰ Hunter Water, *Process for Reservoir Inspections*, undated.

⁴⁶¹ Hunter Water, *Work Instruction 011 – Working on Reservoirs and High Level Tanks* (Version 1.0), December 2018.

⁴⁶² Document: *Reservoir Inspection Form NEW APP - Nth Lambton 1 res 23-10-18.pdf*.

⁴⁶³ Water Infrastructure Services, Hunter Water; *Cessnock No 2 (Bellbird 2) Reservoir; Reservoir Inspection Report*, 22 November 2017.

⁴⁶⁴ Document: *Integrum Form - LMAE-102204 North Lambton 1 Res 26-10-18.pdf*.

-
- Report on a *Reservoir Roof Structural Condition Survey and Assessment*⁴⁶⁵ conducted in November 2017 – this indicated that, from a structural perspective, the roof has sufficient capacity to support access.
 - Email correspondence between Hunter Water and hunterh₂O in respect of the identified failure and the findings of the condition survey and structural assessment.⁴⁶⁶

Hunter Water advised that:⁴⁶⁷

“We are currently deciding how to resolve the issue. Due to safety considerations with working on the roof, it is likely that as the reservoir is due for cleaning this year, we will take the reservoir offline to set the scaffold inside and have each of the bolts closely inspected and also have the maintenance work carried out where necessary at the same time. We are also investigating other interim inspection methods such as using a drone.”

On the basis of the evidence provided, it is apparent that Hunter Water is taking appropriate action to address this issue.

Planned maintenance activity:

Documentation provided in respect of the planned water job, which involved replacement of a faulty line valve (refer **Section 2.5**), Hunter Water provided:

- *Work Instruction 001 – Working on Potable Water Mains and Fittings*⁴⁶⁸ - which details the methodology for Shutting down of potable water reticulation systems; Repairing potable water mains; Flushing and cleaning potable water mains; Repairing/Replacing potable water fittings such as hydrants and valves; and Tapping of potable water mains.
- Training record for maintenance worker involved in the maintenance job showing completion of *Working on Potable Water Mains and Fittings* training module⁴⁶⁹ using the Competency Theory Assessment Tool.
- A *Planned Maintenance Work Job Pack*,⁴⁷⁰ including work order, notification details, etc. for the inspected maintenance job.

This documentation demonstrates that appropriate arrangements were in place for undertaking this maintenance activity. Further discussion in respect of hygiene measures is presented in **Table 3.6**.

Morpeth WWTW:

As reported in **Section 2.6.3**, labelling of equipment could be improved; for example, there were no labels or tags on the MBR recirculation pumps to identify their asset numbers. As an opportunity for improvement (**OFI-HWC-2017/18.24**) it is suggested the Hunter Water (in conjunction with Veolia, as appropriate) ensures that all mechanical and assets are tagged or labelled to clearly identify their asset numbers.

In respect of the Blower failure, Hunter Water provided a copy of a *Project Development Plan*⁴⁷¹ that details the issues associated with the failure, assessment of the options for addressing the failure and a recommendation for replacement. This form had been completed by Veolia and submitted to Hunter Water for approval to proceed.

⁴⁶⁵ hunterh₂O, *Reservoir Roof Structural Condition Survey and Assessment*; North Lambton 1; Hunter Water Corporation, November 2017.

⁴⁶⁶ Email dated 26 October 2018 from Hunter Water to hunterh₂O and response dated 29 October 2018 (re: *North Lambton Roof Hazard Near Miss*).

⁴⁶⁷ Email dated 16 November 2018 from Hunter Water to Cobbitty Consulting and IPART (re: *North Lambton reservoir roof*).

⁴⁶⁸ Hunter Water, *Work Instruction 001 – Working on Potable Water Mains and Fittings* (Version 2), 14 March 2018.

⁴⁶⁹ Document: *Form - Work Instruction W1001 - Theory Competency Assessment - 11 October 2016.pdf*.

⁴⁷⁰ Document: *Elder Street Lambton.pdf*.

⁴⁷¹ Hunter Water, *Project Development Plan for Contract CS0341 Minor Capital Works* (for STMOR-AB1 BLOWER 1, BIOREACTOR – 000000030404), Version 1.1), 2 November 2018.

Hunter Water provided copies of a sample of maintenance documentation in respect of Morpeth WWTW, including (for example):

- Veolia form *TEM-3126 HW - Morpeth WWTW Weekly Duties*,⁴⁷² together with completed forms for the weeks commencing 18 June 2018 and 26 August 2018.
- Details of the maintenance regime (work order listing) for the UV installation.⁴⁷³
- Listing of completed work orders for the UV installation.⁴⁷⁴
- Listing of completed work orders for the odour control facility.⁴⁷⁵

Review of this documentation indicates that an appropriate maintenance regime is being implemented.

Dungog WTP:

Hunter Water provided copies of a sample of maintenance documentation in respect of Dungog WTP, including (for example):

- Veolia form *TEM-2826 HW - Dungog WTP Weekly PMT Duties - 1*,⁴⁷⁶ together with completed forms for the weeks commencing 15 January 2018 and 15 August 2018.
- Details of the maintenance regime (work order listing) for the WTP backwash pumps.⁴⁷⁷
- Listing of completed work orders for the WTP backwash pumps.⁴⁷⁸

Review of this documentation again indicates that an appropriate maintenance regime is being implemented.

Hunter Water/Veolia interaction:

During the audit interviews and site inspections, the interaction between Hunter Water and Veolia was discussed. Some observations and examples were as follows:

- Hunter Water has contracted Veolia to provide operation and maintenance (mechanical and electrical) services at all of its treatment facilities for a period of eight (8) years, of which approximately four (4) years has passed.
 - Under the terms of the contract, Veolia implements a maintenance regime that was initially nominated by Hunter Water; however, as required, Veolia has reviewed and proposed changes to the regime, which have been accepted by Hunter Water.
 - Hunter Water undertakes audits of Veolia's maintenance implementation; for example, a *Treatment Plant Maintenance Audit of the Toronto WWTW* was conducted in October 2018.⁴⁷⁹
 - Veolia's performance in completion of maintenance activities is monitored. Sample KPI reports were provided including:⁴⁸⁰
 - current format KPI report (September 2018);
 - older format KPI report (April 2018); and
 - example of the 'transition KPI document' – used whilst Hunter Water was tracking would-be performance against the current KPIs while they were still formally performing and reporting against the older KPIs (April 2018).
-

⁴⁷² Veolia document: *TEM-3126 HW - Morpeth WWTW Weekly Duties - 1.pdf*.

⁴⁷³ MS Excel workbook: *Maint Regime - Morpeth WWTW UV.xlsx*.

⁴⁷⁴ MS Excel workbook: *Morpeth UV System WOs 2017 2018.xlsx*.

⁴⁷⁵ MS Excel workbook: *Morpeth Odour Control WOs 2017 2018.xlsx*.

⁴⁷⁶ Veolia document: *TEM-2826 HW - Dungog WTP Weekly PMT Duties - 1.pdf*.

⁴⁷⁷ MS Excel workbook: *Maint Regime - Dungog WTP Backwash Pump.xlsx*.

⁴⁷⁸ MS Excel workbook: *Morpeth UV System WOs 2017 2018.xlsx*.

⁴⁷⁹ Hunter Water, *Treatment Plant Maintenance Audit; Toronto WWTW*, 17 October 2018.

⁴⁸⁰ Email dated 7 November 2018 from Hunter Water to Cobbitty Consulting and IPART (re: *Veolia KPI reports for IPART audit*).

-
- Treatment plant maintenance is managed by Veolia using VAMS (Veolia's maintenance management system). Records are also replicated in Ellipse (Hunter Water's maintenance management system), which requires manual entry by Veolia. As an opportunity for improvement (**OFI-HWC-2017/18.25**), it is suggested that Hunter Water, in conjunction with Veolia, considers the implementation of a mechanism for automated upload of treatment plant maintenance data into Ellipse.
 - As reported in **Section 2.7.3**, Veolia maintains an *Asset Deficiency Register*,⁴⁸¹ a copy of which has been provided.

This sample of documentation demonstrates a cooperative arrangement between Hunter Water and Veolia, which will ensure positive outcomes in respect of management of the assets.

Recommendations

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


Opportunities for improvement

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

- **OFI-HWC-2017/18.24:** It is suggested the Hunter Water (in conjunction with Veolia, as appropriate) ensures that all mechanical and assets are tagged or labelled to clearly identify their asset numbers.
 - **OFI-HWC-2017/18.25:** It is suggested that Hunter Water, in conjunction with Veolia, considers the implementation of a mechanism for automated upload of treatment plant maintenance data into Ellipse.
-

⁴⁸¹ MS Excel workbook: *D02 Asset Deficiency Register (WIP) - Oct 2018.xlsx*.

Table 3.15 Asset management system (sub-clause 4.1.3)

Sub-clause	Requirement	Compliance Grade
4.1.3	<p>Until the Asset Management System has been implemented in accordance with clause 4.1.2, Hunter Water must ensure that all relevant activities are carried out in accordance with the previous asset management system that was required under the operating licence held by Hunter Water which commenced in 2012.</p> <p><i>[Note: This clause permits Hunter Water to transition its previous asset management system based on the Water Services Association of Australia's Aquamark benchmarking tool to the Australian Standard AS ISO 55001:2014 Asset management - Management systems – Requirements.]</i></p>	 Compliant
Risk		Target for Full Compliance
Failure to comply with the requirements of this obligation presents a high level of operational risk that Hunter Water may not have continued to meet its business objectives.		Evidence that Hunter Water has continued to carry out its asset management activities in accordance with its previous asset management system.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ Hunter Water, <i>Asset Management Policy</i> (Version 2), June 2016. ▪ Hunter Water, <i>Asset Management Policy</i> (Version 3), June 2018. ▪ Intranet screenshots: Asset Creation Framework guidance (including Framework introduction/overview, Initiation phase, Development phase, Delivery phase and Completion phase). ▪ WSAA/AECOM, <i>AMCV Project; Asset Management Customer Value; Participant Report for Hunter Water Corporation</i> (Revision 2), 6 March 2017. ▪ WSAA/AECOM, <i>AMCV Project; Asset Management Customer Value; Industry Report</i> (Revision 1), 22 February 2017. ▪ Hunter Water, <i>State of the Assets Report</i>, September 2016. ▪ Hunter Water, <i>Compliance and Performance Report</i>, September 2018. ▪ PowerPoint presentation: Hunter Water, <i>Operational Licence Audit Asset Management System</i>, 6 November 2018. ▪ QEM Consulting, <i>ISO 55001: Gap Analysis Report</i>, 30 March 2018. ▪ Hunter Water, <i>Project Development Plan; ISO 55001 Prioritisation and Implementation Plan Development</i>, 12 June 2015. 		
Summary of reasons for grade		
<p>During the audit period, Hunter Water transitioned from the Aquamark system to the ISO 55001 consistent system. The transition process was one of continual improvement, which involved enhancement of specific aspects of the system. It is therefore difficult to assess at what stage the ISO 55001 consistent system can be deemed to have been implemented for the purposes of assessing compliance with this obligation.</p>		

Nonetheless, on the basis of the discussion presented both in **Table 3.14** and below, it is assessed that Hunter Water had continued to implement its previous Asset Management System to the extent applicable as it developed and transitioned its Asset Management System to be consistent with ISO 55001. Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.

Discussion and notes

Prior to the development and implementation of its ISO 55001 consistent Asset Management System, Hunter Water implemented an Asset Management System that was consistent with (had been assessed in accordance with) the Aquamark framework.⁴⁸² This system was a more technical /engineering focussed system rather than a management system in the broader sense.

During the audit period, Hunter Water transitioned from the Aquamark system to the ISO 55001 consistent system. As reported in **Table 3.13**, the Asset Management System in its current form was independently certified as being consistent with ISO 55001 in July 2018.

The transition process was one of continual improvement, which involved enhancement of specific aspects of the system. It is therefore difficult to assess at what stage the ISO 55001 consistent system can be deemed to have been implemented for the purposes of assessing compliance with this obligation.

Accordingly, implementation of the Asset Management System has been assessed in detail in **Table 3.14** (which addresses clause 4.1.2 of the *Operating Licence*) and is not discussed further here. Notwithstanding, the following observations are made:

- An *Asset Management Policy* (June 2016 version),⁴⁸³ which demonstrates Hunter Water's commitment to the management of its assets, remained in place and was updated in June 2018.⁴⁸⁴
- As noted by Hunter Water, the previous Asset Management System incorporated:
 - Asset Management Policy;
 - Asset Management Framework;
 - Asset Planning;
 - Asset Class Planning;
 - Asset Creation Framework;
 - Asset Operational Framework; and
 - Asset Maintenance.

A sample of relevant documentation was provided including (for example) a series of screenshots showing intranet guidance in respect of the Asset Creation Framework.⁴⁸⁵

- Hunter Water participated in the WSAA 2016 Asset Management Customer Value (AMCV) Project (the WSAA Aquamark based asset management benchmarking project). Albeit undertaken prior to the audit period, the outcomes indicate that Hunter Water was assessed to be above the median score for all seven functions.^{486,487} This indicates that Hunter Water's asset management practices were well founded and provided a strong base for continued improvement as it moved towards ISO 55001 compliance during the audit
-

⁴⁸² Water Services Association of Australia's (WSAA) Aquamark benchmarking framework/tool.

⁴⁸³ Hunter Water, *Asset Management Policy* (Version 2), June 2016.

⁴⁸⁴ Hunter Water, *Asset Management Policy* (Version 3), June 2018.

⁴⁸⁵ Intranet screenshots: Asset Creation Framework guidance (including Framework introduction/overview, Initiation phase, Development phase, Delivery phase and Completion phase).

⁴⁸⁶ WSAA/AECOM, *AMCV Project; Asset Management Customer Value; Participant Report for Hunter Water Corporation* (Revision 2), 6 March 2017.

⁴⁸⁷ WSAA/AECOM, *AMCV Project; Asset Management Customer Value; Industry Report* (Revision 1), 22 February 2017.

period.

- The *State of the Assets Report*⁴⁸⁸ submitted to IPART in September 2016 (i.e. prior to the audit period) demonstrates that Hunter Water had made a robust assessment of the state of its asset portfolio at that time. A clear understanding of asset condition and performance is necessary to be able to appropriately focus forward planning and the ongoing management of the assets.
- Review of the *Compliance and Performance Report*⁴⁸⁹ revealed a number of asset management initiatives that were implemented during the audit period; they include a combination of improvements in respect of management system, governance, and system processes and procedures. These initiatives, a sample of which is discussed in **Table 3.14**, demonstrate continued improvement with a focus on alignment with Hunter Water's *2017+3 Corporate Strategy*.
- In response to the auditor's enquiry regarding practical changes that had been implemented through the transition to an ISO 55001 consistent Asset Management System, Hunter Water nominated the following areas:⁴⁹⁰
 - Management System versus Asset Lifecycle – Engineering approach to asset management;
 - Management Leadership;
 - Stakeholder engagement;
 - Update Strategic Alignment (objectives);
 - Integration of technical staff and writers;
 - Create procedures for routine activities;
 - Information; and
 - Competency and training.

These areas reflect movement to an Asset Management System with a management rather than technical focus.

- Planning for the development of and transition to an ISO 55001 Asset Management System had commenced in early 2015. A gap analysis⁴⁹¹ had been completed and a Project Development Plan⁴⁹² for Stages 2 and 3 of the previous (February 2014) preliminary implementation plan submitted in June 2015.

These observations are taken to support an assessment that Hunter Water had continued to implement its previous Aquamark alignment Asset Management System to the extent applicable as it developed and transitioned its Asset Management System to be consistent with ISO 55001.

Recommendations

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

Opportunities for improvement

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

⁴⁸⁸ Hunter Water, *State of the Assets Report*, September 2016.

⁴⁸⁹ Hunter Water, *Compliance and Performance Report*, September 2018.


⁴⁹⁰ PowerPoint presentation: Hunter Water, *Operational Licence Audit Asset Management System*, 6 November 2018.

⁴⁹¹ QEM Consulting, *ISO 55001: Gap Analysis Report*, 30 March 2018.

⁴⁹² Hunter Water, *Project Development Plan; ISO 55001 Prioritisation and Implementation Plan Development*, 12 June 2015.

3.5.2 Environmental management system


Table 3.16 Environmental management system (sub-clause 4.2.1)

Sub-clause	Requirement	Compliance Grade
4.2.1	Hunter Water must at all times maintain a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian/New Zealand Standard AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use, or other standard approved by IPART on request by Hunter Water (the Environmental Management System).	<div> Compliant</div>
Risk	Target for Full Compliance	
Without a comprehensive and effectively implemented Environmental Management System, there is a high risk that Hunter Water may not be able to effectively manage risks to the environment resulting from its operations.	Evidence that an Environmental Management System consistent with AS/NZS ISO 14001 has been maintained throughout the audit period.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.Certificate - EMS ISO 14001-2015 issued by Bureau Veritas - expires 20/10/2020.		
Summary of reasons for grade		
Hunter Water provided evidence that an Environmental Management System consistent with AS/NZS ISO 14001 was maintained throughout the audit period.		
Discussion and notes		
<p>Hunter Water’s Environmental Management System (EMS) was third party certified in 2014 and re-certified in September 2018 by Bureau Veritas Certification. The Certificate⁴⁹³ demonstrating the original approval date of 20 October 2014 to 20 October 2020 was provided as evidence. This demonstrates that a system compliant with ISO 14001:2015 (and therefore AS/NZS ISO 14001:2016)⁴⁹⁴ was in place for the entire audit period.</p> <p>The scope, provided on the certificate, of the EMS covers all of Hunter Water’s area of operations and for the supply of drinking and recycled water and providing sewerage and stormwater services and the disposal of wastewater.</p>		
Recommendations		
There are no recommendations in respect of this sub-clause.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this sub-clause.		

⁴⁹³ Certificate - EMS ISO 14001-2015 issued by Bureau Veritas - expires 20/10/2020.

⁴⁹⁴ Reference to AS/NZS ISO 14001:2016 (Preface) reveals that: "This Standard [AS/NZS ISO 14001] is identical with, and has been reproduced from ISO 14001:2015, Environmental management systems – Requirements with guidance for use".

Table 3.17 Environmental management system (sub-clause 4.2.2)

Sub-clause	Requirement	Compliance Grade
4.2.2	Hunter Water must fully implement, and carry out all relevant activities in accordance with, the Environmental Management System.	 Compliant (minor shortcomings)

Risk

If the Environmental Management System is not fully implemented, there is a high risk that Hunter Water may not be able to effectively manage risks to the environment resulting from its operations.

Target for Full Compliance

Evidence that the Environmental Management System is fully implemented and that all relevant activities are carried out in accordance with the System.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Community and Environment Policy 2015.
- Compliance and Performance Report 2017-18.
- Copy of HW2013-1447 4 4.008 Working Paper - Re-certification and Transition Audit Report Aug 2017_with CA tracking.
- Copy of HW2013-1447 4 4.014 Report - Re-certification to 9001 and surveillance to WHS & Env_List ~ 11 May 2018_HW CA as sent to DNVGL.
- EP0128-Environmental-Management-Plan-2018---2020.
- HW2012-738 4 15.004 Plan - EP0085 - Dungog Water Treatment Plant PIRMP – CURRENT.
- HW2012-738 4 15.012 Plan - EP0095 - Morpeth Wastewater Treatment Works PIRMP - Current.
- HW2013-1447 4 4.006 Report - Hunter Water Corporation Re-certification and Transition Audit_Management_Summary_Report Aug 2017.
- HW2013-1447 4 4.012 Report - Re-certification to 9001 and surveillance to 14001 and 4801_Management Summary Report - 9 - 11 May 2018.
- EF0108 - Treatment Operations Inspection Checklist conducted for Morpeth WWTW – 22/8/2018.
- KRAD-E70A94 - Morpeth WWTW – Annual Environmental Inspection – Hazard Form.
- Register – ER0106 – Environmental Commitments Tracking.
- HW2008-772 10 6.015 Register - Attendance Record - 08 05 2018.
- HW2008-772 10 6.016 Register - Attendance Record - 02 05 2018.
- HW2008-772 10 6.017 Register - Attendance Record - 15 05 2018.
- HW2008-772 10 6.018 Register - Attendance Record - 16 05 2018.
- HW2008-772 10 6.019 Register - Attendance Record - 22 05 2018.
- HW2008-772 10 6.020 Register - Attendance Record - 23 05 2018.
- HW2008-772 10 6.021 Register - Attendance Record - 30 05 2018 pm.
- HW2008-772 10 6.022 Register - Attendance Record - 30 05 2018 am.
- HW2008-772 10 6.023 Register - Attendance Record - 29 05 2018 pm.

