



Catherine Hill Bay Water Utility

New Infrastructure Audit (Stage 2 Scheme)

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Independent Pricing and Regulatory Tribunal

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1. Executive Summary

1.1 Auditor Declaration

This report presents the findings of a New Infrastructure Audit of Catherine Hill Bay Water Utility Pty Ltd's compliance with the requirements of its Network Operator's Licence (Licence No: 16_035) and the relevant provisions of the *Water Industry Competition (General) Regulation 2008* as they relate to the drinking water, sewerage and recycled water schemes at Catherine Hill Bay.

The auditor confirms that:

- the auditor was provided with sufficient evidence on which to base the conclusions reached during the audit;
- the audit findings accurately reflect the professional opinion of the auditor;
- the auditor has conducted the audit, determined the audit findings and prepared this report in accordance with the requirements of the *WIC Act Audit Guidelines*¹ and the provisions of the Audit Deed; and
- the audit findings have not been unduly influenced by the Licensee and/or any of its associates and express the auditor's opinion as to whether the Licensee has met the Licence conditions and regulatory requirements as specified in the scope.

1.2 Major Findings

The Licensee, Catherine Hill Bay Water Utility Pty Ltd, was found to have designed and constructed and to be able to operate and maintain the audited drinking water, sewerage and recycled water schemes in compliance with the assessed audit criteria, with the exception of the following:

- **Network Operator's Licence clause B10.3** – although a Licensee's Code of Conduct (draft *Code of Conduct*) that addresses the requisite matters has been established, it has not yet been formally agreed in writing by the two parties notwithstanding a letter of intent from Central Coast Council to do so. At the time of reporting, the draft *Code of Conduct* remains in place and IPART has accepted a Voluntary Undertaking from Catherine Hill Bay Water in respect of this matter.

1.3 Recommendations

The following recommendation has been made as a result of this audit:

- **REC-CHB2-NIA.01:** It is recommended that Catherine Hill Bay Water takes action to ensure that it updates the draft *Code of Conduct* (as necessary) and agrees in writing a Licensee's Code of Conduct with Central Coast Council no later than 30 November 2019, as committed in the Voluntary Undertaking dated 8 October 2018 that has been accepted by IPART.

¹ IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018.

One (1) opportunity for improvement, which the Licensee may wish to consider, is identified in the body of the report.

1.4 Conclusion

Notwithstanding the identified non-compliance, in the opinion of the auditors the Licensee can commence commercial operation of the Stage 2 Scheme infrastructure² for the safe and reliable supply of drinking water and non-potable (recycled) water and the provision of sewerage services at Catherine Hill Bay.

The auditors support the approval of the commercial operation of these assets, which are to be operated under WICA Network Operator's Licence No: 16_035.

² Stage 2 Scheme infrastructure is as described in **Section 2.2**.

2. Introduction

2.1 Objectives

This report presents the findings of a New Infrastructure Audit undertaken for the Independent Pricing and Regulatory Tribunal (IPART) under the provisions of the *Water Industry Competition Act 2006*.

The objective of the audit was to assess compliance of the Licensee, Catherine Hill Bay Water Utility Pty Ltd (Catherine Hill Bay Water or CHBWU), in meeting the requirements of the relevant legislation (the *Water Industry Competition Act 2006* and *Water Industry Competition (General) Regulation 2008*) and its Network Operator's Licence (Licence No: 16_035) as they relate to the drinking water, sewerage and recycled water schemes at Catherine Hill Bay.

It is noted that a separately reported Licence Plan Audit³ was conducted in conjunction with this audit.

2.2 Licensee's Infrastructure, Systems and Procedures

The infrastructure, systems and procedures subject to audit are those related to the drinking water, sewerage and recycled water schemes (the Schemes) that will service "The Beaches" land and housing development at Catherine Hill Bay, approximately 20 kilometres south of Newcastle (refer <http://www.solowater.com.au/schemes/>). At the current stage of development, the Water Industry Infrastructure comprises:

- Stage 1 (which has previously been approved for commercial operation), including:⁴
 - a potable (drinking) water network that draws water from an existing bulk potable water supply, with an inline chlorine monitoring and dosing system;
 - a pressure sewer collection network, together with an interim pump out tank (for disposal of sewage by road tanker); and
 - a non-potable (recycled) water network, which has initially been charged with potable water via a cross connection from the potable water supply located downstream of the chlorine dosing point.
- Stage 2 (for which approval for commercial operation is now sought and is the subject of this audit), including:
 - a treatment plant for the production of recycled water from sewage;
 - facilities for the on-site storage of recycled water prior to distribution; and
 - on-site drinking water storage and chlorine dosing facility.

Once the Stage 2 infrastructure has been approved for commercial operation, the non-potable water network will be charged with recycled water. Surplus recycled water will be transported offsite until an irrigation system, which will be incorporated as part of Stages 6 and 7 of the land development, is commissioned. The proposed irrigation system will be subject to future audit and approval, and is not included in the scope of this audit.

³ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 2 Scheme)* (Version 2.0), November 2018.

⁴ Minister for Energy and Utilities, *Notice of approval to bring new infrastructure into commercial operation*, 27 October 2017.

Catherine Hill Bay Water Utility Pty Ltd (ACN 163 381 922) is the Licensee, holding Network Operator's Licence No: 16_035. As Licensee, Catherine Hill Bay Water will own and/or be responsible for the ongoing operation and maintenance of the drinking water network, sewerage network and the recycled water network (under the Stage 2 arrangements) in accordance with its Licence Plans including:

- Solo Water, *Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2* (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018;
- Solo Water, *Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2* (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018;
- Solo Water, *Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2* (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018;
- Solo Water, *Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2* (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018; and
- other relevant supporting documentation.

It is noted that the *Infrastructure Operating Plan*, *Recycled Water Quality Management Plan* and *Sewage Management Plan* were updated during the audit process to remove reference to the use of recycled water for construction purposes. Whilst it is understood that this use was identified in the management plans submitted with Catherine Hill Bay Water's licence application, and is a use for which the supplied water would be suitable and safe, it was not reflected in the granted Licence.

2.3 Audit Method

2.3.1 Audit Scope

The audit comprised a New Infrastructure Audit conducted pursuant to the *WIC Act Audit Guidelines*.⁵ The specific scope of the audit addresses selected requirements of:

- the *Water Industry Competition (General) Regulation 2008*; and
- Network Operator's Licence No: 16_035;

in relation to the infrastructure that is proposed to be brought into commercial operation, which includes:

- a treatment plant for the production of recycled water from sewage;
- facilities for the on-site storage of recycled water prior to distribution; and
- on-site drinking water storage and chlorine dosing facility.

The audit scope specifically excludes the proposed irrigation scheme and associated infrastructure that are to be brought into commercial operation at a future date.

2.3.2 Audit Standard

The audit has been undertaken in accordance with the principles/guidance presented in:

- ISO 19011:2011 *Guidelines for auditing management systems*; and
- IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018 (WIC Act Audit Guidelines).

⁵ IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018.

2.3.3 Audit Steps

The audit has been undertaken generally in accordance with the procedure outlined in the *WTC Act Audit Guidelines*.

Following approval of an *Audit Proposal* by IPART, an *Audit Agenda* and *Information Request* were sent to both the Licensee and IPART approximately one week prior to the audit fieldwork being undertaken. Audit fieldwork comprising a site inspection of existing infrastructure and a desktop audit of relevant documentation/records was undertaken on 18 October 2018. Some additional items of information and/or clarification were requested following the audit fieldwork and subsequently provided.

A draft audit report was prepared and submitted to both the Licensee and IPART for review/comment before being finalised.

The audit process involved seeking objective evidence that the Licensee had complied with the obligations identified for audit by IPART. Evidence was obtained through interview, review of relevant documentation and records, and site inspection.

2.3.4 Audit Team

The audit was conducted by Jim Sly and Dr Dan Deere, both of whom hold the required Lead Auditor accreditation on IPART's Technical Services and Water Licensing Panel. The two auditors collectively addressed the various components of the audit.





Quality assurance review of the audit reports was undertaken by each auditor reviewing the other auditor's work.

Catherine Hill Bay Water was represented by Rhys Richards (Director), Brad Irwin (Environmental Engineer/New Schemes Manager), Craig Heininger (Water Utility Engineer /Operations Manager), Ronnie Paine (Water and Wastewater Systems Operator) and Ross Pascoe (Site Supervisor). IPART representative Jessica Hanna attended as an observer during the audit fieldwork.

2.3.5 Audit Grades

Audit grades have been awarded in accordance with guidance presented in the *WTC Act Audit Guidelines*. The compliance grades applicable for the purposes of this audit were as identified in **Table 2.1**.

Table 2.1 Audit Compliance Grades

Compliance Grade	Description
 Compliant	Sufficient evidence is available to confirm that the requirements have been met.
 Non-compliant (non-material)	Sufficient evidence is available to confirm that the requirements have been met and the deficiency does not adversely impact the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
 Non-compliant (material)	Sufficient evidence is available to confirm that the requirements have been met and the deficiency does adversely impact the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
 No Requirement	There was no requirement for the Licensee to meet this criterion during the audit period.

2.4 Regulatory Regime

The Catherine Hill Bay Water schemes operate in accordance with the provisions of a Network Operator's Licence (Licence No: 16_035) issued under the *Water Industry Competition Act 2006* (NSW). Other relevant regulatory instruments and standards/guidelines include:

- *Water Industry Competition (General) Regulation 2008* (NSW);
- IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018;
- *Australian Drinking Water Guidelines 2011* (as amended 2016);
- *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006*;
- *Plumbing Code of Australia*;
- *Plumbing and Drainage Act 2011* (NSW); and
- NSW and national water industry and environmental regulations and codes of practice as applicable.

2.5 Quality Assurance Process

The quality of this audit report was assured through a professional review process. The report has been independently reviewed by a Lead Auditor who holds relevant accreditation on IPART's Technical Services and Water Licensing Panel.

2.6 Audit Findings

Audit findings are summarised in the following **Section 3**, and are presented in full detail in **Appendix A**.

3. New Infrastructure

3.1 Summary of Findings

Under the provisions of *Water Industry Competition Act 2006*, the *Water Industry Competition (General) Regulation 2008* and the Network Operator's Licence, the Licensee is required to demonstrate the adequacy of any new infrastructure prior to it being introduced into service.