-
- HW2008-772 10 6.024 Register - Attendance Record - 29 05 2018 am.
 - HW2008-772 10 6.031 Register - Attendance Record - 20 06 2018 am.
 - HW2014-778 13 14.005 Register-Attendance Record - 08052018 - IMG_2531.
 - Register - Environmental Aspects and Risk Register - April 2018 – FINAL.
-

Summary of reasons for grade

During the audit it could be seen that environmental management was a key part of the integrated management system and was taken into account throughout the business. The environmental management system is well managed and, in general, is implemented as defined.

This sub-clause was graded as Compliant (minor shortcomings) due to some high-risk improvement items not being closed out within the agreed timeframes. However, it was considered that these do not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.

Discussion and notes

To assess compliance with this sub-clause, relevant activities in the Hunter Water EMS were considered, to ensure that they were being carried out.

The EMS is detailed in the Environmental Management Plan (EMP),⁴⁹⁵ February 2018. Hunter Water transitioned to a new EMP during 2017/18 audit period. The EMP outlines Hunter Water's environmental objectives, actions and targets. The EMS is underpinned by the Hunter Water Community and Environment Policy.⁴⁹⁶ This policy is dated January 2015 and was due for review in January 2018. **OFI-HWC-2017/18-26:** Ensure that documents are reviewed by the due date (e.g. Community and Environment Policy).

Hunter Water reports on progress against the objectives of the EMP in the Annual Compliance and Performance Report.⁴⁹⁷ From the report it could be seen that:

- The 20 key environmental objectives were being progressed throughout the audit period and future activities have been planned.
- One the objectives included involvement with the NSW PFAS Expert Panel led by the Office of the NSW Chief Scientist and Engineer to manage the legacy PFAS risk at Williamtown. An operating strategy for the Tomago Borefields to manage the PFAS groundwater risk was developed and endorsed by the panel.
- All treatment plants were operated, monitored and reported on, in accordance with EPA licence requirements. However, a penalty notice was received in July 2017 which related to leaks of alum and lime at the Dungog WTP, prior to the audit period.
- Five integrated audits of the EMS, WHS and quality management systems were undertaken.
- The EMS was transitioned from ISO 14001:2004 to ISO 14001:2015.
- There were no major non-conformities with the EMS during the third-party certification.

Environmental commitments are tracked in a register,⁴⁹⁸ and there are currently 133 items in the consolidated list. Several issues were shown as overdue and of those, 4 were considered to be high risk. The approved due dates ranged from December 2015 to December 2017. The actions were:

- For People - Policy – Safe working conditions during fires or high fire danger period.
-

⁴⁹⁵ EP0128-Environmental-Management-Plan-2018---2020.

⁴⁹⁶ Community and Environment Policy 2015.

⁴⁹⁷ Compliance and Performance Report 2017-18.

⁴⁹⁸ Register – ER0106 – Environmental Commitments Tracking.

-
- Reduce occurrence of dry weather overflows from wastewater pump stations and wastewater network - Undertake business improvement project to utilise SCADA to collect more information to assist in wastewater pump stations failure analysis.
 - Reduce Compliance Risks Associated with Chemical Storage and Handling - Implement remote monitoring of odour dosing units (i.e. SCADA).
 - Waste Water transportation - Dry Weather Overflow - Continue roll-out of WWPS improvement strategy in line with criticality review.

REC-HWC-2017/18-07: There are a number of items in the Environmental Compliance Tracking Register that have slipped past the due date. Whilst this cannot be helped on occasion, it is recommended that high risk issues have realistic completion dates and are addressed within the allocated timeframe.

Hunter Water undertakes annual environmental assessments of Veolia operated sites. The Treatment Operation Checklist for Morpeth WWTW was completed in August 2018.⁴⁹⁹ Evidence of an issue raised following the inspection was reported on the associated Integrum record⁵⁰⁰ as follows:

- Uncontained sediment stockpile etc.
- Identified 23 August 2018.
- Due for completion 28 September 2018.

General environmental training is undertaken every 2 years for field staff for identifying and managing environmental risks.⁵⁰¹ Course attendance sheets were supplied for training in May 2018.

Environmental risks are assessed and recorded in the Environmental Aspects and Risk Register.⁵⁰² The register is detailed and appears to cover the environmental risks expected to be associated with a water utility.

The current Pollution Incident Response Management Plans were provided for the sites inspected, Dungog WTP and Morpeth WWTW. These plans had both been reviewed during the audit period.

Recommendations

The following recommendation is made in respect of this sub-clause:

- **REC-HWC-2017/18-07:** There are a number of items in the Environmental Compliance Tracking Register that have slipped past the due date. Whilst this cannot be helped on this occasion, it is recommended that high risk issues have realistic completion dates and are addressed within the allocated timeframe. This should be addressed by 30 June 2019.

Opportunities for improvement

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

- **OFI-HWC-2017/18-26:** Ensure that documents are reviewed by the due date (e.g. Community and Environment Policy).
-

⁴⁹⁹ EF0108 - Treatment Operations Inspection Checklist conducted for Morpeth WWTW – 22/8/2018.

⁵⁰⁰ KRAD-E70A94 - Morpeth WWTW – Annual Environmental Inspection – Hazard Form.

⁵⁰¹ HW2012-738 4 9.013 User Manual - EG0073 - Course Outline - General Environmental Awareness (Field Based)


- Identifying and Managing ~ CURRENT(4).

⁵⁰² Register - Environmental Aspects and Risk Register - April 2018 – FINAL.

3.6 Customer and stakeholder relations

3.6.1 Code of conduct with WIC Act Licensee

Table 3.18 Code of conduct with WIC Act Licensee (sub-clause 5.8.1)

Sub-clause	Requirement	Compliance Grade
5.8.1	Hunter Water must use reasonable endeavours to cooperate with any WIC Act Licensee that seeks to establish with Hunter Water a code of conduct required under a licence under the WIC Act.	<div> Compliant</div>
Risk	Target for Full Compliance	
Failure to comply with the requirements of this obligation presents a high risk that services may not be provided to properties that require them where serviced by a WIC Act Licensee. Ultimately, this may present a risk to public health or the environment.	Evidence that Hunter Water has used reasonable endeavours to cooperate with WIC Act Licensees that have sought to establish a code of conduct as required under a WIC Act licence.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.<i>Huntlee Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 2 December 2016.<i>Cooranbong Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.<i>Deed of Variation to Cooranbong Utility Services Agreement</i> between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.<i>Supply Agreement; Agreement for the Supply of Treated Effluent and Potable Water</i> between Hunter Water Corporation, Kooragang Water Pty Ltd and WUA Midco Pty Ltd, 28 November 2017.		
Summary of reasons for grade		
<p>Hunter Water demonstrated that it has entered into Utility Service Agreements, which contain a code of conduct, with WIC Act Licensees that have sought to do so (albeit prior to the audit period). A supply agreement in respect of the Kooragang Industrial Water Scheme (KIWS) also appears to address the requirements of a code of conduct as required under a WIC Act licence.</p> <p>Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>Hunter Water advised that previous applications for the provision of Services from Huntlee Water and Cooranbong Water (subsidiaries of Flow Systems) had resulted in those WIC Act Licensees entering into Utility Service Agreements with Hunter Water, although this had occurred prior to the audit period.⁵⁰³ Evidence of the Huntlee Water⁵⁰⁴ and Cooranbong Water⁵⁰⁵</p>		

⁵⁰³ As reported in **Table 3.2**, there were no requests for the provision of Services from WIC Act Licensees during the audit period.

⁵⁰⁴ *Huntlee Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 2 December 2016.

⁵⁰⁵ *Cooranbong Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.

Utility Service Agreements were provided; the Utility Service Agreement with Cooranbong Water was also subsequently varied.⁵⁰⁶

Each Utility Services Agreement contains a Code of Conduct which governs how Hunter Water and the WIC Act Licensee will interact in respect of key areas of their business. The auditor has previously reviewed the Utility Service Agreements in relation to both Huntlee Water and Cooranbong Water and confirms that they address the requirements of a code of conduct under a WIC Act licence.

Although not provided as evidence in respect of this obligation, a brief review of the *Supply Agreement*⁵⁰⁷ in respect of the Kooragang Industrial Water Scheme (KIWS) (refer **Table 3.2**) reveals that it also appears to address the requirements of a code of conduct under a WIC Act licence.

On this basis, it is apparent that Hunter Water has cooperated with WIC Act Licensees that have sought to establish a code of conduct required under a licence under the WIC Act with it.

Recommendations

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

Opportunities for improvement


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

⁵⁰⁶ *Deed of Variation to Cooranbong Utility Services Agreement* between Hunter Water Corporation and Flow Systems Pty Ltd, dated 14 April 2016.

⁵⁰⁷ *Supply Agreement; Agreement for the Supply of Treated Effluent and Potable Water* between Hunter Water Corporation, Kooragang Water Pty Ltd and WUA Midco Pty Ltd, 28 November 2017.

3.6.2 Memorandum of Understanding with Department of Primary Industry – Water

**Table 3.19 Memorandum of Understanding with Department of Primary Industry – Water
(sub-clause 5.10.1)**

Sub-clause	Requirement	Compliance Grade
5.10.1	<p>Hunter Water must use its best endeavours to:</p> <p>a) maintain a memorandum of understanding (which may be referred to as a roles and responsibilities protocol) with the Department of Primary Industries Water in relation to:</p> <p>i) the roles and responsibilities for the Department of Primary Industries Water and Hunter Water in respect of the review and implementation of the Lower Hunter Water Plan; and</p> <p>ii) calculation and reporting of System Yield; and</p> <p>b) comply with the memorandum of understanding maintained under clause 5.10.1(a).</p> <p><i>[Note: Clause 5.10.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding or a roles and responsibilities protocol.]</i></p>	<div> Compliant</div>
Risk	Target for Full Compliance	
Failure to comply with this obligation presents a high operational risk. DoI Water is a key stakeholder in respect of the management of water resources from which Hunter Water draws its water supply.	Evidence that Hunter Water has used its best endeavours to maintain and comply with a Memorandum of Understanding with DoI Water.	
Evidence sighted		
<ul style="list-style-type: none">Hunter Water response to 2018 Audit Questionnaire.Email dated 4 October 2018 from DoI Water to Hunter Water (re: <i>Tripartite agreement v6 - comments from Darren</i>).Metropolitan Water Directorate, <i>Lower Hunter Water Plan</i>, 2014.Draft (Version 7) <i>Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan</i>, undated.<i>Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan</i> between Metropolitan Water Directorate (now DoI Water) and Hunter Water, dated 23 May 2014.DPI, <i>Lower Hunter Water Plan; MERI Annual Evaluation 2014</i>, October 2014.DPI Water, <i>Lower Hunter Water Plan; MERI Annual Evaluation 2015</i>, December 2015.DPI Water, <i>Lower Hunter Water Plan; MERI Major Evaluation 2016</i> (Draft 0.3), 16 November 2016.DPI Water, <i>Lower Hunter Water Plan; MERI Evaluation 2017</i> (Version 3.0), 20 December 2017.		

-
- Email dated 18 June 2018 from Hunter Water to Working Group Members (re: *Lower Hunter Water Plan - Communications and Engagement Working Group*) including attachments.
 - Hunter Water, *Meeting Minutes; Community Engagement Working Group* for meeting held on 21 June 2018.
 - DPI, *Lower Hunter Water Senior Officers' Group; Terms of Reference* (Draft), August 2018.
 - DPI, *Lower Hunter Water Drought Response Implementation Senior Officers' Group; Terms of Reference* (Draft), August 2018.
 - DPI, *AGENDA; Lower Hunter Water Senior Officers Group*; Monday 22 October 2018.
 - DoI, *Agenda; Lower Hunter Water Senior Officers' Group* for meeting to be held 15 February 2019.
 - DoI, *Agenda; Independent Water Advisory Panel* for meeting to be held on 7 March 2019.
-

Summary of reasons for grade

Hunter Water demonstrated that a *Roles and Responsibilities Protocol* in relation to the Lower Hunter Water Plan remains in place between itself and the Department of Industry – Water. The parties have been negotiating an update to the *Protocol*, which is to also include Central Coast Council; however, this is not yet in place.

Hunter Water demonstrated that it has continued to fulfil its roles and responsibilities under the *Protocol*, including annual update of the supply-demand water balance and participation in the various forums related to the Lower Hunter Water Plan.

Accordingly, it is assessed that Hunter Water has demonstrated compliance with this obligation.

Discussion and notes

Maintenance of the memorandum of understanding:

Hunter Water advised that:

“Hunter Water and Department of Industry – Water (formerly Department of Primary Industries Water) have been negotiating a revision to the existing roles and responsibilities agreement. The revision has been delayed as DoI – Water negotiates with Central Coast Council, which are to be included in the agreement. The current 2014 Lower Hunter Water Plan (LHWP) is in effect until the revision process is complete.”

The current status of the proposed new agreement as documented by the Department of Industry – Water (DoI Water) confirms Hunter Water’s advice.⁵⁰⁸ It further indicates that:

- the revision/update of the protocol would guide the development of the next iteration of the Lower Hunter Water Plan (LHWP);⁵⁰⁹
- delays in finalising the current draft have been due to issues between DoI Water and Central Coast Council; and
- Hunter Water has been supportive in the process of developing draft agreements to date and has urged DoI to expedite finalisation of the agreement.

Hunter Water advised that the most recent plan is to break out the DoI Water/Hunter Water into a separate agreement. The current draft of the proposed tripartite *Roles and Responsibilities Protocol*⁵¹⁰ was provided.

⁵⁰⁸ Email dated 4 October 2018 from DoI Water to Hunter Water (re: *Tripartite agreement v6 - comments from Darren*).

⁵⁰⁹ Metropolitan Water Directorate, *Lower Hunter Water Plan*, 2014.

⁵¹⁰ Draft (Version 7) *Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan*, undated.

Compliance with the memorandum of understanding:

Under the terms of the 2014 *Roles and Responsibilities Protocol*,⁵¹¹ which remains in place, Hunter Water has a number of roles and responsibilities. These include (for example):

- Maintaining and updating Hunter Water's water source model:

Hunter Water noted that:⁵¹²

"The current yield calculation and reporting methodology was developed and approved through the LHWP, the governance structure for which included multiple agencies including DoI Water."

As reported below and in **Table 3.4**, Hunter Water continues to calculate the yield in accordance with the approved methodology.

- Updating and evaluating the supply-demand balance at least every 12-months:

Hunter Water noted that:⁵¹³

"The LHWP monitoring, evaluation, reporting and improvement (MERI) plan requires annual evaluation of system yield and identification of material changes in yield (and other measures) that could potentially trigger an intervention. These evaluations of system yield are contained in annual MERI reports that are prepared by the lead agency (currently DoI Water, previously Metropolitan Water Directorate)."

Review of the 2014,⁵¹⁴ 2015,⁵¹⁵ 2016⁵¹⁶ and 2017⁵¹⁷ MERI (monitoring, evaluation, reporting and improvement) reports confirms that the supply-demand balance has been determined and reported each year. Both the estimated system yield and supply-demand balance are reported and the influences and impacts discussed.

- Communications and community engagement:

Hunter Water participates in the Communications and Engagement Working Group (CEWG). The agenda for the meeting held on 21 June 2018 was provided, together with meeting papers:⁵¹⁸

- CEWG – LHWP Community Engagement Strategy;
- CEGW Paper – Terms of Reference (discussion item); and
- CEGW – DRAFT Terms of reference.

Minutes of the meeting were also provided.⁵¹⁹ An update on the progress of the Water Resilience Program (and LHWP), and an overview of Hunter Water's approach to community engagement were the primary topics of discussion.

- Lower Hunter Water Senior Officers Group (LHWSOG):

Hunter Water representatives participate as members of the LHWSOG. The *LHWSOG Terms of Reference* ⁵²⁰detail the purpose and tasks of the group, together with operating protocols and governance arrangements. Senior officers also participate in the Lower Hunter Water Drought Response Implementation Senior Officers' Group, the

⁵¹¹ *Roles and Responsibilities Protocol for Implementing, Evaluating and Reviewing the Lower Hunter Water Plan* between Metropolitan Water Directorate (now DoI Water) and Hunter Water, dated 23 May 2014.

⁵¹² Hunter Water response to 2018 Audit Questionnaire.

⁵¹³ Hunter Water response to 2018 Audit Questionnaire.

⁵¹⁴ DPI, *Lower Hunter Water Plan; MERI Annual Evaluation 2014*, October 2014.

⁵¹⁵ DPI Water, *Lower Hunter Water Plan; MERI Annual Evaluation 2015*, December 2015.

⁵¹⁶ DPI Water, *Lower Hunter Water Plan; MERI Major Evaluation 2016 (Draft 0.3)*, 16 November 2016.

⁵¹⁷ DPI Water, *Lower Hunter Water Plan; MERI Evaluation 2017 (Version 3.0)*, 20 December 2017.

⁵¹⁸ Email dated 18 June 2018 from Hunter Water to Working Group Members (re: *Lower Hunter Water Plan - Communications and Engagement Working Group*) including attachments.

⁵¹⁹ Hunter Water, *Meeting Minutes; Community Engagement Working Group* for meeting held on 21 June 2018.

⁵²⁰ DPI, *Lower Hunter Water Senior Officers' Group; Terms of Reference (Draft)*, August 2018.

purpose, task and operating arrangements for which are documented in the *DRISOG Terms of Reference*.⁵²¹

The agenda and meeting papers for the 22 October 2018 meeting of the LHWSOG were provided.⁵²² Topics of discussion included (for example) the above mentioned Terms of Reference; an update on drought preparation; and future scenarios for long-term planning in the Hunter.

An agenda⁵²³ for the February 2019 meeting of the LHWSOG was also provided. This listed Hunter Water representatives as invitees.

- Other Meetings/Forums:

An agenda⁵²⁴ for the March 2019 meeting of the Independent Water Advisory Panel, to which Hunter Water representatives were listed as invitees, was provided. Items listed for discussion appear to be strategic in nature, as would be expected for a forum attended by senior officers.

An agenda for a Project Group meeting between Hunter Water and DoI listed a number of items for discussion including the roles and responsibilities protocol, outcomes of the first deliberative forum and agenda items for the next LHWSOG and Independent Water Advisory Panel meetings.

In reviewing the 2017 MERI report, it was noted that progress on the implementation of recommendations from the 2016 major evaluation has been satisfactory for all Hunter Water led actions except one (which relates to desalination readiness). In this case, there are some risks to the delivery of LHWP objectives.

In summary, it is apparent that Hunter Water has actively complied with its obligations under the *Roles and Responsibilities Protocol*.

Recommendations

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

Opportunities for improvement

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

⁵²¹ DPI, *Lower Hunter Water Drought Response Implementation Senior Officers' Group; Terms of Reference* (Draft), August 2018.


⁵²² DPI, *AGENDA; Lower Hunter Water Senior Officers Group*; Monday 22 October 2018.

⁵²³ DoI, *Agenda; Lower Hunter Water Senior Officers' Group* for meeting to be held 15 February 2019.

⁵²⁴ DoI, *Agenda; Independent Water Advisory Panel* for meeting to be held on 7 March 2019.