Catherine Hill Bay Water was found to be compliant with the audited clauses of the *Water Industry Competition (General) Regulation 2008* and the Network Operator's Licence as they apply to the Stage 2 Scheme drinking water, sewerage and recycled water infrastructure at Catherine Hill Bay, with the exception of the following:

- **Network Operator's Licence clause B10.3** – Non-compliant – Insignificant:
Although a Licensee's Code of Conduct has not yet been formally agreed, a draft *Code of Conduct* has been established and Central Coast Council has provided a letter indicating its intent to enter into the proposed *Code of Conduct* with Catherine Hill Bay Water (in relation to the supply of bulk potable water to the Catherine Hill Bay Water schemes). Review of the draft *Code of Conduct* available at the time of reporting reveals that it addresses the requisite matters, and there is no evidence that the terms of the proposed *Code of Conduct* have been contravened.

However, as the proposed *Code of Conduct* has not yet been formalised (agreed in writing by the two parties), Catherine Hill Bay Water has not demonstrated full compliance with this obligation. Given that the draft *Code of Conduct* remains in place and IPART has accepted a Voluntary Undertaking from Catherine Hill Bay Water in respect of this matter, the non-compliance is not considered to be material.

To achieve full compliance with clause B10, Catherine Hill Bay Water should ensure that it updates the draft *Code of Conduct* (as necessary) and agrees in writing a Licensee's Code of Conduct with Central Coast Council no later than 30 November 2019, as committed in the Voluntary Undertaking dated 8 October 2018 that has been accepted by IPART.

Detailed assessment in respect of this obligation is presented in **Table A.18** (refer **Appendix A**).

3.2 Review of Actions

The Licensee has not made any suggestions for corrections or clarifications following issue of the draft report and prior to the final report being issued.

3.3 Opportunities for Improvement


One (1) opportunity for improvement has been identified in respect of the audited obligations, as follows:

- **OFI-CHB2-NIA.01:** It is suggested that Catherine Hill Bay Water reviews the SCADA system setup to ensure that the correct units are displayed on the AIT8011 UV Intensity setpoint screen.

Appendix A Detailed Audit Findings – New Infrastructure

Detailed audit findings are presented in this Appendix.

Table A.1 **New Infrastructure Audit Table – WIC Act s10(4)(a) and s13(2)(a) and Network Operator's Licence cl.B1**

Clause	Requirement	Compliance Grade
WIC Act s10(4)(a) and s13(2)(a) and Network Operator's Licence cl.B1	The Licensee must have the technical, financial and organisational capacity to carry out the activities authorised by this Licence. If the Licensee ceases to have this capacity, it must report this to IPART immediately in accordance with the Reporting Manual.	<div> Compliant</div>
Risk	Target for Full Compliance	
This presents a high operational risk. Without the technical, financial and organisational capacity to carry out the activities authorised by the Licence, the Licensee may be unable to meet its obligations under the Licence, specifically the safe and effective delivery of agreed levels of service.	Evidence that the Licensee has the technical, financial and organisational capacity to carry out the activities authorised by the Licence. Documentation of procedures for identifying, and reporting to IPART, if the Licensee ceases to have the technical, financial and organisational capacity to carry out the activities authorised by the Licence.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.Solo, <i>Organisational Chart</i> (MS-OPER-G-8321-SW) (Issue No: 1.1), January 2018.Solo, <i>Planning and New Schemes Manager; Position Description</i> (IMS-HRPR-P-6233) (Issue No: 1.0), July 2017.Solo, <i>Water and Wastewater Utility Engineer; Position Description</i> (IMS-HRPR-P-6228) (Issue No: 1.0), March 2017.Solo, <i>Site Supervisor – Solo Water; Position Description</i> (IMS-HRPR-P-6146) (Issue No: 2.0), March 2016.Solo, <i>Water and Wastewater Systems Operator – Solo Water</i> (IMS HRPR-P-6234) (Issue No: 1.1), January 2018.Brad Irwin: Curriculum Vitae; Engineers Australia Membership Certificate; and NPER Certificate of Registration.Craig Heininger: Curriculum Vitae; Qualification Certificates; and AWA Membership Certificate.Alan Irving: Curriculum Vitae; Plumbing Licence; and Training Cards as referenced.Ross Pascoe: Curriculum Vitae; Plumbing Licence; and Training Cards as referenced.Ronnie Paine, Curriculum Vitae; and Training Cards/Certification as referenced.IPART, <i>Assessment of Catherine Hill Bay Water Utility's network operator's licence application; Water – Report to the Minister</i>, September 2015.		

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- *Service Agreement; For the Provision of Construction Services, Retail Services and O&M Services at the Catherine Hill Bay Development* between Catherine Hill Bay Water Utility Pty Ltd and Solo Water Pty Ltd, dated 5 February 2016.
 - Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).
 - *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2018.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.
 - Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual* (Revision 1.00), 10 October 2018.
 - Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; SCADA Operations Manual* (Revision 1.00), 12 October 2018.
 - Aquatis, *Best Practices for CHB Membrane Bioreactor*, undated.
 - Aquatis, *Catherine Hill Bay Best Practices Training Guidelines*, undated (in relation to the Recycled Water Plant).
 - Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018].
 - Solo, *IPART Reporting Procedure* (IMS-OPER-D-8324-SW) (Issue No: 1.1), March 2018.
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Summary of reasons for grade

Catherine Hill Bay Water demonstrated that, principally through its parent company Solo Water (an Authorised Person under the Licence), it holds the technical and organisational capacity to carry out the activities authorised by the Licence. Furthermore, IPART assessed that it also held the financial capacity to do so at the time the Licence Application was assessed (September 2015).

Catherine Hill Bay Water also demonstrated that it has in place procedures for identifying, and reporting to IPART, if it ceases to have the technical, financial or organisational capacity required to carry out the activities authorised by the Licence.

Accordingly, Catherine Hill Bay Water was assessed as being compliant with this obligation.

Discussion and notes

Technical Capacity:

The organisational structure in respect of the Catherine Hill Bay Water schemes is shown in the Solo Water (Catherine Hill Bay Water's parent company) *Organisational Chart*.⁶ Roles and responsibilities are described in summary form in the *Infrastructure Operating Plan*.⁷

More specific responsibilities associated with particular roles are presented in detailed position descriptions. Review of a sample of position descriptions revealed that they require appropriate skills and experience, as follows:

- Planning and New Schemes Manager – responsibilities include planning new schemes, project and operations management, people management and other company roles. Skills and experience requirements include an engineering degree; a minimum of 10 years water industry experience
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⁶ Solo, *Organisational Chart* (MS-OPER-G-8321-SW) (Issue No: 1.1), January 2018.

⁷ *Infrastructure Operating Plan*, section 4.1 (table 4.1).

(specifically in respect of new schemes); knowledge of planning and approval processes; and experience in water and wastewater design, development, construction and operations.⁸

- Water and Wastewater Utility Engineer (Operations Manager) – responsibilities include product development design and engineering, project and operations management, people management and other company roles. Skills and experience requirements include an engineering degree; a minimum of 10 years water industry operations experience; and experience in water and wastewater design, development, construction and operations.⁹
- Site Supervisor – responsibilities include site management and people management. Skills and experience requirements include a minimum of 2 years' experience in a similar supervisory role.¹⁰
- Water and Wastewater Systems Operator – responsibilities include site management and people management. Skills and experience requirements include trade or technical qualifications applicable to the water industry and a minimum of 5 years' experience in the water industry with a focus on operation and maintenance of water and wastewater systems.¹¹

Review of the curriculum vitae and other relevant documentation for the incumbents of a selection of the key positions is as follows:

- Planning and New Schemes Manager (Brad Irwin) – an Environmental Engineer with 15 years relevant water industry experience, including the investigation planning and design of water and wastewater systems and integrated water management. Evidence of Engineers Australia (Chartered Professional Engineer) membership and registration on the National Professional Engineers Register was also provided.¹²
- Operations Manager (Craig Heininger) – a civil engineer with 25 years relevant water industry experience including roles in the development of water and wastewater infrastructure and the operation and maintenance of treatment facilities and other water industry infrastructure. Qualifications include a Bachelor of Engineering (Civil), Certificate III in Industrial Instrumentation and a Water Board Gold Medal Award (UNSW); Craig is also a member of the Australian Water Association.¹³
- Site Manager (Alan Irving) – a licensed plumber with almost 40 years' industry experience, including domestic and commercial maintenance and new work, and the construction of sewer and water reticulation infrastructure. Copies of Alan's relevant training cards were provided, including his Plumbing Licence (No: 23847); NSW Fair Trading Supervisor Certificate; Certificate III in Civil Construction (Tunnel Construction); Energy Safe Victoria Restricted Electrical Workers Licence; OH&S Industry Induction and Confined Spaces training.¹⁴
- Site Supervisor (Ross Pascoe) – a licensed plumber with more than 35 years' experience including domestic and commercial plumbing, leading hand on commercial projects and site supervision in relation to water and sewer network construction and treatment plant construction and commissioning. Copies of Ross' relevant training cards were provided, including his Plumbing Licence (No: 26103); NSW Fair Trading Supervisor Certificate; Queensland Building and Construction Commission Plumbing Occupational Licence; WorkSafe Victoria Licence to Perform High Risk Work; Agricultural Chemical User Permit; Equipment Operator OHS Competency Qualification; and OH&S General Induction (WorkCover NSW).¹⁵
- Water and Wastewater Systems Operator (Ronnie Payne) – an Environmental Engineer with

⁸ Solo, *Planning and New Schemes Manager; Position Description* (IMS-HRPR-P-6233) (Issue No: 1.0), July 2017.

⁹ Solo, *Water and Wastewater Utility Engineer; Position Description* (IMS-HRPR-P-6228) (Issue No: 1.0), March 2017.

¹⁰ Solo, *Site Supervisor – Solo Water; Position Description* (IMS-HRPR-P-6146) (Issue No: 2.0), March 2016.

¹¹ Solo, *Water and Wastewater Systems Operator – Solo Water* (IMS HRPR-P-6234) (Issue No: 1.1), January 2018.

¹² Brad Irwin: Curriculum Vitae; Engineers Australia Membership Certificate; and NPER Certificate of Registration.

¹³ Craig Heininger: Curriculum Vitae; Qualification Certificates; and AWA Membership Certificate.¹⁴ Alan Irving: Curriculum Vitae; Plumbing Licence; and Training Cards as referenced.

¹⁴ Alan Irving: Curriculum Vitae; Plumbing Licence; and Training Cards as referenced.

¹⁵ Ross Pascoe: Curriculum Vitae; Plumbing Licence; and Training Cards as referenced.