3.6.3 Memorandum of Understanding with Fire and Rescue NSW

Table 3.20 Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.1)

Sub-clause	Requirement	Compliance Grade
5.11.1	<p>Hunter Water must use its best endeavours to:</p> <p>a) develop and enter into a memorandum of understanding with FRNSW by 31 December 2017; and</p> <p>b) once the memorandum of understanding referred to in clause 5.11.1(a) is developed and entered into, comply with the memorandum of understanding.</p> <p><i>[Note: Clause 5.11.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding.]</i></p>	<div><p>Compliant (minor shortcomings)</p></div>
<hr/>		
Risk	Target for Full Compliance	
Failure to comply with this obligation presents a moderate operational risk. FRNSW is a key consumer in respect of Hunter Water’s services, with obligations in respect of community protection.	Evidence that Hunter Water has used its best endeavours to develop and enter into a Memorandum of Understanding with FRNSW by 31 December 2017, and has subsequently complied with the Memorandum of Understanding.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">▪ Hunter Water response to 2018 Audit Questionnaire.▪ CWT/Risk Edge, <i>Distribution System Risk Review – Summary Paper; for Hunter Water Corporation</i> (Revision 1), 20 August 2018.▪ Email dated 12 December 2017 from Hunter Water to FRNSW (re: <i>MoU between Hunter Water and Fire and Rescue NSW</i>).▪ Email dated 15 December 2017 from Hunter Water to FRNSW (re: <i>MoU between Hunter Water and Fire and Rescue NSW</i>).▪ Email dated 9 February 2018 from FRNSW to Hunter Water (re: <i>MoU between Hunter Water and Fire and Rescue NSW</i>).▪ Email dated 25 July 2018 from Hunter Water to FRNSW (re: <i>MoU between Hunter Water and Fire and Rescue NSW</i>) and attached draft MoU.▪ Email chain between Hunter Water and FRNSW with entries on 3 October 2018 and 12 October 2018 (re: <i>MoU between Hunter Water and Fire and Rescue NSW</i>).▪ <i>Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW</i> (draft), dated 25 July 2018.		

Summary of reasons for grade

Hunter Water demonstrated that it has been working with Fire and Rescue NSW to establish a Memorandum of Understanding between the parties; however, it had not entered into such Memorandum of Understanding by 31 December 2017. Whilst the evidence suggests that work has continued, there appear to have been some periods during which there has been a lapse in activity (for example, between February and May 2018).

On this basis, it is assessed that Hunter Water has demonstrated compliance with this obligation, i.e. that it had used its best endeavours to establish a Memorandum of Understanding albeit with some minor shortcomings.

Discussion and notes

Hunter Water advised that it has been working extensively with Fire and Rescue NSW (FRNSW) to develop a Memorandum of Understanding (MoU), noting that there have been more than three drafts to date.⁵²⁵ Notwithstanding, a MoU was not in place at the time of reporting.

Hunter Water advised that the need for a third draft was triggered by the outcomes of the Hunter Water Distribution System Risk Assessment, conducted in May 2018, which recommended that the draft MoU be amended to enhance water quality management associated with third parties accessing Hunter Water's system. Review of the *Distribution System Risk Assessment*⁵²⁶ report reveals that Action A8 requires: "Include water quality considerations in MoU with NSW Fire and Rescue and all future MoUs".

Hunter Water further noted that a meeting had been held in August 2018 to familiarise FRNSW with Hunter Water's operating environment, following which Hunter Water was awaiting a response from FRNSW to carry the MoU through for Executive Approval.

As evidence that it had used its best endeavours to develop and enter into an MoU, Hunter Water provided the following timeline:

- *Hunter Water Legal Review (December 2017)*
- *Hunter Water Group Manager Endorsement (December 2017)*
- *FRNSW Legal Review (February 2018)*
- *Distribution Risk Assessment undertaken (May 2018)*
- *Updated content post Distribution Risk Assessment recommendation (July 2018)*
- *FRNSW Executive (Chief Superintendent) approval (October 2018).*

This timeline is supported by a series of email correspondence between Hunter Water and FRNSW. Key points drawn from the correspondence are as follows:

- The first draft of the MoU had been reviewed by Hunter Water's legal team in early December 2017 and was in the process of being reviewed by Hunter Water's Group Managers in early December 2017.⁵²⁷ This infers that there had been prior activity to develop a draft that was then subject to legal review.
 - Structural change within Hunter Water was identified as the prime driver for delay in failing to meet the 31st December 2017 deadline for an agreed upon MoU.⁵²⁸
-

⁵²⁵ Hunter Water response to 2018 Audit Questionnaire.

⁵²⁶ CWT/Risk Edge, *Distribution System Risk Review – Summary Paper; for Hunter Water Corporation* (Revision 1), 20 August 2018, appendix C (page 59).

⁵²⁷ Email dated 12 December 2017 from Hunter Water to FRNSW (re: *MoU between Hunter Water and Fire and Rescue NSW*).

⁵²⁸ Email dated 12 December 2017 from Hunter Water to FRNSW (re: *MoU between Hunter Water and Fire and Rescue NSW*).

-
- The first draft of the MoU was sent to FRNSW for review by a similar level of management (Legal Counsel and Group Manager) on 15 December 2017.⁵²⁹
 - After several follow-ups by Hunter Water, FRNSW provided a marked-up copy (second draft) of the MoU on 9 February 2018.⁵³⁰
 - Hunter Water provided the third draft of the MoU, which incorporated “managing water quality risks associated with accessing water from the network” as one of the issues to be addressed by the Fire Fighting Working Group.⁵³¹ An early August 2018 meeting between Hunter Water and FRNSW was proposed.
 - Hunter Water internal approval by the Executive Management Team was sought prior to approval by the Hunter Water’s Managing Director and FRNSW’s Commissioner. FRNSW had advised that the MoU had been approved by the Chief Superintendent (Executive level) and a briefing had been prepared for the Commissioner recommending that he sign the document. Hunter Water requested that FRNSW wait until its Executive Management Team had given its approval so that submission could be made to Hunter Water’s Managing Director and FRNSW’s Commissioner at the same time.⁵³²

Based on the preceding, the three principal drafts appear to have been:

- First draft (December 2017) – following Hunter Water legal review and Group Manager endorsement;
- Second Draft (February 2018) – following FRNSW review; and
- Third draft (July 2018)⁵³³ – incorporated the outcomes of the Distribution System Risk Review, and remains the current draft.

Although the evidence discussed above demonstrates that there has been progress in the development of a MoU, particularly since December 2017, progress appears to have stalled in the period between February and July 2018. It is not apparent at what stage development was put on hold pending the outcome of the Distribution System Risk Assessment. On the other hand, it is noted that the requirement to establish a MoU with FRNSW was a new requirement in the current *Operating Licence* that came into effect from 1 July 2017; from a practical perspective, establishment of the MoU within a period of six months (i.e. by 31 December 2017) could be considered a challenging task.

On balance, it is assessed that whilst Hunter Water may have used its best endeavours to establish the MoU prior to 31 December 2017, it has not demonstrated that it has continued to do so at all times subsequent to that date. On that basis it is considered that Hunter Water has complied with this obligation, albeit with minor shortcomings. It is therefore recommended
(REC-HWC-2017/18-08) Hunter Water should use its best endeavours to develop and enter into a Memorandum of Understanding with Fire and Rescue NSW by 31 March 2019.

Recommendations

The following recommendation is made in respect of this sub-clause:

- **REC-HWC-2017/18-08:** Hunter Water should use its best endeavours to develop and enter into a Memorandum of Understanding with Fire and Rescue NSW by 31 March 2019.
-

⁵²⁹ Email dated 15 December 2017 from Hunter Water to FRNSW (re: *MoU between Hunter Water and Fire and Rescue NSW*).

⁵³⁰ Email dated 9 February 2018 from FRNSW to Hunter Water (re: *MoU between Hunter Water and Fire and Rescue NSW*).

⁵³¹ Email dated 25 July 2018 from Hunter Water to FRNSW (re: *MoU between Hunter Water and Fire and Rescue NSW*) and attached draft MoU.


⁵³² Email chain between Hunter Water and FRNSW with entries on 3 October 2018 and 12 October 2018 (re: *MoU between Hunter Water and Fire and Rescue NSW*).

⁵³³ *Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW* (draft), dated 25 July 2018.

Opportunities for improvement

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

Table 3.21 Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.2)

Sub-clause	Requirement	Compliance Grade
5.11.2	<p>The purpose of the memorandum of understanding referred to in clause 5.11.1 is to form the basis for cooperative relationships between the parties to the memorandum of understanding. In particular, the purpose of clause 5.11.1 is to:</p> <ul style="list-style-type: none">a) develop the roles and responsibilities of the parties to the memorandum of understanding as they relate to each other;b) identify the needs and constraints of the parties to the memorandum of understanding as they relate to each other; andc) identify and develop strategies for efficient and effective provision of firefighting water consistent with the goals of each party to the memorandum of understanding.	<div><p>No Requirement</p></div>
<hr/>		
Risk	Target for Full Compliance	
Failure to comply with this obligation presents a moderate operational risk. FRNSW is a key consumer in respect of Hunter Water’s services, with obligations in respect of community protection. It is important that the basis of cooperation between Hunter Water and FRNSW is clearly understood.	Evidence that the Memorandum of Understanding between Hunter Water and FRNSW addresses the specified requirements.	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">▪ Hunter Water response to 2018 Audit Questionnaire.▪ <i>Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW</i> (draft), dated 25 July 2018.		
<hr/>		
Summary of reasons for grade		
<p>Until such time as Hunter Water enters into a Memorandum of Understanding (MoU) with Fire and Rescue NSW, there is no requirement for compliance with this obligation.</p> <p>Nonetheless, Hunter Water demonstrated that the proposed Memorandum of Understanding (MoU) (i.e. the draft at the time of reporting) addresses and is directly reflective of the objectives required by this Licence obligation; objectives related to the management of water quality risks and strengthening relationships between the parties have also been included.</p>		

Discussion and notes

Until such time as Hunter Water enters into a Memorandum of Understanding (MoU) with Fire and Rescue NSW, there is no requirement for compliance with this obligation.

Although the Memorandum of Understanding (MoU) has not yet been formally signed, review of the proposed MoU (i.e. the latest draft available at the time of reporting) reveals that the principles and objectives are clearly documented, as follows:⁵³⁴

“3. Principles and objectives of the MoU

3.1 This MoU is to provide the basis for a co-operative relationship between Hunter Water and FRNSW.

3.2 This relationship is established with the purpose of achieving the following objectives:

- develop the roles and responsibilities of the parties as they relate to each other;*
- identify the needs and constraints of each party as they relate to each other;*
- identify and develop strategies that provide for efficient and effective provision of water consistent with the goals and statutory obligations of each party;*
- manage the water quality risks associated with FRNSW extracting from the Hunter Water network; and*
- strengthen relationships between both parties.*

3.3 The parties share a common goal to identify and develop strategies that aim to provide the community with the most cost effective means of providing firefighting water. In developing these strategies, consideration is to be given to existing regulation and the capabilities and obligations of other agencies and the community.

3.4 The parties intend to establish and maintain open and effective communication through the structures and processes established by this MoU.”

As can be seen, the statement of objectives in section 3.2 of the proposed MoU is directly reflective of the requirements of this Licence obligation, with the addition of objectives related to the management of water quality risks and strengthening relationships between the parties.

Recommendations


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

Opportunities for improvement

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

⁵³⁴ *Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW* (draft), dated 25 July 2018.

Table 3.22 Memorandum of Understanding with Fire and Rescue NSW (sub-clause 5.11.3)

Sub-clause	Requirement	Compliance Grade
5.11.3	<p>The memorandum of understanding referred to in clause 5.11.1 must require:</p> <ul style="list-style-type: none"> a) the establishment of a working group, comprised of representatives from Hunter Water and FRNSW; and b) the working group to consider the following matters (at a minimum): <ul style="list-style-type: none"> i) arrangements regarding information sharing between Hunter Water and FRNSW; ii) agreed timelines and a format for Hunter Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network); iii) arrangements for Hunter Water to consult with FRNSW in the design of new assets and planning of system maintenance, where modelling indicates that minimum available flow and pressure may unduly affect firefighting in the network section under consideration; and iv) other matters as agreed by both parties to the memorandum of understanding. 	 No Requirement
Risk	Target for Full Compliance	
Failure to comply with this obligation presents a moderate operational risk. FRNSW is a key consumer in respect of Hunter Water's services, with obligations in respect of community protection. It is important that water supply services are adequate to enable FRNSW to meet its obligations.	Evidence that the Memorandum of Understanding between Hunter Water and FRNSW includes the specified requirements.	
Evidence sighted	<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ <i>Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW (draft)</i>, dated 25 July 2018. 	

Summary of reasons for grade

Until such time as Hunter Water enters into a Memorandum of Understanding (MoU) with Fire and Rescue NSW, there is no requirement for compliance with this obligation.

Nonetheless, Hunter Water demonstrated that the proposed Memorandum of Understanding (MoU) (i.e. the draft at the time of reporting) requires the establishment of a Fire Fighting Working Group (FFWG), and identifies the matters that it must consider (at a minimum) consistent with the requirements of this Licence obligation.

Discussion and notes

Until such time as Hunter Water enters into a Memorandum of Understanding (MoU) with Fire and Rescue NSW, there is no requirement for compliance with this obligation.

Although the Memorandum of Understanding (MoU) has not yet been formally signed, review of the proposed MoU (i.e. the latest draft available at the time of reporting) reveals that requirements in respect of a Fire Fighting Working Group (FFWG) are clearly documented, as follows:⁵³⁵

4.2 Fire Fighting Working Group

- 4.2.1 *Hunter Water and FRNSW will establish and operate the Fire Fighting Working Group (FFWG).*
 - 4.2.2 *Specific membership of the FFWG will be as agreed between the parties from time to time. The chairperson of the FFWG will alternate per meeting between representatives of each party. Other bodies can be invited to attend a meeting of the FFWG from time to time to assist in deliberations.*
 - 4.2.3 *The intention is that the FFWG shall meet quarterly, unless agreed in writing by both parties. The FFWG shall specify the procedure for calling its meetings and the manner in which business is to be conducted at, and in relation to, those meetings.*
 - 4.2.4 *It is intended that the role of the FFWG will be to:*
 - *identify and consider issues relevant to achieving the objectives stated in Section 3 of this MoU;*
 - *consider any direction from the SLG;*
 - *make recommendations to the SLG where required by the SLG or a party's Chief Executive;*
 - *develop and lead the implementation of formal business; arrangements and strategies between the parties ; and*
 - *where appropriate, engage and consult with other stakeholders to better enable the FFWG to recommend wider strategies to the SLG.*
 - 4.2.5 *The FFWG will consider the need for formal binding arrangements to be put in place between the parties regarding:*
 - *the sharing of information, for example, water network information or fire incidents;*
 - *design of new, replacement or upgraded water network assets, and the requirement for Hunter Water to consult with FRNSW where modelling indicates that minimum available flow and pressure may unduly affect firefighting in the network section under consideration;*
 - *efficient means of accessing water from the network;*
 - *managing water quality risks associated with accessing water from the network;*
 - *planning of water network maintenance; and*
-

⁵³⁵ Memorandum of Understanding between Hunter Water Corporation and Fire and Rescue NSW (draft), dated 25 July 2018.

-
- *if considered necessary, implement such formal arrangements.*

4.2.6 *The FFWG is to agree to the format and timing for Hunter Water to provide a report detailing its water network performance regarding water availability for firefighting.*

As can be seen, section 4 of the proposed MoU sets out in detail the operational arrangements and role of the FFWG and the matters it is required to address. Sections 4.2.5 and 4.2.6 address the specific requirements of this Licence obligation.

It is noted that, in anticipation that the MoU will be formalised, there has been correspondence between Hunter Water and FRNSW regarding the constituency of the FFWG (and the Strategic Liaison Group (SLG) that is also required to be established under the MoU).⁵³⁶

Recommendations

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

Opportunities for improvement

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

⁵³⁶ Email chain between Hunter Water and FRNSW with entries on 3 October 2018 and 12 October 2018 (re: *MoU between Hunter Water and Fire and Rescue NSW*).

4. Previous Recommendations

4.1 Overview

This section sets out the detailed findings in respect of the status of previous recommendations. In each case the following is provided:

- the reference number for the previous recommendation;
- the previous recommendation;
- the assessed status (Complete, Ongoing or No action taken);
- a summary of the reason for the assessed status;
- a list of the evidence reviewed in assessing the status;
- discussion of the evidence reviewed and how it demonstrates the assessed status;
- any further recommendations; and
- any identified opportunities for improvement.

It is noted that all clause references in respect of the assessed previous recommendations relate to the *Hunter Water Corporation Operating Licence 2012-2017*.

4.2 Detailed Assessment of Status

4.2.1 Drinking Water

Table 4.1 Previous Recommendations 2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13

Reference	Requirement	Status
2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13	<i>Water Quality; Drinking Water (clauses 2.1.1 & 2.1.2).⁵³⁷</i>	Part a) Ongoing
	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; and e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate. To assist in the identification of any aspect still outstanding in the 2017-18 audit the auditor makes a further recommendation: (f) for the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system. <i>[Note: these recommendations apply to both Drinking Water and Recycled Water.]</i>	Part b) Completed
		Part c) Completed
		Part d) Completed
		Part e) Completed
		Part f) Completed

Anticipated completion date

It is anticipated that a) will be finalised within the 2018/19 audit period.

⁵³⁷ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- HW2015-1160 3 17.004 File note - IPART Recommendation 2013-14 f) (Critical Control Point Review).
- HW2016-1069 3.003 Minutes - Meeting with NSW Health on CCPs – 010318.
- HW2015-1343 4.017 Email - QA review of HACCP limit tables - revised tables sent 19th December 2017.
- HW2015-1343 4.016 Email - NSW Health Satisfaction of Hunter Water CCPs – 28062017.
- HW2016-1069 3.002 Email - Status of Hunter Water CCPs - end of June 2017.
- HW2015-1444 3.001 Procedure - Establishing and Reviewing Critical Control Points.
- HW2015-1160 3 17.015 Screen shots of SCADA.
- HW2014-778 15 2.006 Grahamstown WTP – CCP Table.
- HW2014-778 15 2.005 Dungog WTP –CCP Table.
- HW2014-778 15 2.004 Anna Bay WTP –CCP Table.
- HW2014-778 15 2.009 Nelson Bay WTP –CCP Table.
- HW2014-778 15 2.008 Lemon Tree Passage WTP –CCP Table.
- HW2014-778 15 2.007 Gresford WTP –CCP Table.
- HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.
- HW2015-1160 3 17.005 Article - Integrum - WQ Incident.
- HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response
- Letter: Hunter Water Corporation 2017-2018 Operational Audit, NSW Health 16 August 2018.
- Email: Update on CCPs from NSW Health.

Summary of reasons for assessed status

Hunter Water has closed out the majority of this recommendation by reviewing its critical control points and CCP tables. Hunter Water is waiting on agreement from NSW Health in respect of the final component.

Discussion and notes

Part a):

NSW Health indicated their response to the audit⁵³⁸ that the CCPs have not been finalised, but that it is nearing completion.⁵³⁹ Detail around chlorine concentration and contact time is the last item to be agreed.

The status of this part is assessed as on-going.

Part b):

A process has been developed to ensure critical limits can only be altered through an approval process. All critical limits for Water Treatment Plant CCPs have been hardcoded in the PLC set in SCADA. A change to these critical limit alarms needs to go through a SCADA change request⁵⁴⁰ and field staff need to physically attend site to alter the alarms.

⁵³⁸ Letter: Hunter Water Corporation 2017-2018 Operational Audit, NSW Health 16 August 2018.

⁵³⁹ Email: Update on CCPs from NSW Health.

⁵⁴⁰ HW2015-1444 3.001 Procedure - Establishing and Reviewing Critical Control Points.

Automatic shutdowns are applied at all CCPs which are monitored continuously in SCADA. SCADA access to alter automatic shutdown setpoints at Water Treatment Plants and Network Chlorinators is restricted to supervisory access. All critical limits for Network Chlorinators are hardcoded in the PLC set in SCADA.

This process was reviewed during the site inspection at Dungog WTP.

The status of this part is assessed as completed.

Part c):

CCP tables have been developed for all of the treatment plants.^{541,542,543,544,545,546} These detail the location, parameter, target criteria, monitoring frequency, critical limit and corrective action for all the WTP based CCPs.

The status of this part is assessed as completed.

Part d):

CCP breaches are recorded in Hunter Water's corporate risk and compliance management system (Integrum) which includes a data entry space for corrective actions.⁵⁴⁷ In addition, annotations are added to SCADA trends to record the details behind anomalies in water quality, which was observed at the Dungog WTP.