13 years' experience in commissioning, operation, maintenance and servicing of both large and small water treatment facilities throughout Australia and the Asia Pacific. Ronnie's multifaceted roles have included construction manager, commissioning engineer, process review engineer, operations team leader, site lead technical advisor, breakdown on-site maintenance specialist, and lead plant operator. Copies of Ronnie's Construction Induction card and certification in relation to confined space entry, working and rescue were provided.¹⁶

On the basis of the sample of evidence reviewed and discussions with the abovementioned people during the audit fieldwork,¹⁷ it is apparent that Catherine Hill Bay Water has the technical capacity to carry out the activities authorised by the Licence.

Financial Capacity:

The Auditor has not directly assessed this criterion. It is noted, however, that in the process of assessing Catherine Hill Bay Water's Network Operator's Licence Application, IPART assessed that:¹⁸

"We are satisfied that CHBWU, supported by the Rico Family Trust, has the financial capacity to construct, operate and maintain drinking water, non-potable water and sewerage infrastructure at the Catherine Hill Bay development."

Organisational Capacity:

As noted above, the Organisation Structure in respect of the Catherine Hill Bay Water schemes is shown in the *Organisational Chart*.¹⁹ Review of the chart reveals that Catherine Hill Bay Water has, principally through Solo Water (parent company and an Authorised Person under the Licence), capacity in relation to planning and development of new schemes, operation, information management, finance and retail supply which are all required to effectively carry out the authorised activities. A *Service Agreement*²⁰ between Catherine Hill Bay Water and Solo Water, which sets out details of the support arrangements, shows that services to be provided include Construction Services, Retail Services and O&M Services over an initial 25-year period. In undertaking the Stage 1 (Interim Scheme) New Infrastructure Audit, it is noted that, although appropriately signed, the *Service Agreement* did not appear to have been dated and therefore has no commencement date; Catherine Hill Bay Water has now provided a dated copy of the Agreement showing that it was signed on 5 February 2016.

Catherine Hill Bay Water also has a *Service Agreement*²¹ with Solo Resource Recovery (parent company of Solo Water) in relation to the transport and disposal of sewage. Solo Resource Recovery, in turn, has a *Tankering Agreement*²² with Hunter Water for the disposal of sewage into its system (refer to Table A.13 for further related discussion).

Capacity can also be assessed from the perspective of organisational preparedness to undertake the authorised activities. As discussed further in Table A.3 and Table A.4, in addition to its Management Plans, Catherine Hill Bay Water has a number of Operator's Manuals and an extensive range of procedures and other supporting documentation in place to guide the operation and maintenance of the infrastructure. These include (for example):

- *Operator's Manual; Distribution System Networks; Stage 2;*²³
- *Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2;*²⁴

¹⁶ Ronnie Paine, Curriculum Vitae; and Training Cards/Certification as referenced.

¹⁷ Ross Pascoe participated in the Stage 1 audits conducted by Cobbitty Consulting/Water Futures.

¹⁸ IPART, *Assessment of Catherine Hill Bay Water Utility's network operator's licence application; Water – Report to the Minister*, September 2015, section 4.2.2.

¹⁹ Solo, *Organisational Chart* (MS-OPER-G-8321-SW) (Issue No: 1.1), January 2018.

²⁰ *Service Agreement; For the Provision of Construction Services, Retail Services and O&M Services at the Catherine Hill Bay Development* between Catherine Hill Bay Water Utility Pty Ltd and Solo Water Pty Ltd, dated 5 February 2016.

²¹ Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).

²² *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2018.

²³ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018.

²⁴ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.

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- *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual*;²⁵
 - *Catherine Hill Bay RWTP; SCADA Operations Manual*;²⁶
 - *Best Practices for CHB Membrane Bioreactor*;²⁷ and
 - *Catherine Hill Bay Best Practices Training Guidelines*.²⁸

Loss of Capacity:

Catherine Hill Bay Water outlines its arrangements for regularly monitoring and reviewing organisational capacity in the *Infrastructure Operating Plan*.²⁹ Such reviews, which are to be undertaken in conjunction with any staffing or operational changes, are the responsibility of the Operations Manager (in consultation with the Solo Water Board).

In the event that Catherine Hill Bay Water identifies that it has ceased to have capacity to carry out the activities authorised by the Licence, it will notify IPART in accordance with the *Reporting Manual*. The reporting requirement is identified in the *CHB Regulatory & Formal Requirements Register*;³⁰ the reporting process is outlined in the *IPART Reporting Procedure*.³¹

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

²⁵ Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual* (Revision 1.00), 10 October 2018.

²⁶ Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; SCADA Operations Manual* (Revision 1.00), 12 October 2018.

²⁷ Aquatis, *Best Practices for CHB Membrane Bioreactor*, undated.


²⁸ Aquatis, *Catherine Hill Bay Best Practices Training Guidelines*, undated (in relation to the Recycled Water Plant).

²⁹ *Infrastructure Operating Plan*, section 4.3.

³⁰ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018], *Network Operator Reporting* worksheet, item 53.

³¹ Solo, *IPART Reporting Procedure* (IMS-OPER-D-8324-SW) (Issue No: 1.1), March 2018.

Table A.2 New Infrastructure Audit Table – WIC Reg Sched 1 cl.2(1)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.2(1)	The licensee must not bring any new water or sewerage infrastructure into commercial operation without the written approval of the Minister.	 Compliant
Risk <p>This presents a high operational risk. The Minister's written approval is only provided when the Licensee has demonstrated that the infrastructure complies and can be operated in accordance with the relevant requirements. Accordingly, the absence of the Minister's written approval may mean that the infrastructure has not been so assessed.</p>		Target for Full Compliance <p>Evidence that the Licensee has obtained the written approval of the Minister prior to bringing any new water or sewerage infrastructure into commercial operation.</p>
Evidence sighted <ul style="list-style-type: none"> Interviews with Catherine Hill Bay Water personnel on 18 October 2018. Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018. NSW Government, <i>Notice of approval to bring new infrastructure into commercial operation</i>, 27 October 2017 (for infrastructure operated by Catherine Hill Bay Water Utility under Licence No: 16_035). 		
Summary of reasons for grade <p>Catherine Hill Bay Water had not, at the time of the audit fieldwork, brought any of the water or sewerage infrastructure that is the subject of this audit into operation. Accordingly, no infrastructure had been brought into commercial operation without the Minister's written approval to do so, and Catherine Hill Bay Water is assessed as being compliant with this obligation.</p>		
Discussion and notes <p>Catherine Hill Bay Water advised that none of the infrastructure that is the subject of this audit, i.e.:</p> <ul style="list-style-type: none"> the treatment plant for the production of recycled water from sewage; the facilities for the on-site storage of recycled water prior to distribution; or the on-site drinking water storage and chlorine dosing facility; <p>had been brought into operation at the time of the audit. Inspection of the infrastructure revealed no evidence to the contrary; whilst the treatment plant was in the process of being commissioned, none of the above infrastructure was found to be operating commercially.</p> <p>It is noted that the Minister had granted approval for the Stage 1 (interim scheme) infrastructure, which had been the subject of a previous New Infrastructure Audit, to be brought into commercial operation.³² That infrastructure was being operated at the time of the site audit/audit inspection.</p>		

³² NSW Government, *Notice of approval to bring new infrastructure into commercial operation*, 27 October 2017 (for infrastructure operated by Catherine Hill Bay Water Utility under Licence No: 16_035).

Consequently, it was apparent that Catherine Hill Bay Water had not, at the time of the audit fieldwork, brought any new infrastructure into commercial operation without the written approval of the Minister

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table A.3 New Infrastructure Audit Table – WIC Reg Sched 1 cl.2(2)(b)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.2(2)(b)	The infrastructure is capable of operating safely.	 Compliant
Risk	Target for Full Compliance	
This presents a high operational risk. The risk is generally managed by the implementation of an asset management system/framework that outlines the basis for the ongoing management of the infrastructure assets.		Demonstration that the infrastructure is capable of operating safely.
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Catherine Hill Bay Water personnel on 18 October 2018. Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018. Pressure Sewer Solutions, <i>Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW</i> (Revision 3), 24 October 2013. Pressure Sewer Solutions, <i>Catherine Hill Bay; Pressure Sewerage System Masterplan Report</i> (Revision 3), 24 October 2013. Pressure Sewer Solutions, <i>Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW</i> (Revision 3), 24 October 2013. Cardno, <i>Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design</i> (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018. Entegra, <i>Proposed 50 x 15 x 4m Industrial Building for Solo Water – Catherine Hill Bay, NSW</i> (Drawings No: ENT-16065, Sheets 1-5) (Revision L), 14 November 2017. Tasman Tanks, <i>Potable Tank; General Arrangement, Orientation and Level Indicator</i>, (Drawings No: TG10668701-T001 (Rev1), T002 (Rev1) and T003 (Rev0)). Portfolio of test records and compliance certificates in respect of the civil and structural/building works and storage tanks. Tasman Tanks, <i>Certificate & Warranty Documentation; Catherine Hill Bay Waste Water Treatment Plant 1458; Water Storage Tank – Galvabond TS600</i> (in respect of the PotableTS600 Galvabond Modular Panel Tank), 17 April 2018. Completed BPAA form: <i>Report on inspection and testing of backflow prevention devices, registered air gaps and registered break tanks</i>, 25 August 2018 (in relation to the potable water connection to the Recycled Water Storage (RES-9100). Witthoft Engineering, <i>Solo Water; Catherine Hill Bay; P&ID Drawings</i> (Drawings No: SW-56-RWTP-P-0000 to 9200 (16 sheets of various revisions and dated). Witthoft Engineering, <i>Catherine Hill Bay RWTP; Functional Specification; PLC04 – AWTP PLC</i> (Revision 2.00), 15 October 2018. 		