Preventative measures and corrective actions are documented in CCP tables and the CCP exceedance response plan.⁵⁴⁸ The Water Quality Committee⁵⁴⁹ is to view operational performance, including CCPs.

The status of this part is assessed as completed.

Part e):

During the site inspection at Dungog WTP it was observed that CCP critical limits were set in SCADA, including the delay times.

The status of this part is assessed as completed.

Part f):

A report was prepared on the status of this recommendation.⁵⁵⁰

The status of this part is assessed as completed.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

⁵⁴¹ HW2014-778 15 2.006 Grahamstown WTP – CCP Table.

⁵⁴² HW2014-778 15 2.005 Dungog WTP –CCP Table.

⁵⁴³ HW2014-778 15 2.004 Anna Bay WTP –CCP Table.

⁵⁴⁴ HW2014-778 15 2.009 Nelson Bay WTP –CCP Table.

⁵⁴⁵ HW2014-778 15 2.008 Lemon Tree Passage WTP –CCP Table.

⁵⁴⁶ HW2014-778 15 2.007 Gresford WTP –CCP Table.

⁵⁴⁷ HW2015-1160 3 17.005 Article - Integrum - WQ Incident.

⁵⁴⁸ HW2014-778 15 2.001 Plan - Veolia CCP Exceedance Response.

⁵⁴⁹ HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.

⁵⁵⁰ HW2015-1160 3 17.004 File note - IPART Recommendation 2013-14 f) (Critical Control Point Review).

Table 4.2 Previous Recommendation 2016/17-01

Reference	Requirement	Status
2016/17-01	<p><i>Water Quality; Drinking Water (clause 2.1.1):</i>⁵⁵¹</p> <p>By 30 September 2018, Hunter Water should ensure that a process is in place to identify and address repeat water quality incidents and trends.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference. ▪ HW2018-198 10.001 Report - EXECUTIVE brief - Water System Performance - August 2018. ▪ HW2006-1417 30 8.008 Minutes - Water Quality Committee – September 2018. 		
Summary of reasons for assessed status		
The recommendation was successfully closed out.		
Discussion and notes		
<p>A process has been developed to capture water quality incidents and trends, including repeat incidents. The process is outlined in the water quality committee's terms of reference,⁵⁵² and is managed through the water quality committee meetings⁵⁵³ and regular reporting to the Executive Management Team (EMT).⁵⁵⁴</p> <p>This process allows the Water Quality Committee to review repeated incidents and also give EMT oversight of the process.</p>		
Further recommendations		
There are no further recommendations arising in respect of this previous recommendation.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this previous recommendation.		

⁵⁵¹ Clause reference relates to the Hunter Water Corporation Operating Licence 2012-2017.

⁵⁵² HW2006-1417 15 17.001 Statement - Water Quality Committee Terms of Reference.

⁵⁵³ HW2006-1417 30 8.008 Minutes - Water Quality Committee – September 2018.

⁵⁵⁴ HW2018-198 10.001 Report - EXECUTIVE brief - Water System Performance - August 2018.

Table 4.3 Previous Recommendation 2016/17-02

Reference	Requirement	Status
2016/17-02	<p><i>Water Quality; Drinking Water (clause 2.1.2).⁵⁵⁵</i></p> <p>By 30 September 2018, Hunter Water should ensure that all emergency and incident management procedures are reviewed, and revised if necessary, based on the Four Mile Creek Critical Control Point reporting breaches (July 2016 and June 2017).</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ HW2012-1337 11 31.001 Procedure - Water Network CCP Non-conformance Response. ▪ HW2006-2906 4 6.008 Guideline - Criteria for Notification to NSW Health. ▪ HW2006-2906 4 6.023 Procedure - Water Quality Notification to NSW Health. ▪ HW2006-2906 4 6.010 Register - Contact Details NSW Health. 		
Summary of reasons for assessed status		
This recommendation has been completed, as it was intended.		
Discussion and notes		
<p>Hunter Water self-reported in the 2016/2017 audit that it failed to immediately report four short-term chlorine overdosing incidents to NSW Health, breaching reporting protocols. This incident should have also triggered a review of emergency and incident procedures, which it did not. Therefore, the 2016/2017 audit made the recommendation to review the procedures in light of the above incident.</p> <p>In response several emergency and incident management procedures have been reviewed and revised, as required. The reviewed documents are as follows:</p> <ul style="list-style-type: none"> ▪ Procedure - water network CCP non-conformance response;⁵⁵⁶ ▪ Criteria for Notification to Health;⁵⁵⁷ ▪ Water Quality Notification to NSW Health Procedure;⁵⁵⁸ and ▪ Contact Details for HNE Health and NSW Health Water Unit.⁵⁵⁹ <p>These documents now provide clear directions if such a chlorine overdose were to happen in the future.</p>		
Further recommendations		
There are no further recommendations arising in respect of this previous recommendation.		

⁵⁵⁵ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁵⁶ HW2012-1337 11 31.001 Procedure - Water Network CCP Non-conformance Response.

⁵⁵⁷ HW2006-2906 4 6.008 Guideline - Criteria for Notification to NSW Health.

⁵⁵⁸ HW2006-2906 4 6.023 Procedure - Water Quality Notification to NSW Health.

⁵⁵⁹ HW2006-2906 4 6.010 Register - Contact Details NSW Health.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

Table 4.4 Previous Recommendation 2016/17-03

Reference	Requirement	Status
2016/17-03	<p><i>Water Quality; Drinking Water (clause 2.1.2);⁵⁶⁰</i></p> <p>For the next scheduled emergency scenario training exercise, Hunter Water should include a Critical Control Point breach as the scenario.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ HW2007-900 31 39.002 Letter - 2018 Emergency Exercise Planning Brief. ▪ HW2007-900 31 39.008 Plan - Hunter Water Exercise Concept Document Vs 2. ▪ HW2007-900 31 39.009 Register - 2018 Participant list day 1 session 1 & 2. ▪ HW2007-900 31 39.017 Register - 2018 Incident Training Register Day 2 sessions 1 & 2. 		
Summary of reasons for assessed status		
The recommendation was completed within the time period.		
Discussion and notes		
<p>Hunter Water completed an emergency training exercise in September 2018. The exercise brief,⁵⁶¹ concept,⁵⁶² and list of participants^{563,564} were provided as evidence.</p> <p>The emergency training exercise was facilitated by Janellis Australia Pty Ltd who specialises in organisational resilience development.</p> <p>The scope of the emergency training exercise included testing of the following:</p> <ul style="list-style-type: none"> ▪ Incident Management Teams; ▪ Hunter Water Incident Management Plan; ▪ Dam Safety Emergency Plan (DSEP) – Chichester dam; ▪ Pollution Incident Response Management Plan (PIRMP) - Dungog Water Treatment Plan; ▪ Critical Control Point (CCP) Breach; and ▪ Veolia Incident and Emergency Management Manual for Hunter Water Treatment Operations Contract CS0341. Document no PL-HW-9-7101-3. 		
Further recommendations		
There are no further recommendations arising in respect of this previous recommendation.		

⁵⁶⁰ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁶¹ HW2007-900 31 39.002 Letter - 2018 Emergency Exercise Planning Brief.

⁵⁶² HW2007-900 31 39.008 Plan - Hunter Water Exercise Concept Document Vs 2.

⁵⁶³ HW2007-900 31 39.009 Register - 2018 Participant list day 1 session 1 & 2.

⁵⁶⁴ HW2007-900 31 39.017 Register - 2018 Incident Training Register Day 2 sessions 1 & 2.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

Table 4.5 Previous Recommendation 2016/17-04

Reference	Requirement	Status
2016/17-04	<p><i>Water Quality; Drinking Water (clause 2.1.2);⁵⁶⁵</i></p> <p>By 30 September 2018, Hunter Water should ensure that all personnel involved in undertaking reservoir inspections undertake training in the importance of accurately completing the reservoir inspection forms, including the records associated with the inspection.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ HW2013-196 10 28.002 Presentation - Civil toolbox talk August 2018 - Reservoir inspection training. ▪ HW2013-196 10 28.001 Schedule - Tool Box Talk - August 2018 - Attendance Sheets. ▪ HW2015-1449 1 11.016 Reservoir Inspection Example - East 2. ▪ HW2015-1449 1 11.006 Reservoir Inspections and Repairs - KPI Report for July. 		
Summary of reasons for assessed status		
<p>The recommendation was completed within the time period; however, it was considered that there could be some further improvement. Therefore, the requirement was closed out with a further recommendation.</p>		
Discussion and notes		
<p>Hunter Water has developed and implemented a training program for reservoir inspections, which is delivered through on-site toolbox talks,⁵⁶⁶ to all staff undertaking inspections.⁵⁶⁷</p> <p>The inspection form has also been revised and a sample of completed inspections forms was provided as evidence.⁵⁶⁸ In addition, details of reservoir inspections and repairs were also provided,⁵⁶⁹ which demonstrates that inspections are occurring and issues are being picked up. However, during the audit the North Lambton Reservoir it was noted that there was an area where the roof ridges were not sealed, under the gutter, adjacent to the access stairwell. Also, at this point there was an approximate 5mm gap where stormwater water from the platform drained into the reservoir. These should have been picked up during previous inspections.</p> <p>It is understood that issues will constantly arise and need to be addressed. Also, there needs to be continual improvement in process and training maintained.</p>		
Further recommendations		
<p>The following recommendation is made to further address the issue identified in this previous recommendation:</p>		

⁵⁶⁵ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁶⁶ HW2013-196 10 28.002 Presentation - Civil toolbox talk August 2018 - Reservoir inspection training.

⁵⁶⁷ HW2013-196 10 28.001 Schedule - Tool Box Talk - August 2018 - Attendance Sheets.

⁵⁶⁸ HW2015-1449 1 11.016 Reservoir Inspection Example - East 2.

⁵⁶⁹ HW2015-1449 1 11.006 Reservoir Inspections and Repairs - KPI Report for July.

-
- **REC-HWC-2017/18-09:** Add reservoir inspection training to the training needs matrix for all positions undertaking reservoir inspections, to ensure training is current.

Revise the *Reservoir Inspection* form to be specific rather than subjective, where possible. For example, under Roof Hatches and Roof Sheeting, the inspection item:

“P1 – evidence of bird/vermin in reservoir or vent/opening not bird/vermin proof.”

could be revised to include a specific measurable assessment criterion:

“P1 – evidence of bird/vermin in reservoir or vent/opening greater than “X”mm.”

These issues should be addressed by 30 June 2019.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

4.2.2 Recycled Water

Table 4.6 Previous Recommendations 2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13

Reference	Requirement	Status
2013/14-03, 2013/14-04, 2013/14-06 and 2013/14-13	<i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2).⁵⁷⁰</i>	Part a) Ongoing
	Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including:	Part b) Completed
		Part c) Ongoing
	a) review all CCP critical limits (including alarm delays), and monitoring points to ensure they reflect current practice, as agreed with NSW Health;	Part d) Completed
		Part e) Ongoing
		Part f) Completed
	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; and	
	e) operational and critical limits must be set in SCADA as alarms, including delay times where appropriate.	
	To assist in the identification of any aspect still outstanding in the 2017-18 audit the auditor makes a further recommendation:	
	(f) for the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system.	
	<i>[Note: these recommendations apply to both Drinking Water and Recycled Water.]</i>	

Anticipated completion date

Hunter Water has identified that it will meet with NSW Health before the end of the 2018 calendar year to confirm NSW Health agreement.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

⁵⁷⁰ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

-
- Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.
 - Veolia – SCADA Change Request – SC0228-WW-MOR – 17 May 2017.
 - Veolia – SCADA Change Request – SC0261-WW-MOR – 22 September 2017.
 - Veolia – Spreadsheet – Morpeth WWTW Plat Spreadsheet – populated to 24 September 2018.
 - Veolia – Spreadsheet – CCP Alarm Report – 18 June 2018.
 - Veolia - Corporate Email - WWTW CCP and EPA Compliance Alarms 18 June 2018.
 - Hunter Water – Screenshot – Integrum example – undated.
-

Summary of reasons for assessed status

Hunter Water has commenced closing out this recommendation by reviewing its critical control points and site specific RWQMPs. Hunter Water is waiting on agreement from NSW Health on the review. Some minor discrepancies were identified in the audit of the establishment and implementation of the critical control points. It was agreed with IPART observers that it would be acceptable to close out parts of this recommendations therefore, it was determined that parts b), d) and f) are completed, and parts a), c) and e) are ongoing.

Discussion and notes

Part a):

Hunter Water has undertaken a review of its recycled water critical control points and the results of the review are documented in the site specific RWQMPs.^{571,572} In July 2018 Hunter Water undertook a validation testing program to review and confirm the critical limits as detailed in the Validation Testing Program for Water Recycling Schemes – July 2018 Report.⁵⁷³ Hunter Water did not provide evidence that the critical limits have been agreed with NSW Health and it was pointed out that the Validation Program has been provided to NSW Health, however comments on the Validation Program have not yet been received; therefore this part of the recommendation is ‘ongoing’.

Part b):

A SCADA change request process has been established to confirm that any changes to CCPs are documented and approved. SCADA change requests^{574,575} were provided as evidence to demonstrate that changes to SCADA are approved, however in the examples provided for this audit, the SCADA change requests were signed off by a Veolia Supervisor but not signed off by a Hunter Water representative.

It was discussed that the interlocks are hardcoded into SCADA and cannot be changed without the SCADA change request process.

This part of the recommendation has been completed.

Part c):

The documentation of CCPs has been revised however as previously noted, there is some discrepancies between the Hunter Water and Veolia site specific RWQMPs for Morpeth and also with the location of the critical limit for CCP3 at Morpeth therefore this part of the recommendation is ‘ongoing’.

⁵⁷¹ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

⁵⁷² Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018.

⁵⁷³ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

⁵⁷⁴ Veolia – SCADA Change Request – SC0228-WW-MOR – 17 May 2017.

⁵⁷⁵ Veolia – SCADA Change Request – SC0261-WW-MOR – 22 September 2017.

Part d):

Operators are required to make a note on SCADA when there is an alarm and make a comment on the WWTW Plant Spreadsheet⁵⁷⁶. A CCP exceedance generates a daily report that is sent out in an email with a list of alarms and includes the comments that an operator may make as well as any head office comments. The daily alarm list spreadsheet⁵⁷⁷ and a Veolia Corporate Email - WWTW CCP and EPA Compliance Alarms 18 June 2018⁵⁷⁸ were provided as evidence.

Hunter Water uses the Integrum program to document and progress corrective actions and provided an example of corrective responses undertaken and recorded in Integrum⁵⁷⁹ which showed items relating to UV issues at Kurri Kurri and filter issues at Branxton that were captured and allocated to a Hunter Water Officer and the due date for completion.

This part of the recommendation has been completed.

Part e):

SCADA Alarms were observed during the site visit to the Morpeth WWTW. It was noted that whilst the critical limits for the parameters were set in accordance with the site specific RWQMP, there was a time delay implemented for CCP1, which is not identified in the site specific RWQMP for Morpeth. Whilst a time delay is considered a practical approach to implementing the CCP, it is not set in SCADA as documented in the RWQMP therefore, this part of the recommendation is 'ongoing'.

Part f):

Hunter Water has not provided a report on the status of each of the parts of the recommendations, however, evidence including the Validation Program, updated RWQMPs, and SCADA change requests have been provided to document the progress in implementing the recommendations.

This part of the recommendation has been completed.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation. However, opportunities for improvement have been previously identified in this report in relation to the establishment and implementation of CCPs.

⁵⁷⁶ Veolia – Spreadsheet – Morpeth WWTW Plat Spreadsheet – populated to 24 September 2018.

⁵⁷⁷ Veolia – Spreadsheet – CCP Alarm Report – 18 June 2018.

⁵⁷⁸ Veolia - Corporate Email - WWTW CCP and EPA Compliance Alarms 18 June 2018.

⁵⁷⁹ Hunter Water – Screenshot – Integrum example – undated.

Table 4.7 Previous Recommendation 2015/16-05

Reference	Requirement	Status
2015/16-05	<p><i>Water Quality; Recycled Water (clauses 2.2.1 & 2.2.2);</i>⁵⁸⁰</p> <p>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.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ Hunter Water – Spreadsheet – Recycled Water Gap Analysis 2017-18. ▪ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018. ▪ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018. ▪ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018. ▪ Veolia – Monthly Recycled Effluent Meeting Agenda – 20 August 2018. ▪ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018. 		
Summary of reasons for assessed status		
<p>Hunter Water undertook a gap analysis⁵⁸¹ during the audit period, which identified gaps in compliance in the recycled water framework and recommended actions to fill the gaps. Evidence was provided that the actions have been undertaken to address the identified gaps.</p>		
Discussion and notes		
<p>Hunter Water provided a spreadsheet that documented the results of the recycled water gap analysis undertaken to address this recommendation. The gap analysis resulted in a number of recommendations that have been actioned, for example:</p> <ul style="list-style-type: none"> ▪ Update of the Corporate RWQMP⁵⁸² and scheme specific RWQMPs;^{583,584} ▪ Long term review of trends in monthly operational meetings;⁵⁸⁵ and ▪ Update of Validation Plan.⁵⁸⁶ <p>This recommendation has been completed.</p>		

⁵⁸⁰ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁸¹ Hunter Water – Spreadsheet – Recycled Water Gap Analysis 2017 -18

⁵⁸² Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018

⁵⁸³ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018

⁵⁸⁴ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018

⁵⁸⁵ Veolia – Monthly Recycled Effluent Meeting Agenda – 20 August 2018

⁵⁸⁶ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

Table 4.8 Previous Recommendation 2016/17-05

Reference	Requirement	Status
2016/17-05	<p><i>Water Quality; Recycled Water (clause 2.2.1):</i>⁵⁸⁷</p> <p>By 30 December 2018, Hunter Water should update the Corporate Recycled Water Quality Management Plan to document current activities and processes. This should include filling any gaps identified as part of Recommendation 15/16-05.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ Hunter Water – Spreadsheet – Recycled Water Gap Analysis 2017-18. ▪ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018. 		
Summary of reasons for assessed status		
<p>Hunter Water updated its Corporate RWQMP⁵⁸⁸ in the audit period based on the recommendation of the gap analysis⁵⁸⁹ undertaken to address Recommendation 2015/16-05.</p> <p>This recommendation has been completed.</p>		
Discussion and notes		
<p>Hunter Water updated its Corporate RWQMP⁵⁹⁰ in the audit period.</p>		
Further recommendations		
<p>There are no further recommendations arising in respect of this previous recommendation.</p>		
Opportunities for improvement		
<p>No opportunities for improvement have been identified in respect of this previous recommendation.</p>		

⁵⁸⁷ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁸⁸ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018

⁵⁸⁹ Hunter Water – Spreadsheet – Recycled Water Gap Analysis 2017 -18

⁵⁹⁰ Hunter Water - Recycled Water Quality Management Plan - Corporate – July 2018

Table 4.9 Previous Recommendation 2016/17-06

Reference	Requirement	Status
2016/17-06	<p><i>Water Quality; Recycled Water (clause 2.2.1);</i>⁵⁹¹</p> <p>By 30 September 2018, Hunter Water should:</p> <ul style="list-style-type: none"> Develop a table in each scheme Recycled Water Quality Management Plan that documents the evidence for the selection of the Critical Control Point, its associated monitoring parameter(s) and limits. This should include sufficient document control to capture when changes are made and the basis of those changes. Consult with NSW Health on the validation testing program for the water recycling schemes. Specify the performance required of the ultraviolet (UV) units in their operating context and determine whether they are achieving this performance. Any failure in the performance of pre-validated UV units should be further investigated. 	Ongoing

Anticipated completion date

Hunter Water has identified that it will meet with NSW Health before the end of the 2018 calendar year to confirm NSW Health agreement.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.
- Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

Summary of reasons for assessed status

Hunter Water is awaiting feedback from NSW Health on the Validation Report therefore this recommendation is ‘ongoing’.