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- Portfolio of commissioning documentation, including test records and certificates, in respect of the treatment plant components.
 - Solo, *RWTP CCP1 – MBR UF Membranes Management* (IMS-GNRL-D-4411-SW) (Issues No: 1.0), August 2018.
 - Solo, *RWTP CCP2 – UV Disinfection Management* (IMS-GNRL-D-4412-SW) (Issues No: 1.0), August 2018.
 - Solo, *RWTP CCP3 – Chlorine Contact Tank Management* (IMS-GNRL-D-4413-SW) (Issues No: 1.0), August 2018.
 - Aquatis, *CHB Recycled Water Treatment Plant; Validation Plan & Validation Results (from 26/09/2018 to 31/10/2018)*, undated.
 - Solo, *CCP Residual Chlorination Management Procedure* (IMS-GNRL-D-4414-SW), (Issue No: 1.1), September 2018.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.
 - Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual* (Revision 1.00), 10 October 2018.
 - Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; SCADA Operations Manual* (Revision 1.00), 12 October 2018.
 - Aquatis, *Best Practices for CHB Membrane Bioreactor*, undated.
 - Aquatis, *Catherine Hill Bay Best Practices Training Guidelines*, undated (in relation to the Recycled Water Plant).
 - Solo, *Adjust or Amend a Critical Control Point* (INS-OPER-D-8323-SW) (Issue No: 1.1), August 2018.
 - Solo, *CHB Receipt/Storage of Chemicals* (IMS-CONP-D-0861-SW) (Issue No: 1.1), October 2018.
 - Solo, *CHB Asset Inspection Checklist (RWTP)* (IMS-CONT-D-1691-SW) (Issue No: 1.0), July 2018.
 - Solo, *CHB Operations Workflow Checklist (RWTP)* (IMS-CONT-G-1692-SW) (Issue No: 1.0), July 2018.
 - Solo, *CHB Daily Log Sheet (RWTP)* (IMS-CONT-G-1693-SW) (Issue No: 1.2), October 2018.
 - Solo Water, *Incident Response and Notification Management Plan* (Issue No: 3.1), November 2018.
 - Solo, *Power Outage* (IMS-OPER-D-8309-SW) (Issue No: 1.1), October 2018.
 - TQCSI *Certificates of Registration* of the Solo Resource Recovery Safety Management Systems to *AS/NZS 4801: 2001* and *OHSAS 18001:2007*, in both cases expiring 20 November 2020.
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Summary of reasons for grade

Catherine Hill Bay Water has demonstrated that the Stage 2 drinking water, sewerage and recycled water infrastructure that is to be brought into service is capable of operating safely. It is evident that the infrastructure has been properly designed and constructed so that it meets its functional requirements, including the production of recycled water of the required quality; adequate resources are available to operate and maintain the infrastructure; and there are management plans, procedures and other supporting documentation in place to ensure that operation and maintenance activities are undertaken in an appropriate manner.

Accordingly, Catherine Hill Bay Water is assessed as being compliant with this obligation.

Discussion and notes

Overview:

The ability of the infrastructure to operate safely and reliably is dependent upon:

- the infrastructure having been properly designed and constructed;
- appropriate resources being available to operate and maintain the infrastructure; and
- procedures for operation and maintenance of the infrastructure being available.

Each of these aspects is discussed in the following. Further discussion in relation to the proper design and construction, safe and reliable operation and proper maintenance of the infrastructure is presented in Table A.5.

Design and Construction:

General:

As indicated in the *Infrastructure Operating Plan*,³³ the respective Master Plans (*Drinking Water Master Plan*,³⁴ *Sewerage Master Plan*³⁵ and *Recycled Water Master Plan*³⁶) provide the design basis for the schemes at Catherine Hill Bay. Both the *Infrastructure Operating Plan* and the Master Plans identify the relevant codes and standards for design and construction of the works (refer Table A.5 for further discussion). Compliance with the relevant industry standards will generally facilitate safe and reliable operation of the infrastructure.

Catherine Hill Bay Water requires contractors constructing the infrastructure to complete a series of inspections and tests relevant to the work being undertaken. Once completed and certified by the contractor, these forms are signed-off by a Catherine Hill Bay Water representative who has undertaken inspections and/or witnessed testing of the infrastructure during construction, either at specific hold points or on a random basis. This ensures that the infrastructure has been properly constructed.

Design and construction of each of the principal components of the scheme that are the subject of this audit are discussed (on a sample basis) in the following.

Site Civil and Structural Works:

Details of the site civil works are detailed primarily in a set of drawings entitled *Civil Engineering Design*.³⁷ Review of the drawings reveals them to be consistent with relevant standards and codes, which are identified on the drawings.

Structural design for the treatment plant building is detailed on a set of drawings entitled *Proposed 50 x 15 x 4m Industrial Building for Solo Water – Catherine Hill Bay, NSW*.³⁸

Observations made during the site inspections revealed that the built infrastructure appeared to be generally consistent with the drawings and relevant standards. Catherine Hill Bay Water provided an extensive portfolio of documents certifying the integrity of the work, including:

- Structural engineering certification;
- Concrete compressive strength tests;

³³ *Infrastructure Operating Plan*, sections 2.4 and 2.5.

³⁴ Pressure Sewer Solutions, *Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.

³⁵ Pressure Sewer Solutions, *Catherine Hill Bay; Pressure Sewerage System Masterplan Report* (Revision 3), 24 October 2013.

³⁶ Pressure Sewer Solutions, *Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.³⁷ Cardno, *Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design* (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018.

³⁷ Cardno, *Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design* (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018.

³⁸ Entegra, *Proposed 50 x 15 x 4m Industrial Building for Solo Water – Catherine Hill Bay, NSW* (Drawings No: ENT-16065, Sheets 1-5) (Revision I), 14 November 2017.

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- Pipework pressure tests;
 - Material conformance tests;
 - Building certification in respect of (for example) water supply connection; sanitary plumbing and drainage; Lighting; and Emergency and Exit Lighting; and
 - Certification of fire-fighting installations including hydrants (with flow test results), fire extinguishers and fire blankets.