Discussion and notes

The CCPs, associated monitoring parameter(s) and limits for each recycled water scheme are summarised in Table 4-1 of each scheme specific RWQMP.⁵⁹²

The rationale for the selection of CCPs, associated monitoring parameter(s) and limits, is given in the Validation testing program for water recycling schemes report.⁵⁹³ Section 6 of the Validation report provides a summary table (Table 6-1) of the selection of CCPs for each recycled water scheme. Section 2 of the Validation report provides a summary table for, each scheme that summarises the operational monitoring parameter, the critical limit and the basis for its selection.

The Validation Report has been provided to NSW Health for review and agreement. The Validation Report includes details of the treatment performance for the UV disinfection systems.

⁵⁹¹ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁹² Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018.

⁵⁹³ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018.

Veolia monitors UV performance to determine whether the UV systems are operating within the correct range. Any failure in the performance of any UV units, including those that are pre-validated, leads to an automatic interlock and cease of recycled water supply. Non-routine and repeating UV unit failure is further investigated by Veolia.

Hunter Water is awaiting feedback from NSW Health on the Validation Report therefore this recommendation is 'ongoing'.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation. However, opportunities for improvement have been previously identified in this report in relation to the establishment and implementation of CCPs.

Table 4.10 Previous Recommendation 2016/17-07

Reference	Requirement	Status
2016/17-07	<p><i>Water Quality; Recycled Water (clause 2.2.2);</i>⁵⁹⁴</p> <p>By 30 September 2018, Hunter Water should ensure the preventive measures for helminth control for agricultural sites (Karuah, Morpeth and Farley) achieve the required log reduction values as per the <i>Australian Guidelines for Water Recycling 2006</i>.</p>	Completed
Anticipated completion date		
Not applicable.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ Hunter Water - Helminth controls for Hunter Water's recycled water schemes – 24 July 2018. ▪ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018. ▪ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018. ▪ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018. 		
Summary of reasons for assessed status		
<p>Hunter Water assessed the risk and required preventive measures for helminth control as documented in the Helminth controls for Hunter Water's recycled water schemes report.⁵⁹⁵</p> <p>This recommendation has been completed.</p>		
Discussion and notes		
<p>The preventive measures for helminth control for agricultural sites were assessed and detailed in the Helminth controls for Hunter Water's recycled water schemes report. In addition, the Validation testing program for water recycling schemes report⁵⁹⁶ and the scheme specific RWQMPs^{597,598} were updated with respect to the recommendations for helminth control.</p> <p>Hunter Water advised that the Helminth controls for Hunter Water's recycled water schemes report is being reviewed by Dr Graham Bailey from DPI to give him the opportunity to comment.</p>		
Further recommendations		
There are no further recommendations arising in respect of this previous recommendation.		

⁵⁹⁴ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁵⁹⁵ Hunter Water - Helminth controls for Hunter Water's recycled water schemes – 24 July 2018

⁵⁹⁶ Hunter Water – Validation Testing Program for Water Recycling Schemes – July 2018

⁵⁹⁷ Hunter Water - Recycled Water Quality Management Plan - Morpeth WWTW – July 2018

⁵⁹⁸ Veolia - Recycled Water Quality Management Plan for the Hunter Water Morpeth WWTW Recycled Water Scheme - PL-HWW-20-8308-3 - 27 September 2018

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

4.2.3 Asset management system

Table 4.11 Previous Recommendation 2015/16-06

Reference	Requirement	Status
2015/16-06	<i>Assets; Asset Management System (clause 4.1.2).</i> ⁵⁹⁹ 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.	Completed

Anticipated completion date

Not applicable – recommendation addressed (and a new recommendation has been made).

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water, *Asset Standards Management Plan* (Version 4.0), 6 June 2018.
- Hunter Water, *Standard – Asset Class Management* (Version 1), 16 May 2018.
- Hunter Water, *Stormwater Asset Class Management Plan* (Version 2), 17 November 2015.
- Hunter Water, *Asset Class Management Plan – Reservoirs* (Version 2), 19 April 2016.
- Hunter Water, *Asset Management Plan; Grahamstown Dam* (Version 2), 11 June 2014.
- Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.
- Hunter Water, *Preliminary Program Business Case – Water Network Asset Program 2020-2025* 17 October 2018.

Summary of reasons for assessed status

Although Hunter Water demonstrated that its *Asset Standards Management Plan* has now been updated, not all Asset Class Management Plans have been updated consistent with the document control system. Hunter Water outlined a revised approach to documentation of its approach to the management of its assets, under which its Asset Class Management Plans in their previous format are no longer applicable; it also demonstrated some documentation is now in place under the revised arrangement. Accordingly, this previous recommendation is deemed to have been addressed.

It is, however, appropriate to ensure that the adopted approach to management of the assets is fully documented under the new arrangements. Accordingly, a new recommendation is made in this respect.

Discussion and notes

Hunter Water advised⁶⁰⁰ that it had updated its *Asset Standards Management Plan*⁶⁰¹ in February 2018, although it was not formally approved until June 2018. The *Asset Standards Management Plan* defines the processes and strategies associated with the management of asset standards for Hunter Water. Asset standards are used in the planning, design, construction, operation and maintenance of Hunter Water assets.

⁵⁹⁹ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁶⁰⁰ Hunter Water response to 2018 Audit Questionnaire.

⁶⁰¹ Hunter Water, *Asset Standards Management Plan* (Version 4.0), 6 June 2018.

The *Standard – Asset Class Management*⁶⁰² sets out the standards in accordance with which Asset Class Management Plans are prepared. Hunter Water advised that it had updated a number of Asset Class Management Plans over the last four (4) years, and has a program for updating the remaining plans.

As examples of those that had been reviewed, Hunter Water provided copies of the *Stormwater*,⁶⁰³ *Reservoirs*⁶⁰⁴ and *Grahamstown Dam*⁶⁰⁵ *Asset Class Management Plans* (amongst others); these had last been reviewed in November 2015, March 2016 and respectively. It is noted that the *Standard – Asset Class Management* requires review of Asset Class Management Plans at intervals not exceeding five (5) years.

Hunter Water outlined the program that it has for updating the remaining Asset Class Management Plans, which comprises:⁶⁰⁶

- *Phase 1 – Involves updating the strategy analysis to determine the optimum balance between capital and maintenance investment to meet or improve performance and service standards. These are incorporated into the G1 business cases, which have been prepared for the 2020-25 price submissions (see the water network, structures and network mechanical-electrical renewals business cases).*
- *Phase 2 – Involves reviewing the template for the Standard Asset Class Management, which has been completed.*
- *Phase 3 – Involves reviewing the structure of the Asset Class Plans to ensure they are adding value to the business. This has been completed, which has determined that the optimum methodology is to rationalise the plans into a:*
 - *Product Asset Management Plan, which captures and monitors the strategic and operational requirements of the assets.*
 - *State of the Assets dashboard, which is a live report of the state of the assets and their performance. This is work in progress, but with a functional specification for trunk water mains.*
 - *Review and analysis of the detailed asset class strategies for investment, performance and risk (see above).*
 - *Consolidation of the facility management plans for the super critical facilities (see the Chichester Trunk Gravity Main, CTGM).*

Review of the structure of its asset management documentation and specifically the Asset Class Management Plans, which are the subject of this recommendation, from the perspective of value adding is strongly supported (refer **Table 3.14** for further discussion). The revised structure comprises:

- *Strategic Asset Management Plan*,⁶⁰⁷ which is the overarching document;
 - Asset Management Plans/Asset Class Management Plans for each product;
 - Facility Plans for specific facilities or system components as deemed necessary (based on risk and criticality);
 - Asset Strategies which details the strategic approach to each asset class or facility as appropriate; and
 - Fatal Asset Strategies which address assets from the perspective of safety management.
-

⁶⁰² Hunter Water, *Standard – Asset Class Management* (Version 1), 16 May 2018.

⁶⁰³ Hunter Water, *Stormwater Asset Class Management Plan* (Version 2), 17 November 2015.

⁶⁰⁴ Hunter Water, *Asset Class Management Plan – Reservoirs* (Version 2), 19 April 2016.

⁶⁰⁵ Hunter Water, *Asset Management Plan; Grahamstown Dam* (Version 2), 11 June 2014.

⁶⁰⁶ Hunter Water response to 2018 Audit Questionnaire.

⁶⁰⁷ Hunter Water, *Strategic Asset Management Plan* (Version 2.0), June 2018.

Review of the above referenced G1 business cases (for example, the *Preliminary Program Business Case – Water Network Asset Program 2020-2025*)⁶⁰⁸ reveals that they set out the strategic approach for management of the respective asset class over a five year period corresponding to Hunter Water's next Price Determination. As reported above, Asset Strategies comprise one of the levels in the revised documentation structure.

Although Hunter Water has not necessarily updated all Asset Class Management Plans that were due for review, the adopted new arrangement for documentation of its approach to the management of its assets makes that requirement in some respects redundant. Accordingly, Recommendation 2015/16-06 is deemed to have been addressed by implementing the new structure.

It is, however, appropriate to ensure that the adopted approach to management of the assets is fully documented under the new arrangements. Accordingly, it is recommended (**REC-HWC-2017/18-10**) that Hunter Water fully documents its adopted approach to the management of the assets under the revised document hierarchy/structure, which comprises a portfolio of Asset Management Plans, Facility Plans, Asset Strategies and Fatal Asset Strategies. Priority documentation should be in place by 30 June 2021, and the remaining documentation should be substantially in place by that time.

Further recommendations

The following recommendation is made to further address the issue identified in this previous recommendation:

- **REC-HWC-2017/18-10:** It is recommended that Hunter Water fully documents its adopted approach to the management of the assets under the revised document hierarchy/structure, which comprises a portfolio of Asset Management Plans, Facility Plans, Asset Strategies and Fatal Asset Strategies. Priority documentation including the Asset Management Plans, Asset Strategies and Fatal Asset Strategies should be in place by 30 June 2021; Facility Plans should be substantially in place by 30 June 2021.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

⁶⁰⁸ Hunter Water, *Preliminary Program Business Case – Water Network Asset Program 2020-2025* 17 October 2018.

Table 4.12 Previous Recommendation 2016/17-08

Reference	Requirement	Status
2016/17-08	<p><i>Assets; Asset Management System (clause 4.1.2).</i>⁶⁰⁹</p> <p>By 30 June 2019, Hunter Water should fully implement an asset criticality and risk assessment approach that is consistent across all asset classes and consistent with the enterprise risk management framework.</p>	Ongoing

Anticipated completion date

30 June 2019.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water, *Standard – Criticality* (Draft), undated.
- MS Excel workbook: *Hunter Water criticality tool.xlsx*, dated 20 February 2018.
- Hunter Water, *Standard – Asset Risk Management* (Draft), undated.
- Hunter Water, *Standard – Enterprise Risk Management* (Version 2), 8 March 2018.
- Document: *Data - Risk Driver Analysis Summary Table - Critical asset failure – Dec 17.docx*.
- Hunter Water, *Risk Appetite Statement* (Version 2.0), undated.
- Hunter Water, *Critical Water Network Assets; 2018 Risk Review and Action Plan*, September 2018.
- PowerPoint presentation: Hunter Water, *Critical Asset Strategy*, September 2018.

Summary of reasons for assessed status

Hunter Water demonstrated that it has progressed implementation of an asset criticality and risk assessment approach that addresses all asset classes and is consistent with the enterprise risk management framework, as required under this recommendation. The basis and methodology appears to have been developed and it now remains for the process to be implemented across the asset portfolio.

Discussion and notes

Hunter Water advised that:⁶¹⁰

“Hunter Water is updating the Asset Criticality Strategy, which involves reviewing the criticality principles, alignment to Hunter Water’s Risk Appetites within the Enterprise Risk Management and consideration of the risk associated with the Asset Risk Management. The activities completed to date are:

- *Creation of Critical Asset Risk Profile*
- *Detailed assessment of identified risks with controls identified*
- *Investments recommended through the 2020-25 Price Submission*
- *Creation of internal working group to assess and update the Critical asset Strategy*
- *Commencement of a critical asset prioritisation.”*

⁶⁰⁹ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁶¹⁰ Hunter Water response to 2018 Audit Questionnaire.

Hunter Water provided a number of documents to demonstrate its progress in addressing this recommendation, including:

- *Standard – Criticality* (undated draft)⁶¹¹ – this standard defines asset criticality at Hunter Water, how it shall be assessed and implemented across the organisation, and how it shall govern the decision-making process. It notes that the outcome of a criticality assessment is a list of critical assets.
- *Hunter Water Criticality Tool*⁶¹² – this tool provides a template for undertaking asset criticality assessments. The instructions indicate that the asset register/asset list for the area to be reviewed is to be loaded from Ellipse. The tool provides for the consequence of asset failure to be assessed against a number of primary and secondary consequence criteria to determine an overall criticality rating for the asset. Primary criterion include Customer Service (service continuity, quality (public health), and environmental), Statutory Compliance and Health and Safety; secondary criterion include Media/reputation, Maintenance Index and Financial (capital budget and operating budget). Guidance is provided for each assessment criterion.
- *Standard – Asset Risk Management* (undated draft)⁶¹³ – this standard defines specific requirements relating to management of asset risks within Hunter Water’s Asset Management System and in accordance with the Enterprise Risk Management (ERM) framework.
- *Standard – Enterprise Risk Management*⁶¹⁴ – this standard sets out processes that have been developed in order to ensure consistency in the implementation of Hunter Water’s identification, assessment and control methodologies and to enhance the enterprise wide comparability of risks being faced.
- *Risk Driver Analysis Summary – Critical asset failure*⁶¹⁵ – provides a summary of the assessed risk associated with the portfolio of critical assets; a risk management plan for each critical asset/group of assets is presented.
- *Risk Appetite Statement*⁶¹⁶ – presents Hunter Water’s internal risk appetite statements for the business; Asset failure and Operational resilience are most relevant from an asset management perspective, but other categories are also relevant.
- *Critical Water Network Assets; 2018 Risk Review and Action Plan*⁶¹⁷ – this report presents the outcomes of a strategic risk review and options assessments process, undertaken for identified critical water network assets with a high risk rating in respect of asset performance and reliability. An action plan, investment requirements and gateway approval status are documented.
- *PowerPoint presentation: Critical Asset Strategy*⁶¹⁸ – provides an overview of the basis and current status of Hunter Water’s critical asset strategy.

Review of these documents confirms that Hunter Water has progressed implementation of an asset criticality and risk assessment approach that addresses all asset classes and is consistent with the enterprise risk management framework, as required under this recommendation. The basis and methodology appears to have been developed and it now remains for the process to be implemented across the asset portfolio.

As at September 2018, the status of Facility Plans for critical assets/asset classes was as follows:⁶¹⁹

⁶¹¹ Hunter Water, *Standard – Criticality* (Draft), undated.

⁶¹² MS Excel workbook: *Hunter Water criticality tool.xlsx*, dated 20 February 2018.

⁶¹³ Hunter Water, *Standard – Asset Risk Management* (Draft), undated.

⁶¹⁴ Hunter Water, *Standard – Enterprise Risk Management* (Version 2), 8 March 2018.

⁶¹⁵ Document: *Data - Risk Driver Analysis Summary Table - Critical asset failure – Dec 17.docx*.

⁶¹⁶ Hunter Water, *Risk Appetite Statement* (Version 2.0), undated.

⁶¹⁷ Hunter Water, *Critical Water Network Assets; 2018 Risk Review and Action Plan*, September 2018.

⁶¹⁸ PowerPoint presentation: Hunter Water, *Critical Asset Strategy*, September 2018.

-
- four (4) had been completed, including the Grahamstown Dam, Chichester Dam and CTGM (Chichester Trunk Gravity Main) and Stormwater Detention Basins Plans;
 - five (5) had been partially completed/being undertaken, including High Voltage, Telemetry, Radio Network, Borefields and Bulk Pump Stations Plans; and
 - the remainder, including for example Dungog WTP, Bulk Reservoirs and critical WWTPs, were yet to be undertaken.
-

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

⁶¹⁹ PowerPoint presentation: Hunter Water, *Critical Asset Strategy*, September 2018, slide 14.

Table 4.13 Previous Recommendation 2016/17-09

Reference	Requirement	Status
2016/17-09	<p><i>Assets; Asset Management System (clause 4.1.2).</i>⁶²⁰</p> <p>Hunter Water should review the currency of all planned maintenance work instructions (for all assets) and prepare a program to update these as required over a period in accordance with its document control standard. The program should be prepared by 31 December 2018.</p>	Completed

Anticipated completion date

Not applicable – recommendation has been addressed.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- Hunter Water, *File Note – Reviewing Standards Jobs*, 4 October 2018.
- Hunter Water, *Procedure – Change MSTs and Standard Jobs* (Version 0.1 – Draft), undated.
- Hunter Water, *QAI 006 – Asset Information Standard 6 – Ellipse Standard Jobs* (Version 2.0), undated.
- Hunter Water, *QAI 007 – Asset Information Standard 7 – Ellipse Maintenance Schedule Tasks* (Version 1.0), undated.
- Email dated 5 April 2018 from Veolia to Hunter Water (re: *RevC PM Review*).
- Document: *20180405 MatterForEndorsement_PM review_RevC(updatefrom2016).pdf*.
- MS Excel workbook: *20180405 Data File_PM review RevC.xlsx*.

Summary of reasons for assessed status

Hunter Water demonstrated that it has prepared a program review of all planned maintenance work instructions (“standard jobs”), as required by this recommendation. The program sets target dates for review of proportions of the work instructions, prioritised on the basis of use.

Furthermore, Hunter Water demonstrated that it is in the progress of undertaking the reviews. Review of treatment plant related work instructions/standard jobs has been completed; review of those related to the network is due for completion by the end of December 2019. Interim milestones have been set and 16% have been reviewed (and are awaiting approval) at the time of reporting.

Discussion and notes

Hunter Water advised that Ellipse (maintenance management system):⁶²¹

“... uses “Standard Jobs” which are potentially common for a particular type of recurring maintenance task. For example one standard job for a pump station inspection carries the full work instruction that is applied to the majority of pump stations via Ellipse Maintenance Schedule Tasks” which creates a work order based on the standard job for that particular pump station as it is due.”

Hunter Water further notes that there is currently no means of identifying when individual standard jobs were last reviewed, noting that there are more than 5,000 that are active in the maintenance management system. Going forward, existing and new standard jobs for

⁶²⁰ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁶²¹ Hunter Water response to 2018 Audit Questionnaire.

preventative maintenance will be assigned a next review date. Each quarter, a list of standard jobs that are due for review will be prepared; a work order raised and the review process managed through the maintenance management system.

Details of Hunter Water's approach to update and management of its "standard jobs" (maintenance work instructions) is documented in the following:

- *Planned Maintenance Review Program*⁶²² – this file note outlines the proposed method for reviewing standard jobs that are contained within Ellipse and are used to carry out maintenance tasks. This process is limited to recurring preventive maintenance tasks. It includes a task list with target dates for completion, which constitutes the program required pursuant to this recommendation.
- *Procedure – Change MSTs and Standard Jobs*⁶²³ – procedure for implementing changes to MSTs (maintenance schedule tasks) and standard jobs. The intent is to ensure that, when changing Ellipse MSTs and standard jobs, they are always compliant with current legislation, codes of practice, Australian standards and Hunter Water asset class management plans.
- *QAI 006 – Asset Information Standard 6 – Ellipse Standard Jobs*⁶²⁴ – this document defines the codes and naming conventions to be used in Ellipse for standard jobs (corrective maintenance; preventative maintenance; and other).
- *QAI 007 – Asset Information Standard 7 – Ellipse Maintenance Schedule Tasks*⁶²⁵ – this document defines the codes, structures and naming conventions to be used in Ellipse to create or modify maintenance schedule tasks (MSTs) against an individual piece of equipment (POE) or an equipment group identifier (EGI).

Hunter Water advised that progress in respect of the review process was as follows:

- Treatment plants – the review process is complete. As part of the service contact for operation and maintenance of the treatment plants, Veolia was required to undertake a review of all maintenance tasks. Hunter Water provided documentation to demonstrate that the preventative maintenance program and associated tasks had been reviewed. It was noted that a further revision will be required to address "... *major changes to the Ellipse Asset Register are scheduled for implementation in the coming months*".^{626,627,628}
- Network – there are 5,100 active jobs but only 1,661 assigned to preventative maintenance activities; these jobs appear on over 8,600 maintenance tasks. Hunter Water plans to:
 - assign review dates for all jobs and review the top 40% of most used standard jobs by December 2018;
 - review the next 30% by end of Q1 2019 and the next 10% by Q2 2019; and
 - review the remaining active jobs by the end of 2019.

It noted that more than 1,400 (16%) of the 8,600 have been reviewed and are awaiting approval.

As part of the review process, Hunter Water is reviewing the need for each individual standard job and rationalising jobs where appropriate.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

⁶²² Hunter Water, *File Note – Reviewing Standards Jobs*, 4 October 2018.

⁶²³ Hunter Water, *Procedure – Change MSTs and Standard Jobs* (Version 0.1 – Draft), undated.

⁶²⁴ Hunter Water, *QAI 006 – Asset Information Standard 6 – Ellipse Standard Jobs* (Version 2.0), undated.

⁶²⁵ Hunter Water, *QAI 007 – Asset Information Standard 7 – Ellipse Maintenance Schedule Tasks* (Version 1.0), undated.

⁶²⁶ Email dated 5 April 2018 from Veolia to Hunter Water (re: *RevC PM Review*).

⁶²⁷ Document: *20180405 MatterForEndorsement_PM review_RevC(updatefrom2016).pdf*.

⁶²⁸ MS Excel workbook: *20180405 Data File_PM review RevC.xlsx*.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

4.2.4 Environmental management system

Table 4.14 Previous Recommendation 2016/17-10

Reference	Requirement	Status
2016/17-10	<p><i>Environment; Environment Management (clause 6.1.3).⁶²⁹</i></p> <p>By 30 September 2018, Hunter Water should conduct refresher training of operations and maintenance staff for annual inspections and maintenance activities. In particular, there should be focus on identifying environmental impacts and ensuring mitigation of any impacts noted.</p>	Completed

Anticipated completion date

Not applicable – recommendation has been addressed.

Evidence sighted

- Hunter Water response to 2018 Audit Questionnaire.
- HW2012-738 4 9.013 User Manual - EG0073 - Course Outline - General Environmental Awareness (Field Based) - Identifying and Managing ~ CURRENT.
- HW2014-778 13 14.005 Register-Attendance Record – 08052018.
- HW2008-772 10 6.015 Register - Attendance Record - 08 05 2018.
- HW2008-772 10 6.016 Register - Attendance Record - 02 05 2018.
- HW2008-772 10 6.017 Register - Attendance Record - 15 05 2018.
- HW2008-772 10 6.018 Register - Attendance Record - 16 05 2018.
- HW2008-772 10 6.019 Register - Attendance Record - 22 05 2018.
- HW2008-772 10 6.020 Register - Attendance Record - 23 05 2018.
- HW2008-772 10 6.021 Register - Attendance Record - 30 05 2018 pm.
- HW2008-772 10 6.022 Register - Attendance Record - 30 05 2018 am.
- HW2008-772 10 6.023 Register - Attendance Record - 29 05 2018 pm.
- HW2008-772 10 6.024 Register - Attendance Record - 29 05 2018 am.
- HW2008-772 10 6.031 Register - Attendance Record - 20 06 2018 am.

Summary of reasons for assessed status

Hunter Water undertook refresher training for staff with responsibilities under the EMS in May 2018. The training covered a range of relevant environmental awareness topics including legislation, chemicals and spill clean-up, sediment and erosion, required equipment, de-chlorination of water discharged to the environment, aboriginal heritage, vegetation clearing, waste, acid sulphate soils and reportable incidents.

This recommendation has been completed.

⁶²⁹ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

Discussion and notes

Hunter Water provided the course outline⁶³⁰ for the EMS training which provided a general overview of the training program and showed a range of modules available on the Hunter Water TRIM system during the audit interviews.

Hunter Water provided training records^{631,632,633,634,635,636,637,638,639,640,641,642} from May 2018, detailing the modules that included the 'ENV-020 Environmental Field Training' Module and the names and positions of the attendees.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

⁶³⁰ HW2012-738 4 9.013 User Manual - EG0073 - Course Outline - General Environmental Awareness (Field Based) - Identifying and Managing ~ CURRENT.

⁶³¹ HW2014-778 13 14.005 Register-Attendance Record – 08052018.

⁶³² HW2008-772 10 6.015 Register - Attendance Record - 08 05 2018.

⁶³³ HW2008-772 10 6.016 Register - Attendance Record - 02 05 2018.

⁶³⁴ HW2008-772 10 6.017 Register - Attendance Record - 15 05 2018.

⁶³⁵ HW2008-772 10 6.018 Register - Attendance Record - 16 05 2018.

⁶³⁶ HW2008-772 10 6.019 Register - Attendance Record - 22 05 2018.

⁶³⁷ HW2008-772 10 6.020 Register - Attendance Record - 23 05 2018.

⁶³⁸ HW2008-772 10 6.021 Register - Attendance Record - 30 05 2018 pm.

⁶³⁹ HW2008-772 10 6.022 Register - Attendance Record - 30 05 2018 am.

⁶⁴⁰ HW2008-772 10 6.023 Register - Attendance Record - 29 05 2018 pm.

⁶⁴¹ HW2008-772 10 6.024 Register - Attendance Record - 29 05 2018 am.

⁶⁴² HW2008-772 10 6.031 Register - Attendance Record - 20 06 2018 am.

Table 4.15 Previous Recommendation 2016/17-11

Reference	Requirement	Status
2016/17-11	<p><i>Environment; Environment Management (clause 6.1.3)</i>.⁶⁴³</p> <p>By 30 September 2018, Hunter Water should complete a review of its schedule of environmental inspections, and expand the schedule where relevant to include the following:</p> <ul style="list-style-type: none"> ▪ if inspecting a high risk site (eg, chlorinator or water treatment plant) that is in close proximity to a lower risk site (eg, reservoir or water pumping station) the lower risk site should also be included in the inspection, and ▪ an approach for those sites that are not near high risk sites. 	Completed
Anticipated completion date		
Not applicable – recommendation has been addressed.		
Evidence sighted		
<ul style="list-style-type: none"> ▪ Hunter Water response to 2018 Audit Questionnaire. ▪ EP0128-Environmental-Management-Plan-2018---2020. ▪ Schedule - ER0054 - Depot and work site environmental inspection schedule – CURRENT. ▪ HW2008-772 10.017 Training material (sighted during the audit). 		
Summary of reasons for assessed status		
<p>Hunter Water reviewed and updated its site inspection schedule to include the inspection of lower risk sites when inspecting adjacent high-risk sites. The schedule includes detail in the site description to indicate the inspection of the additional areas that must be inspected when inspecting the high-risk components of the site.</p> <p>The schedule also includes an approach for depots, pump stations and other work sites. Hunter Water has a reporting process detailed in the training materials that requires all staff to report any instances of environmental damage, and this includes all of Hunter Water's sites (high and low risk).</p> <p>This recommendation has been completed.</p>		
Discussion and notes		
<p>Hunter Water reviewed its site inspection schedule⁶⁴⁴ to identify the low risk sites that must also be inspected when adjacent high-risk sites are inspected. The site description in the schedule has identified the following sites that include high and low risk areas that must be inspected:</p> <ul style="list-style-type: none"> ▪ Chlorine Gas - Buttai (including reservoir grounds); ▪ Chlorine Gas - West Wallsend (including reservoir grounds); and ▪ Network Hazchem (Odour dosing) including nearby wastewater pump stations. 		

⁶⁴³ Clause reference relates to the *Hunter Water Corporation Operating Licence 2012-2017*.

⁶⁴⁴ Schedule - ER0054 - Depot and work site environmental inspection schedule – CURRENT.

The schedule includes two inspections per year of work sites, annual inspections of depots and offices and three inspections per year of WWTW, WTPs and other treatment sites (e.g. chlorinators, de-chlorinators and powdered activated carbon dosing points).

It was discussed during the audit that all Hunter Water staff are required to report instances of environmental damage, and that this is included in the environmental awareness training that is delivered to all staff. The training materials⁶⁴⁵ were sighted during the audit and included the obligations of staff to report and instructions on how to make a report.

Further recommendations

There are no further recommendations arising in respect of this previous recommendation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this previous recommendation.

⁶⁴⁵ HW2008-772 10.017 Training material (sighted during the audit).

Appendix A Audit Scope

The audit scope, as defined by IPART, is included in this Appendix.

2018 operational audit scope Hunter Water Corporation

2018 audit scope

This document sets out the 2018 operational audit scope for Hunter Water Corporation (Hunter Water).

This scope is based on IPART's 5-year audit program for Hunter Water's 2017-2022 Operating Licence. Auditors should note any directions in the comments column of Table 2.

Audit period

The audit period is 1 July 2017 to 31 October 2018. In 2018, we are transitioning Hunter Water to a new audit period (previous audit periods aligned to the financial year). Interviews for the audit will be held in November 2018.

In 2019 we expect the audit period to be 1 November 2018 to 31 October 2019.

Outstanding audit recommendations

Table 3 outlines outstanding audit recommendations. The auditor is required to review these recommendations to determine progress. We report on outstanding audit recommendations separately within IPART's operational audit report to the Minister.

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 clauses 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 clauses 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.

Interpretation

In the case of any discrepancies between the Hunter Water Operating Licence 2017-2022 (licence) and the audit scope, the licence will prevail.

Table 1 Key

Requirement	Meaning
Audit/Review	Audit/review clause in 2018 audit.
SC	We will rely on the utility's Statement of Compliance. All clauses require a Statement of Compliance unless there is a "no requirement" designation.
NR	No requirement (for audit or statement of compliance).

Table 2 2018 Audit scope for Hunter Water Corporation

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1	Licence Context and authorisation		
1.1	Objectives of this Licence		
1.1.1	This licence aims to: <ul style="list-style-type: none"> (a) provide transparent and auditable terms and conditions for Hunter Water to lawfully undertake its activities at industry good-practice; (b) recognise the interests of stakeholders within its Area of Operations; and (c) impose the minimum regulatory burden on Hunter Water by avoiding duplication or conflict with other regulatory instruments. (d) 	NR	
1.2	Licence authorisation		
1.2.1	This Licence authorises and requires 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 within its Area of Operations.	NR	
1.2.2	This Licence authorises Hunter Water to do all things necessary or convenient to achieve, and to promote the capability to achieve, the transfer of water between its Area of Operations and the local government area of the Central Coast Council in accordance with the Hunter/Central Coast Pipeline Agreement.	NR	
1.2.3	This Licence authorises and requires Hunter Water to provide, operate, manage and maintain a drainage service as described in section 13(1)(b) of the Act.	SC	
1.2.4	This Licence authorises (but does not require) Hunter Water to provide, construct, operate, manage and maintain a drainage service within the Area of Operations in excess of the drainage service it is required to provide, operate, manage and maintain under clause 1.2.3. For the avoidance of any doubt, this clause authorises (but does not require) Hunter Water to enhance, expand and add capacity to the drainage service described in section 13(1)(b) of the Act.	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1.3	Term of this Licence		
1.3.1	The term of this Licence is 5 years from the Commencement Date. [Note: This Licence starts on 1 July 2017, which means that it will end on 30 June 2022.]	NR	
1.4	Licence amendment		
1.4.1	Subject to the Act and clause 1.4.2, this Licence may be amended by the Governor by notice in the New South Wales Government Gazette. The amendment takes effect on the date the notice is published in the New South Wales Government Gazette, or on such other date specified in the notice.	NR	
1.4.2	Before any notice of an amendment to this Licence is published in the New South Wales Government Gazette, the Minister must give Hunter Water reasonable notice of the proposed amendment to enable it to comply with the amended Licence (if relevant) upon its commencement.	NR	
1.5	Obligation to make Services available		
1.5.1	Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any Property situated in the Area of Operations which is connected to, or for which a connection is available to: (a) in the case of supplying water, the Water Supply System; and (b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.	Audit	New licence clause.
1.5.2	Subject to Hunter Water continuing to comply with any applicable law, Hunter Water must provide the Services on request to any WIC Act Licensee for ultimate end-use within the Area of Operations, where that WIC Act Licensee is connected to, or where a connection is available in respect of that WIC Act Licensee to: (a) in the case of supplying water, the Water Supply System; and (b) in the case of providing sewerage services and/or disposing of Wastewater, the Sewerage System.	Audit	New licence clause.
1.5.3	Hunter Water may impose any lawful conditions it sees fit on the making available of Services under clause 1.5.1 or clause 1.5.2, to ensure the safe, reliable and financially viable supply of the Services in accordance with this Licence.	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
1.6	Non-exclusive Licence		
1.6.1	This Licence does not prohibit another person from providing Services in the Area of Operations that are the same as, or similar to, the Services, if the person is lawfully entitled to do so.	NR	
1.7	Making copies of this Licence available		
1.7.1	Hunter Water must make this Licence available to any person, free of charge: <ul style="list-style-type: none"> (a) on its website for downloading; and (b) upon request made through the General Enquiry Process. 	SC	
1.8	Pricing		
1.8.1	Subject to the terms of this Licence, the Act and the IPART Act, Hunter Water must set the level of fees, charges and other amounts payable for its Services in accordance with any applicable determination or determinations under the IPART Act.	Audit	<p>In April 2018, Hunter Water verbally informed the IPART Secretariat that it has charged the Environmental Improvement Charge (EIC) to customers that should not be charged.</p> <p>Hunter Water's Statement of Compliance notes that Hunter Water considers it did not have the legal authority to levy the EIC on vacant land for the period since 1 July 2013. Hunter Water ceased levying the EIC on vacant land in April 2018. Hunter Water is taking steps to locate and pay a refund to affected customers.</p> <p>On 4 September 2017, Hunter Water sought advice from IPART on inconsistencies between the 2016 Determination and its current pricing practices for tankered trade waste. In March 2018, Hunter Water advised that it intends to maintain its current approach to pricing tankered trade waste.</p> <p>The auditor should audit this clause by considering five fees or charges under the current Hunter Water Determination including the Environmental Improvement Charge and pricing for tankered trade waste.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments				
1.9	End of term review						
1.9.1	<p>It is anticipated that a review of this Licence will commence in the first quarter of 2021 to investigate:</p> <p>(a) whether this Licence is fulfilling its objectives; and</p> <p>(b) any issues which have arisen during the term of this Licence, which may affect the effectiveness of this Licence,</p> <p>(End of Term Review)</p>	NR					
1.9.2	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 Review.	NR					
1.10	Notices						
1.10.1	<p>Any notice or other communication given under this Licence must be made in writing addressed to the intended recipient at the address shown below or the last address notified by the recipient.</p> <table><tr><th>Hunter Water</th><th>IPART</th></tr><tr><td>The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302</td><td>The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000</td></tr></table>	Hunter Water	IPART	The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000	SC	
Hunter Water	IPART						
The Managing Director Hunter Water Corporation 36 Honeysuckle Drive Newcastle West NSW 2302	The Chief Executive Officer Independent Pricing and Regulatory Tribunal Level 15, 2-24 Rawson Place Sydney NSW 2000						

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
2	Water Conservation		
2.1	Catchment to water treatment plants		
2.1.1	<p>Hunter Water must calculate the System Yield either:</p> <ul style="list-style-type: none"> (a) in accordance with the memorandum of understanding with the Department of Primary Industries Water referred to in clause 5.10.1(a); or (b) if no such memorandum of understanding is in effect, in accordance with a reasonable methodology that Hunter Water considers suitable. 	Audit	Department of Industry - Water (formerly Department of Primary Industries Water) will be contacted by IPART to comment on Hunter Water's performance against this clause.
2.1.2	By 1 November 2018, or by a later date as approved by IPART, Hunter Water must submit to IPART a report outlining Hunter Water's water conservation strategy in relation to its system operating arrangements for Water Storage and Transmission (Water Conservation Strategy).	NR	
2.1.3	<p>The Water Conservation Strategy must include:</p> <ul style="list-style-type: none"> (a) identification and documentation of the existing water conservation activities; (b) a process for identifying additional options for conserving water; (c) a process for comparing these options; and (d) a process for selecting options for implementation 	NR	
2.1.4	By 1 September 2019, or by a later date as approved by IPART, Hunter Water must develop and submit to IPART a water conservation work program using the process set out in the Water Conservation Strategy.	NR	
2.2	Water treatment plants to tap		
2.2.1	<p>Hunter Water must ensure that the 5 year rolling average for annual residential water consumption calculated for each financial year is equal to or less than 215 kilolitres for each Property used for residential purposes which is connected to the Water Supply System (Water Conservation Target), until Hunter Water has obtained IPART's approval for the Economic Level of Water Conservation Methodology (in accordance with clauses 2.2.2 and 2.2.3), and developed a program of water conservation activities using the approved Economic Level of Water Conservation Methodology (in accordance with 2.2.4).</p> <p>[Note: Clause 2.2.1 requires Hunter Water to maintain the Water Conservation Target that was in the immediate predecessor to this Licence while the Economic Level of Water Conservation Methodology is being approved and applied.]</p>	Audit	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
2.2.2	By 1 November 2017, Hunter Water must submit to IPART for IPART's approval a report outlining Hunter Water's proposed approach to, and principles for, developing a methodology for determining its economic level of water conservation in relation to (at a minimum) the following elements: (a) water leakage (within and downstream of its water treatment plants); (b) water recycling; and (c) c)water efficiency (including demand management)	Audit	Not included in auditor's scope. IPART will undertake audit.
2.2.3	By 1 November 2018, or by a later date as approved by IPART, Hunter Water must submit to IPART for IPART's approval the proposed methodology for determining its economic level of water conservation in accordance with the approach and principles approved by IPART (Economic Level of Water Conservation Methodology). IPART may refuse approval of the methodology and require Hunter Water to resubmit it by a specified date after making changes requested by IPART, or approve the methodology unconditionally, or approve the methodology subject to conditions. Hunter Water must comply with any such conditions.	NR	
2.2.4	By 1 September 2019, or by a later date as approved by IPART, Hunter Water must develop and submit a water conservation work program using the Economic Level of Water Conservation Methodology.	NR	
2.2.5	Hunter Water must obtain IPART's written consent to make any changes to the Economic Level of Water Conservation Methodology (other than changes to correct minor grammatical or typographical errors).	SC	
3	Supply services and performance standards		
3.1	Drinking Water		
3.1.1	Hunter Water must maintain a Management System for Drinking Water that is consistent with the Australian Drinking Water Guidelines, except to the extent that NSW Health specifies otherwise in writing (the Drinking Water Quality Management System). [Note: It is expected that the Drinking Water Quality Management System will be consistent with the Framework for Management of Drinking Water Quality. However, where NSW Health considers it appropriate, the application of Australian Drinking Water 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. The Australian Drinking Water Guidelines has provisions relating to the prevention of use of non-potable water for potable purposes.]	Audit	This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit. NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.1.2	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 Drinking Water Quality Management System, and to the satisfaction of NSW Health.	Audit	<p>This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit.</p> <p>NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.</p> <p>NSW Health notes that Hunter Water made a significant change to its Drinking Water Quality Management System (DWQMS) by amending its Corporate Risk Management Framework, without consulting with NSW Health. NSW Health's concerns were addressed by an interim amendment to the Framework, but NSW Health expects to see a revised Framework in the coming weeks. Auditor to review the changes made to the DWQMS, and check for correspondence with NSW Health to determine its satisfaction with the amendments made.</p>
3.2	Recycled Water		
3.2.1	<p>Hunter Water must maintain a Management System for Recycled Water that is consistent with the Australian Guidelines for Water Recycling, except to the extent that NSW Health specifies otherwise in writing (the Recycled Water Quality Management System).</p> <p>[Note: It is expected that the Recycled Water Quality Management System will be consistent with the Australian Guidelines for Water Recycling, including the Framework for Management of Recycled Water Quality and Use. However, where NSW Health considers it appropriate, the application of the Australian Guidelines for Water Recycling 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.].</p>	Audit	<p>This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit.</p> <p>NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.2.2	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 Recycled Water Quality Management System, and to the satisfaction of NSW Health.	Audit	This clause was last audited in 2017 and was assigned an Adequate Compliance grade in that audit. NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
3.3	System Performance Standards		
3.3.1	Water Pressure Standard	Audit	
	<p>(a) Hunter Water must ensure that no more than 4,800 Properties experience a Water Pressure Failure in a financial year (Water Pressure Standard).</p> <p>(b) A Property is taken to have experienced a Water Pressure Failure at each of the following times:</p> <ul style="list-style-type: none"> 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. <p>(c) Despite clause 3.3.1(b), a Property will not be taken to have experienced a Water Pressure Failure if that Water Pressure Failure occurred only because of:</p> <ul style="list-style-type: none"> i. a Planned Water Interruption or Unplanned Water Interruption; ii. water usage by authorised fire 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 four days of its occurrence. 		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.3.2	<p>Water Continuity Standard</p> <p>(a) Hunter Water must ensure that in a financial year:</p> <ul style="list-style-type: none"> i. no more than 10,000 Properties experience an Unplanned Water Interruption that lasts more than five continuous hours; and ii. no more than 5,000 Properties experience three or more Unplanned Water Interruptions that each last more than one hour, <p>(Water Continuity Standard).</p> <p>(b) For the purposes of clause 3.3.2(a), Hunter Water must use the best available data (taking account of water pressure data where that data is available) to determine of:</p> <ul style="list-style-type: none"> i. whether a Property has experienced an Unplanned Water Interruption; and ii. the duration of the Unplanned Water <p>(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 clause 3.3.2(a).</p> 	Audit	
3.3.3	<p>Wastewater Overflow Standard</p> <p>a) Hunter Water must ensure that in a financial year:</p> <ul style="list-style-type: none"> i) no more than 5,000 Properties experience an Uncontrolled Wastewater Overflow in dry weather; and ii) no more than 45 Properties experience three or more Uncontrolled Wastewater Overflow in dry weather, <p>(Wastewater overflow Standard).</p> 	Audit	
3.3.4	<p>Hunter Water must survey its Customers by 30 June 2020 for the purpose of informing a review of System Performance Standards and rebates.</p> <p>[Note: Clause 3.3.4 is not intended to prevent Hunter Water:</p> <p>(a) surveying its Customers and Consumers for any lawful purpose at such times as it sees fit; or</p> <p>(b) b)using the survey required by that clause to survey its Customers and Consumers on topics additional to the topic referred to in that clause.]</p>	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
3.3.5	<p>Interpretation of standards</p> <p>(a) For the purposes of the Water Pressure Standard and Water Continuity Standard, each separately billed part of a Multiple Occupancy Property is to be counted as a separate Property.</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate bill from Hunter Water is to be counted as five separate Properties. However, a block of flats that only receives one bill from Hunter Water is to be counted as one Property.]</p> <p>(b) For the purposes of the Wastewater Overflow Standard, a Multiple Occupancy Property is considered to be one Property.</p> <p>[Note: For example, a complex of five townhouses where each townhouse receives a separate bill from Hunter Water is to be counted as one Property.]</p> <p>(c) the case of any ambiguity in the interpretation or application of any of the standards set out in this clause 3.3, IPART's interpretation of the relevant standard or assessment of its application will prevail.</p>	NR	
4	Organisational Systems Management		
4.1	Asset Management System		
4.1.1	By 31 December 2017, Hunter Water must develop a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian Standard AS ISO 55001:2014 Asset management - Management systems - Requirements, or other standard approved by IPART on request by Hunter Water (the Asset Management System).	Audit	This clause was last audited in 2017 and was awarded Full Compliance in that audit. Audit in 2018 to determine if AMS requirements have been completed by the due date.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
4.1.2	By 1 July 2018, Hunter Water must ensure that the Asset Management System is fully implemented and must, from that date, ensure that all relevant activities are carried out in accordance with the Asset Management System.	Audit	NSW Health notes that defects to a reservoir had not been rectified when an incident was notified in April 2018. It notes a previous audit recommendation regarding training of personnel undertaking inspections to understand the importance of completing reservoir inspections accurately. Auditor to review and assess training records for reservoir inspection staff and progress on Recommendation 2016-17-04.
4.1.3	<p>Until the Asset Management System has been implemented in accordance with clause 4.1.2, Hunter Water must ensure that all relevant activities are carried out in accordance with the previous asset management system that was required under the operating licence held by Hunter Water which commenced in 2012.</p> <p>[Note: This clause permits Hunter Water to transition its previous asset management system based on the Water Services Association of Australia's Aquamark benchmarking tool to the Australian Standard AS ISO 55001:2014 Asset management - Management systems – Requirements.].</p>	Audit	Audit for period prior to the Asset Management System being implemented in accordance with clause 4.1.2.
4.2	Environmental management system		
4.2.1	Hunter Water must at all times maintain a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian/New Zealand Standard AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use, or other standard approved by IPART on request by Hunter Water (the Environmental Management System).	Audit	
4.2.2	Hunter Water must fully implement, and carry out all relevant activities in accordance with, the Environmental Management System.	Audit	
4.3	Quality Management System		
4.3.1	Hunter Water must at all times maintain a Management System for carrying out the functions authorised under this Licence that is consistent with the Australian/New Zealand Standard AS/NZS ISO 9001:2016 Quality management systems – Requirements, or other standard as approved by IPART on request by Hunter Water (the Quality Management System).	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
4.3.2	Hunter Water must fully implement, and carry out all relevant activities in accordance with, the Quality Management System.	SC	
5	Customers and stakeholder relations		
5.1	Customer Contract		
5.1.1	The terms and conditions of the Customer Contract are as set out in Schedule B of this Licence. [Note: Section 38 of the Act makes provision for the amendment of the Customer Contract.].	NR	
5.1.2	Before publishing a notice under section 38 of the Act for the purpose of varying the terms and conditions of the Customer Contract, Hunter Water must provide IPART with a copy of the notice.	SC	
5.2	Consumers		
5.2.1	Hunter Water's obligations under the Customer Contract relating to: (a) Complaint handling and Complaint resolution procedures; and (b) redress (clause 16.3 of the Customer Contract) and claims for damages (clause 16.4 of the Customer Contract), are extended to those Consumers who are not parties to the Customer Contract.	SC	
5.3	Payment difficulties and actions for non-payment		
5.3.1	Hunter Water must maintain and fully implement the following: (a) a financial hardship policy that assists residential Customers and Consumers experiencing financial hardship to better manage their current and future bills; (b) procedures relating to a payment plan for residential Customers and Consumers who are responsible for paying their bills and who are, in Hunter Water's opinion, experiencing financial hardship; (c) procedures for identifying the circumstances under which Hunter Water may disconnect or restrict a supply of water in a manner that will affect a Customer or Consumer; and (d) provisions for self-identification, identification by community welfare organisations and identification by Hunter Water of residential Customers and Consumers experiencing financial hardship, (the Procedure for Payment Difficulties and Actions for Non-payment).	SC	
5.4	Customer advisory group		
5.4.1	Hunter Water must maintain and regularly consult with its Customers through a customer advisory group.	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.4.2	Hunter Water must utilise the customer advisory group to, among other things, obtain advice on the interests of Hunter Water's Customers, the Customer Contract and such other key issues related to Hunter Water's planning and operations as Hunter Water may determine, including the matters set out in section 12(1) of the Act, consistent with the Customer Advisory Group Charter.	SC	
5.4.3	<p>Hunter Water:</p> <ul style="list-style-type: none"> (a) must ensure that, at all times, the membership of the customer advisory group is appointed and determined by Hunter Water in accordance with the Customer Advisory Group Charter; (b) must use its best endeavours to include, as members of the customer advisory group, at least one Customer representing each of the following categories: <ul style="list-style-type: none"> i) business; ii) organisations representing low income; iii) Customers living in rural and urban fringe areas; iv) residential; v) local government; vi) pensioners; vii) Customers with disabilities; viii) Indigenous Australians; and ix) Customers from culturally and linguistically diverse backgrounds; and (c) may include, as members of the customer advisory group, at least one person representing each of the following categories: <ul style="list-style-type: none"> i) business Consumers; ii) residential Consumers; and iii) environmental groups 	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.4.4	<p>Hunter Water and members of the customer advisory group must, for the term of this Licence, maintain a charter that addresses all of the following issues.</p> <ul style="list-style-type: none"> (a) the role of the customer advisory group; (b) how members and the Chair of the customer advisory group will be appointed (c) the term for which members are appointed (d) information on how the customer advisory group will operate; (e) a description of the type of matters that will be referred to the customer advisory group and how those matters may be referred; (f) procedures for communicating the outcomes of the customer advisory group's work to the public; (g) procedures for monitoring issues raised at meetings of the customer advisory group and ensuring appropriate follow-up of those issues; (h) procedures for amending the charter; and (i) funding and resourcing of the customer advisory group by Hunter Water, <p>(Customer Advisory Group Charter).</p> 	SC	
5.4.5	Hunter Water must provide the customer advisory group with information in Hunter Water's possession or under its control necessary to enable the customer advisory group to discharge the tasks assigned to it, other than information or documents that are confidential.	SC	
5.5	Internal complaints handling		
5.5.1	Hunter Water must maintain a procedure for receiving, responding to and resolving Complaints, which is consistent with the Australian/New Zealand Standard AS/NZS 10002:2014 – Guidelines for complaint management in organizations (the Internal Complaints Handling Procedure).	SC	
5.5.2	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 Internal Complaints Handling Procedure.	SC	
5.6	External Dispute Resolution scheme		
5.6.1	Hunter Water must be a member of the Energy and Water Ombudsman NSW to facilitate the resolution, by a dispute resolution body, of disputes between Hunter Water and its Customers or Consumers.	SC	
5.7	Provision of information to Customers and the general public		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.7.1	<p>Hunter Water must prepare a pamphlet or pamphlets with the following information to Customers at least annually with their bills:</p> <ul style="list-style-type: none"> (a) a brief explanation of the Customer Contract and a summary of the key rights and obligations of Customers under the Customer Contract; (b) a brief explanation of the Procedure for Payment Difficulties and Actions for Non-payment; (c) a brief explanation of rights of Customers to claim a rebate and the conditions that apply to those rights; (d) information about the General Enquiry Process; (e) information about how to make a Complaint under the Internal Complaints Handling Procedure; and (f) a brief explanation of the external dispute resolution service, how to access that service, and Customers rights to have a Complaint or dispute referred to Energy and Water Ombudsman NSW. 	SC	
5.7.2	<p>Hunter Water must make a copy of the following documents available to any person, free of charge on its website for downloading and upon request through the General Enquiry Process:</p> <ul style="list-style-type: none"> (a) the Customer Contract; (b) a pamphlet or pamphlets (as referred to in clause 5.7.1); (c) the Procedure for Payment Difficulties and Actions for Non-payment; (d) the Customer Advisory Group Charter; (e) customer advisory group minutes; (f) the Internal Complaints Handling Procedure; (g) information about the dispute resolution scheme provided by Energy and Water Ombudsman NSW; and (h) a map of the Area of Operations. 	SC	
5.7.3	<p>Hunter Water must update the pamphlet or pamphlets prepared under clause 5.7.1 and documents on its website under clause 5.7.2 to reflect any variations made to the information within 60 days of the commencement of the variations.</p>	SC	
5.8	Code of Conduct with WIC Act Licensee		

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.8.1	Hunter Water must use reasonable endeavours to cooperate with any WIC Act Licensee that seeks to establish with Hunter Water a code of conduct required under a licence under the WIC Act.	Audit	New licence clause. Audit to determine if Hunter Water is using 'best endeavours' where a code of conduct is sought to be established with a WIC Act licensee. IPART is aware of Utility Service Agreements in place between WIC Act licensees and Hunter Water which fulfil the requirements of a Code of Conduct under clause 25 of the WIC Regulation.
5.8.2	Where the Minister administering the WIC Act has established a code of conduct under clause 25 of the WIC Regulation, Hunter Water will be taken to have satisfied its obligation under clause 5.8.1 by applying the water industry code of conduct established by the Minister to the relevant WIC Act Licensee.	NR	
5.9	Memorandum of Understanding with NSW Health		
5.9.1	<p>Hunter Water must use its best endeavours to:</p> <ul style="list-style-type: none"> (a) maintain a memorandum of understanding with NSW Health; and (b) comply with the memorandum of understanding maintained under clause 5.9.1(a). <p>[Note: Clause 5.9.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding.]</p>	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.9.2	The purpose of the memorandum of understanding referred to in clause 5.9.1(a) is to form the basis for co-operative relationships between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 5.9.1(a) is to recognise the role of NSW Health in providing advice to the NSW Government in relation to Drinking Water quality standards and the supply of water that is safe to drink.	NR	
5.9.3	The memorandum of understanding referred to in clause 5.9.1(a) must include arrangements for Hunter Water to report to NSW Health information on any events in relation to Hunter Water's systems or Services that might pose a risk to public health.	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.9.4	<p>Hunter Water must provide NSW Health with information relating to water quality in the manner and form specified by NSW Health within a reasonable period of time of receiving NSW Health's request.</p> <p>[Note: The obligation in clause 5.9.4 is in addition to Hunter Water's obligation to comply with any information requests made under section 19 of the Public Health Act 2010 (NSW) by the Secretary of the NSW Ministry of Health.]</p>	SC	NSW Health will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.10	Memorandum of Understanding with Department of Primary Industries - Water		
5.10.1	<p>Hunter Water must use its best endeavours to:</p> <p>(a) maintain a memorandum of understanding (which may be referred to as a roles and responsibilities protocol) with the Department of Primary Industries Water in relation to:</p> <ol style="list-style-type: none"> the roles and responsibilities for the Department of Primary Industries Water and Hunter Water in respect of the review and implementation of the Lower Hunter Water Plan; and calculation and reporting of System Yield; and <p>(b) comply with the memorandum of understanding maintained under clause 5.10.1(a).</p> <p>[Note: Clause 5.10.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding or a roles and responsibilities protocol.]</p>	Audit	<p>New licence clause.</p> <p>This role/function is now with Department of Industry – Water.</p> <p>Department of Industry - Water will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>
5.10.2	The purpose of the memorandum of understanding referred to in clause 5.10.1(a) is to form the basis for a co-operative relationship between the parties to the memorandum of understanding. In particular, the purpose of the memorandum of understanding referred to in clause 5.10.1(a) is to recognise the role of Department of Primary Industries Water in assessing options to address water supply security in the lower Hunter region.	NR	
5.11	Memorandum of understanding with Fire and Rescue NSW		
5.11.1	<p>Hunter Water must use its best endeavours to:</p> <p>(a) develop and enter into a memorandum of understanding with FRNSW by 31 December 2017; and</p> <p>(b) once the memorandum of understanding referred to in clause 5.11.1(a) is developed and entered into, comply with the memorandum of understanding.</p> <p>[Note: Clause 5.11.1 does not limit the persons with whom Hunter Water may enter into a memorandum of understanding.]</p>	Audit	<p>New licence clause.</p> <p>Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.</p>

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
5.11.2	<p>The purpose of the memorandum of understanding referred to in clause 5.11.1 is to form the basis for co-operative relationships between the parties to the memorandum of understanding. In particular, the purpose of clause 5.11.1 is to:</p> <ul style="list-style-type: none"> (a) develop the roles and responsibilities of the parties to the memorandum of understanding as they relate to each other; (b) identify the needs and constraints of the parties to the memorandum of understanding as they relate to each other; and (c) identify and develop strategies for efficient and effective provision of firefighting water consistent with the goals of each party to the memorandum of understanding. 	Audit	Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.
5.11.3	<p>The memorandum of understanding referred to in clause 5.11.1 must require:</p> <ul style="list-style-type: none"> (a) the establishment of a working group, comprised of representatives from Hunter Water and FRNSW; and (b) the working group to consider the following matters (at a minimum): <ul style="list-style-type: none"> i) arrangements regarding information sharing between Hunter Water and FRNSW; ii) agreed timelines and a format for Hunter Water to provide a report to FRNSW detailing the network performance with regard to availability of water for firefighting (taking into account the minimum available flow and pressure in localised areas of the network); iii) arrangements for Hunter Water to consult with FRNSW in the design of new assets and planning of system maintenance, where modelling indicates that minimum available flow and pressure may unduly affect firefighting in the network section under consideration; and iv) other matters as agreed by both parties to the memorandum of understanding. 	Audit	New licence clause. Fire and Rescue NSW will be contacted by IPART to comment on Hunter Water's performance against this clause.
6	Performance monitoring and reporting		
6.1	Operational audits		
6.1.1	<p>IPART may annually, or from time to time as occasion requires, undertake, or may appoint an Auditor to undertake, an audit on Hunter Water's compliance with:</p> <ul style="list-style-type: none"> (a) this Licence; (b) the Reporting Manual; and (c) any matters required by the Minister, <p>(Operational Audit).</p>	NR	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
6.1.2	Hunter Water must provide to IPART or the Auditor all information in Hunter Water's possession, or under Hunter Water's custody or control, which is necessary or convenient for the conduct of the Operational Audit.	SC	
6.1.3	Without limiting clause 6.1.2, Hunter Water must provide to IPART or the Auditor any information necessary or convenient for the conduct of the Operational Audit which IPART or the Auditor requests in writing, within any reasonable period of time specified by IPART or the Auditor in writing.	SC	
6.1.4	<p>For the purposes of any Operational Audit or verifying a report on an Operational Audit, Hunter Water must, within a reasonable period of time from receiving a request from IPART or an Auditor, permit IPART or the Auditor to:</p> <ul style="list-style-type: none"> (a) access 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 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 (including obligations under the Reporting Manual); and (e) discuss matters relevant to the Operational Audit or any report on the Operational Audit with Hunter Water, including Hunter Water's officers and employees. 	SC	
6.2	Reporting Manual		
6.2.1	<p>Hunter Water must comply with all of its reporting obligations set out in the Reporting Manual, including in relation to:</p> <ul style="list-style-type: none"> (a) water conservation; (b) supply services and performance standards; (c) organisational systems management; (d) customer and stakeholder relations; and (e) performance monitoring and reporting, including: <ul style="list-style-type: none"> i) IPART performance indicators; and ii) the National Water Initiative Performance Indicators 	SC	

Licence clause	Operating Licence obligation	2018 audit requirement	Comments
6.2.2	Hunter Water must maintain sufficient record systems to enable Hunter Water to report accurately in accordance with clause 6.2.1.	SC	
6.2.3	<p>In the case of any ambiguity in the interpretation or application of any requirements in the Reporting Manual, IPART's interpretation or assessment will prevail.</p> <p>[Note: The Reporting Manual identifies the details of when, what, to whom and how Hunter Water must report to IPART and NSW Health. The Reporting Manual also specifies what and how reports and other information must be made publicly available.]</p>	NR	
6.3	Provision of Information to IPART and Auditor		
6.3.1	Hunter Water must provide IPART or an Auditor with information relating to the performance of any of Hunter Water's obligations under clause 6.2 (including providing IPART with physical and electronic access to the records required to be kept under clause 6.2) within a reasonable period of time from Hunter Water receiving a request from IPART or an Auditor for that information	SC	
6.3.2	Hunter Water must provide IPART or an Auditor with such information as is reasonably required to enable IPART or an Auditor to conduct any review or investigation of Hunter Water's obligations under this Licence within a reasonable period of time from Hunter Water receiving a request from IPART or an Auditor for that information.	SC	
6.3.3	If Hunter Water contracts out any of its activities to any person (including a subsidiary) it must take all reasonable steps to ensure that, if required by IPART or an Auditor, any such persons provide information and do the things specified in this clause 6 as if that person were Hunter Water.	SC	
6.3.4	<p>Where this Licence requires Hunter Water to provide information to IPART or an Auditor that is information to which:</p> <p>(a) Section 24FF of the IPART Act applies; or</p> <p>(b) Section 24FF of the IPART Act does not apply but IPART or the Auditor has agreed to treat the information as though section 24FF of the IPART Act applies to that information,</p> <p>Hunter Water must, to the maximum extent permitted by the law, provide that information even if it is confidential.</p>	SC	

Table 3 Recommendations / outstanding items from previous audits

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2013-14-03 2013-14-04 2013-14-06 2013-14-13	Water Quality Management Systems Clauses 2.1.1, 2.1.2, 2.2.1 & 2.2.2	<p>Within 6 months, Hunter Water should review Critical Control Points (CCPs) for each treatment plant, including:</p> <ul style="list-style-type: none"> 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. <p>To assist in the identification of any aspect still outstanding in the 2017-18 audit the auditor makes a further recommendation:</p> <p>(f) for the 2017-18 audit Hunter Water should prepare a report (supported by detailed auditable evidence) that demonstrates the status of each part of this Recommendation for each system.</p>	<p><u>Drinking Water CCPs:</u> NSW Health is reviewing revised CCP documentation prepared by Hunter Water incorporating previous feedback by NSW Health. This part of the recommendation remains open.</p> <p><u>Recycled Water CCPs:</u> NSW Health has expressed satisfaction with the status of the review and updated program for the RWQMPs. Some work is still to be completed. This part of the recommendation remains open.</p>	Auditor to check for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2015-16 -05	Water Quality – Recycled Water Quality Management System (Clauses 2.2.1, 2.2.2)	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.	Limited high level progress has been made, and the auditor has recommended updating the recommendation to: ▼ By 30 September 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 and 2016-17 (this) report.	Audit for completion.
2015-16 -06	Assets – Asset Management System implementation (Clause 4.1.2)	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.	Hunter Water provided a schedule detailing the status of revisions of the Asset Class management Plans which showed that 17 of 52 plans are yet to be updated.	Audit for completion.
2016-17-01	Water Quality Drinking Water (Clause 2.1.1)	By 30 September 2018, Hunter Water should ensure that a process is in place to identify and address repeat water quality incidents and trends	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-02	Water Quality Drinking Water (Clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all emergency and incident management procedures are reviewed, and revised if necessary, based on the Four Mile Creek Critical Control Point reporting breaches (July 2016 and June 2017).	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-03	Water Quality Drinking Water (Clause 2.1.2)	For the next scheduled emergency scenario training exercise, Hunter Water should include a Critical Control Point breach as the scenario.	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-04	Water Quality Drinking Water (Clause 2.1.2)	By 30 September 2018, Hunter Water should ensure that all personnel involved in undertaking reservoir inspections undertake training in the importance of accurately completing the reservoir inspection forms, including the records associated with the inspection.	New recommendation from 2016-17 audit.	Audit for completion. See also comments to the auditor for clause 4.1.2.
2016-17-05	Water Quality Recycled Water (Clause 2.2.1)	By 30 December 2018, Hunter Water should update the Corporate Recycled Water Quality Management Plan to document current activities and processes. This should include filling any gaps identified as part of Recommendation 15/16-05.	New recommendation from 2016-17 audit.	Auditor to check progress.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-06	Water Quality Recycled Water (Clause 2.2.1)	<p>By 30 September 2018, Hunter Water should:</p> <ul style="list-style-type: none"> – Develop a table in each scheme Recycled Water Quality Management Plan that documents the evidence for the selection of the Critical Control Point, its associated monitoring parameter(s) and limits. This should include sufficient document control to capture when changes are made and the basis of those changes. – Consult with NSW Health on the validation testing program for the water recycling schemes. – Specify the performance required of the ultraviolet (UV) units in their operating context and determine whether they are achieving this performance. Any failure in the performance of pre-validated UV units should be further investigated. 	New recommendation from 2016-17 audit.	Audit for completion.
2016-17-07	Water Quality Recycled Water (Clause 2.2.2)	By 30 September 2018, Hunter Water should ensure the preventive measures for helminth control for agricultural sites (Karuah, Morpeth and Farley) achieve the required log reduction values as per the <i>Australian Guidelines for Water Recycling 2006</i> .	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-08	Assets (Clause 4.1.2)	By 30 June 2019, Hunter Water should fully implement an asset criticality and risk assessment approach that is consistent across all asset classes and consistent with the enterprise risk management framework.	New recommendation from 2016-17 audit.	Auditor to check progress.
2016-17-09	Assets Implementation (Clause 4.1.2)	Hunter Water should review the currency of all planned maintenance work instructions (for all assets) and prepare a program to update these as required over a period in accordance with its document control standard. The program should be prepared by 31 December 2018	New recommendation from 2016-17 audit.	Auditor to check progress.
2016-17-10	Environment Implementation (Clause 6.1.3)	By 30 September 2018, Hunter Water should conduct refresher training of operations and maintenance staff for annual inspections and maintenance activities. In particular, there should be focus on identifying environmental impacts and ensuring mitigation of any impacts noted.	New recommendation from 2016-17 audit.	Audit for completion.

Recommendation number	Operational issue (licence reference where applicable)	IPART's recommendation to the Minister	2017 audit findings, and status as reported in audit report ^a	Guidance for 2018 audit
2016-17-11	Environment (Clause 6.1.3)	<p>By 30 September 2018, Hunter Water should complete a review of its schedule of environmental inspections, and expand the schedule where relevant to include the following:</p> <ul style="list-style-type: none"> – if inspecting a high risk site (eg, chlorinator or water treatment plant) that is in close proximity to a lower risk site (eg, reservoir or water pumping station) the lower risk site should also be included in the inspection, and – an approach for those sites that are not near high risk sites 	New recommendation from 2016-17 audit.	Audit for completion.

Source: Hunter Water - Atom Consulting, Hunter Water Corporation Operational Audit 2016-17, January 2018.

^a Hunter Water's *Status Report on Recommendations- 2016-17 Operating Licence Audit* is not due until 31 May 2018.

Table 4 Previous field verification locations for Hunter Water Corporation

Audit year	Location	Facility
2017	Kurri Kurri	Wastewater Treatment Plant
	Gresford	Water Treatment Plant and Water Pump Station
	North Lambton	Maintenance Depot and Planned Maintenance repair
	Wallsend	Water Pump Station
	Elmore Vale	Reservoir
2016	Tomago Sandbeds	Borefields
	Lemon Tree Passage	Water Treatment Plant
	Karuah	Wastewater Treatment Plant and the reuse enterprise
	Boulder Bay	Wastewater Treatment Plant
2015	Edgeworth	Wastewater Treatment works
	KIWS (Kooragang Industrial Water Scheme), incl. Mayfield West plant	Advanced Water Treatment Plant (recycled water)
	Grahamstown	Spillway
		Water Treatment Plant
	Campvale	Pumping station
2014	Chichester	Dam
	Dungog	Water Treatment Plant
	Clarence	Sewage Treatment Plant
	Boags Hill	Inlet
	Seaham	Weir
2013	Branxton	Recycled Water Treatment Plant
	Grahamstown	Water treatment plant
2012	Port Stephens	Lemon Tree Passage Water Treatment Plant
	Grahamstown	Dam
	Campvale	Pumping station
	Between Newcastle and Port Stephens	Tomago Sandbeds
	Karuah	Sewage Treatment Plant
2011	Dungog	Water Treatment Plant
	Grahamstown	Water Treatment Plant
	n/a	Service reservoirs and storages
	n/a	Work sites – mains replacement and burst mains repair

Appendix B Hunter Water Representatives

A list of Hunter Water representatives that attended audit interviews and/or field verification visits is presented in this Appendix.

Day 1 – Interview sessions part 1

Kick-off session

Clint Thomson (Executive Manager Service Delivery for Customers)
Richard Harris (Chief Information Officer)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)
John Stanmore (Manager Water Planning)
Martin Robards (Team Leader Alternative Water)
Claire Drelincourt (Manager Audit & Risk)
Leanne O'Brien (Manager Integrated Management System)

Drinking water interview session

John Stanmore (Manager Water Planning)
Wade Delforce (Water Resources Engineer)
Ashley Sneddon (Water Engineer)
Dave Turner (Manager Water Treatment Operations)
Pam O'Donoghue (Treatment Engineer)
Kirby Morrison (Manager Water Network Operations)
Brendan Berghout (Senior Water Resources Engineer)
Karen Arkinstall (Veolia - Manager Systems Reporting Risk & Compliance)
Marie Jourden (Veolia - Technical Services Manager)
Dan Slocombe (Veolia - Manager Water Treatment)
Brett Janissen (Regulatory Economist)

Environmental Management System interview session

Roland Bow (Senior Environmental Scientist)
Kate Radford (Environmental Planner)
Brett Janissen (Regulatory Economist)

Asset Management System interview session

Stuart Horvath (Manager Investment and Asset Planning)
Rowan Loneragan (Manager Mechanical Electrical Planning)
Simon Groves (Senior Engineer Standards and Strategy)
Lutz Backhausen (Group Manager Capability Engineering)
Rhys Hunter (Manager Operational Information)
Emile Doeleman (Treatment Operations Contract Manager)
Emma Berry (Program Director for Water Resilience)
Claire Drelincourt (Manager Audit & Risk)
Ben Silberberg (Regulatory Economist)

Obligation to make services available interview session

Brett Lewis (Manager Development Services)
Laura Hails (General Counsel)
Catherine Hartley (Team Leader Review and Assessment)
Ben Silberberg (Regulatory Economist)

Code of conduct with WIC Act Licensees interview session

Brett Lewis (Manager Development Services)
Laura Hails (General Counsel)
Catherine Hartley (Team Leader Review and Assessment)
Ben Silberberg (Regulatory Economist)

MoU with DoI Water interview session

Emma Berry (Program Director for Water Resilience)
Brendan Berghout (Senior Water Resources Engineer)
Ben Silberberg (Regulatory Economist)

System yield interview session

Emma Berry (Program Director for Water Resilience)
Brendan Berghout (Senior Water Resources Engineer)
Ben Silberberg (Regulatory Economist)

Pricing interview session

Tanker pricing

Martin Robards (Team Leader Alternative Water)
Ben Silberberg (Regulatory Economist)

All other prices – water usage, sewer service, backflow prevention device test fee, EIC

Ian McKensy (Manager Retail Services)
Dane Linde (Team Leader Meters and Billing)
Ben Silberberg (Regulatory Economist)

Water conservation target interview session

John Stanmore (Manager Water Planning)
Ben Silberberg (Regulatory Economist)

Pre-site visit briefing

John Stanmore (Manager Water Planning)
Bob Jennar (Treatment Engineer)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Day 2 – Site Visits

Planning and scheduling at head office

Peter Thomson (Field Supervisor (first responder))
Maria Rawlins (Administrative Support Officer)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

North Lambton depot

Peter Thomson (Field Supervisor (First Responder))
Sam Schubert (Crew Leader (West))
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

North Lambton reservoir

Peter Thomson (Field Supervisor (First Responder))
Luke Mayne (Maintenance and Contracts Officer)
Matt Butler (Network Engineer)
Ian Hiles (Senior Civil Engineer)
Yan Han (Structural Engineer)
Kirby Morrison (Manager Water Network Operations)
Rowan Lonergan (Manager Mechanical Electrical Planning)
Wade Delforce (Water Resources Engineer)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Planned water job

Peter Thomson (Field Supervisor (First Responder))
Roland Bow (Senior Environmental Scientist)
Glen Hudson (Labourer (East))
Jordan Rafton (Day Labourer)
Wade Delforce (Water Resources Engineer)
Kirby Morrison (Manager Water Network Operations)
Rowan Lonergan (Manager Mechanical Electrical Planning)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Morpeth WWTW

Martin Robards (Team Leader Alternative Water)
Anna Mollergren (Treatment Engineer)
Rennie Ferguson (Account Executive)
Rowan Loneragan (Manager Mechanical Electrical Planning)
Greg Baker (Team Leader Mechanical Engineering)
Ludovic Baschet (Veolia - Asset Manager)
Shaun Clews (Veolia - Wastewater Operator Grade 5)
Deanne Pope (Veolia - Biosolids, Residuals and Reuse Officer)
Erin Wilson (Veolia – Engineer)
Karen Arkinstall (Veolia - Manager Systems Reporting Risk & Compliance)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Easts Golf Course Recycled Water Scheme

Martin Robards (Team Leader Alternative Water)
Rennie Ferguson (Account Executive)
Scott Driffield (Easts Golf Course Manager)
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Dungog WTP

Ashley Sneddon (Water Engineer)
Dave Turner (Manager Water Treatment Operations)
Pam O'Donoghue (Treatment Engineer)
Shane Rhodes (Veolia - Operator Water Grade 6)
Dan Slocombe (Veolia - Manager Water Treatment)
Scott Agnew (Veolia – Manager Maintenance)
Karen Arkinstall (Veolia - Manager Systems Reporting Risk & Compliance)
Mike Holmes (Veolia - Process Engineer (Water))
Ben Silberberg (Regulatory Economist)
Brett Janissen (Regulatory Economist)

Day 3 – Interview sessions part 2

Recycled Water interview session

Martin Robards (Team Leader Alternative Water)
Deanne Pope (Veolia - Biosolids, Residuals and Reuse Officer)
Karen Arkinstall (Veolia - Manager Systems Reporting Risk & Compliance)
Erin Wilson (Veolia – Engineer)
Brett Janissen (Regulatory Economist)

System performance standards interview session

Water pressure

Kirby Morrison (Manager Water Network Operations)
Simone Griffiths (AOMS Technical Officer)
Andrew Tjiptadi (Water Network Planning Engineer)
Josh Pearsall (Team Leader Business Systems)
Rhys Hunter (Manager Operational Information)
Ben Silberberg (Regulatory Economist)

Water continuity

Kirby Morrison (Manager Water Network Operations)
Simone Griffiths (AOMS Technical Officer)
Rhys Hunter (Manager Operational Information)
Anna Grant (Information Analyst)
Ben Silberberg (Regulatory Economist)

Wastewater overflows

Victor Archer (Manager Wastewater Network Operations)
Simone Griffiths (AOMS Technical Officer)
Rhys Hunter (Manager Operational Information)
Anna Grant (Information Analyst)
Ben Silberberg (Regulatory Economist)

NWI Indicators interview session

Customer property counts

John Stanmore (Manager Water Planning)
Anna Grant (Information Analyst)
Ben Silberberg (Regulatory Economist)

Assets indicators

Rhys Hunter (Manager Operational Information)
Michael Nugent (Team Leader – GIS)
Simone Griffiths (AOMS Technical Officer)
Anna Grant (Information Analyst)
Ben Silberberg (Regulatory Economist)

Health indicators

Vikas Shah (Treatment Engineer)
Ben Silberberg (Regulatory Economist)

Environment indicators – GHG emissions

Angus Seberry (Manager Environment and Sustainability)
Clare Williams (Environmental Planner)
Ben Silberberg (Regulatory Economist)

Environment indicators – Biosolids and WWTW treatment level

Bob Jennar (Treatment Engineer)
Ben Silberberg (Regulatory Economist)

Asset information interview session

Operational information

Lutz Backhausen (Group Manager Capability Engineering)
Rhys Hunter (Manager Operational Information)
Ben Silberberg (Regulatory Economist)

'Live state of the assets'

Stuart Horvath (Manager Investment and Asset Planning)
Ben Silberberg (Regulatory Economist)

AOMS, GIS and water breaks

Simone Griffiths (AOMS Technical Officer)
Ben Silberberg (Regulatory Economist)

Close-out session

*Jim Bentley (Managing Director)
*Clint Thomson (Executive Manager Service Delivery for Customers)
*Darren Cleary (Chief Investment Officer)
*Jennifer Hayes (Chief Financial Officer)
*Peter Kembrey (Executive Manager Corporate and Legal Services)
*Richard Harris (Chief Information Officer)
John Stanmore (Manager Water Planning)
Colin Hancock (Group Manager Water Operations)
Peter Shields (Manager Economics)
Claire Drelincourt (Manager Audit & Risk)
Angus Seberry (Manager Environment and Sustainability)
Ardie Morris (Manager Revenue)
Wade Delforce (Water Resources Engineer)
Martin Robards (Team Leader Alternative Water)
Karen Arkinstall (Veolia - Manager Systems Reporting Risk & Compliance)
Ben Silberberg (Regulatory Economist)
(*Managing Director and members of the Executive Management Team)

D Hunter Water's Statement of Compliance



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
hunterwater.com.au
1300 657 657 (T)
enquiries@hunterwater.com.au

30 August 2018

Our Ref: HW2009-1194/14/1.004

The Chief Executive Officer
Independent Pricing and Regulatory Tribunal of NSW
PO Box K35
Haymarket Post Shop NSW 1240

Dear Mr Harmstorf,

Statement of Compliance 2017-18

For 2017-18

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 2017-18 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, including to ensure that all information provided is true and correct, in full knowledge of conditions to which Hunter Water is subject under the *Hunter Water Act 1991*.
3. Schedule A provides information on all obligations with which Hunter Water did not comply during 2017-18.
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: 30/08/2018

Signed: 

Name: JIM BENTLEY

Designation: Managing Director

Date: 30/08/2018

Signed: 

Name: TERRY LAWLER

Designation: Chairman



Schedule A – Non-compliances identified during the reporting period

Table #	List of clauses breached, including a brief description of each licence clause	Describe:	
		I.	II.
		III.	IV.
		V.	VI.
1	<p>Operating Licence clause 1.8</p> <p>Subject to the terms of this Licence, the Act and the IPART Act, Hunter Water must set the level of fees, charges and other amounts payable for its Services in accordance with any applicable determination or determinations under the IPART Act.</p>	<p>I. Hunter Water has levied an Environmental Improvement Charge (EIC) as a way of funding backlog sewerage projects in the Lower Hunter since 1989. During this time, Hunter Water charged the EIC to the owners of properties connected to Hunter Water's sewerage system and the owners of vacant land where a sewerage service was available.</p> <p>IPART's 2013 Determination of the <i>Maximum prices for Hunter Water Corporation</i> from 1 July 2013 to 30 June 2017 authorised Hunter Water to levy the EIC on vacant land, but included a later reference to a connection to the sewerage system as a determinant of eligibility.</p> <p>IPART's 2016 Determination of <i>Maximum prices for Hunter Water Corporation</i> from 1 July 2016 to 30 June 2020 defined 'Environmental Improvement Charge Properties' to mean properties connected to Hunter Water's sewerage system. There was no reference to vacant land.</p> <p>IPART made Hunter Water aware of a customer enquiry on 16 March 2018 questioning a Hunter Water bill for the EIC amount against a parcel of vacant land near Lake Macquarie.</p> <p>Hunter Water investigated this matter and sought external advice on the legal basis for levying the EIC charge based on past IPART determinations. On the basis of this review, Hunter Water considers that it did not have the legal authority to levy the EIC on vacant land in the period since 1 July 2013.</p> <p>Hunter Water ceased levying the EIC on vacant land in April 2018.</p>	<p>II. Hunter Water estimates that it incorrectly billed 17,760 properties in the period from 1 July 2013, impacting 19,462 land owners. The number of land owners is higher than the number of properties given the transfer of ownership of some land parcels during this time.</p> <p>IPART set the EIC as \$39.69 per property in 2017-18. Hunter Water estimates the total value of charges levied on properties categorised as vacant land since 1 July 2013 was \$1.4 million.</p> <p>The maximum amount collected from any single property over five years was \$191.58. The average value per property was \$78.69, reflecting the fact that many owners had since developed the property and connected to Hunter Water's sewerage system.</p>

III. Not applicable.

IV. IPART's price determinations prior to 2013 enabled Hunter Water to levy the EIC on vacant land where a sewerage service was available. Hunter Water did not identify IPART's 2013 drafting change requiring vacant land to have a connection to Hunter Water's sewerage system. IPART did not canvass this change during the 2012-13 price review.

Hunter Water did not identify the drafting change made to the definition of EIC properties in IPART's 2016 Determination.

V. There are three groups of impacted property owners in the period since 1 July 2013:

- Property owners who paid the EIC on vacant land and have subsequently connected to Hunter Water's sewerage system.
- Property owners who paid the EIC on vacant land and still own the vacant land.
- Property owners who paid the EIC on vacant land but sold the land to another party in the period 1 July 2013 to 30 April 2018.

Property owners in Categories 1 and 2 have an existing account with Hunter Water. Hunter Water has issued refunds by way of a credit to the property owner's account. Hunter Water has written to each account holder informing them of the EIC refund. Hunter Water has also offered a cash payment if the property owner provides banking details.

Hunter Water is implementing steps to locate and pay a refund to each property owner in Category 3. There are approximately 4,900 customers in this category with a refund total of \$350,000. Hunter Water has engaged an external service provider to find property owner details and offer a direct bank refund.