Storage Tanks:

Drawings showing the general arrangement, orientation details and level indicator details for each of the four storage tanks (potable water, two (2) MBR permeate and recycled water) were provided.³⁹ The tanks as built appeared to be consistent with the details shown thereon.

Completed Inspection and Test Plans and a *Certificate & Warranty Documentation*⁴⁰ were provided for each tank. Certification in respect of the air gap provided to the potable water top-up connection in the recycled water tank (RES-9100) was also provided.⁴¹

Sewage Treatment/Recycled Water Plant:

A description of the sewage treatment/recycled water plant is presented in the *Infrastructure Operating Plan*;⁴² however, design of the facility is encapsulated in more detail in a series of Process [or Piping] and Instrumentation Diagrams and Functional Specifications.

The *Process and Instrumentation Diagrams* (P&IDs)⁴³ show the arrangement and connectivity of the piping and equipment in the process flow, together with the instrumentation and control devices. Review of these drawings reveals that they show an appropriate arrangement for the plant given the processes adopted to achieve that required plant performance. Observations made during the audit site inspection indicate that the treatment plant and associated infrastructure appear to have been constructed consistent with the arrangements shown on the P&IDs.

As identified in the *Infrastructure Operating Plan*,⁴⁴ there are a series of Functional Specifications that collectively detail the process control arrangements for the treatment plant. These include (for example):

- Catherine Hill Bay RWTP - Functional Specification D - PLC Standards;
- Catherine Hill Bay RWTP - Functional Specification E - SCADA Standards;
- Catherine Hill Bay RWTP - Functional Specification F - PLC01 Main PLC;
- Catherine Hill Bay RWTP - Functional Specification G - PLC02 MBR PLC;
- Catherine Hill Bay RWTP - Functional Specification H - PLC03 RWPWPS PLC; and
- Catherine Hill Bay RWTP - Functional Specification I - PLC04 AWTP.

Review of (for example) the *Functional Specification I - PLC04 AWTP*⁴⁵ reveals that it appropriately specifies the control, monitoring and alarm arrangements in relation to the advanced water treatment components of the treatment plant including the UV Feed Pump, UV Disinfection Package Plant, Chlorine Contact Tanks; and Transfer Tank and Pump.

³⁹ For example: Tasman Tanks, *Potable Tank; General Arrangement, Orientation and Level Indicator*, (Drawings No: TG10668701-T001 (Rev1), T002 (Rev1) and T003 (Rev0)).

⁴⁰ For example: Tasman Tanks, *Certificate & Warranty Documentation; Catherine Hill Bay Waste Water Treatment Plant 1458; Water Storage Tank – Galvabond TS600* (in respect of the PotableTS600 Galvabond Modular Panel Tank), 17 April 2018.

⁴¹ Completed BPAA form: *Report on inspection and testing of backflow prevention devices, registered air gaps and registered break tanks*, 25 August 2018 (in relation to the potable water connection to the Recycled Water Storage (RES-9100)).

⁴² *Infrastructure Operating Plan*, section 3.1.5.

⁴³ Witthoft Engineering, *Solo Water; Catherine Hill Bay; P&ID Drawings* (Drawings No: SW-56-RWTP-P-0000 to 9200 (16 sheets of various revisions and dated)).

⁴⁴ *Infrastructure Operating Plan*, section 3.1.7.

⁴⁵ Witthoft Engineering, *Catherine Hill Bay RWTP; Functional Specification; PLC04 – AWTP PLC* (Revision 2.00), 15 October 2018.

Catherine Hill Bay Water has provided an extensive portfolio of documentation detailing:

- Pre-Commissioning tests – including factory acceptance tests; inspection and test plans in respect of electrical, control and mechanical equipment; bench testing and PLCs; and test certificates for all monitoring instrumentation and other equipment.
- Wet Commissioning Tests – including site acceptance tests and inspection/testing checklists;
- Process Commissioning – including (for example) site acceptance testing of the Wedeco UV Disinfection System; and
- Performance testing – discussed further below.

Justification for the claimed LRV (log reduction values) to be achieved by each process treatment barrier is detailed in the *Recycled Water Quality Management Plan*,⁴⁶ together with the critical control point (CCP) limits required to achieve those reductions; a *Validation Plan & Validation Results Template* is also included. The CCP limits are consistent with those shown in the *Recycled Water Quality Management Plan*⁴⁷ and the relevant CCP management procedure.^{48,49,50}

Total log reductions claimed/required are detailed as follows:

Critical Process	Log Reduction Value		
	Virus	Bacteria	Protozoa
Total Claimed	8.93	12	8
Required	6.5	5.3	5.1

At the time of the audit site inspection, validation testing of the plant was well advanced and was completed prior to reporting. The *Validation Report*⁵¹ (prepared using the above-mentioned template) reports as follows:

“The Catherine Hill Bay Recycled Water Plant has been operated with continuous monitoring from September, 26th to October, 31st according to the validation plan. Based on the results of the 36 days of operation, the RWP is performing very well and even better than expected considering some water quality parameters (i.e. TP and TN recycled water concentrations).

Despite numerous start-up/shut downs operations during the validation period aligned with flow and production demand, all data collected are in line with the target limits with more than 8.9log, 12log and 8log validated reduction of viruses, bacteria and protozoa respectively. These reductions have been continuously monitored during the 36 days of operation.

In addition, there were no reportable incidences of CCP critical limit exceedances during the validation period in accordance with the CCP management procedures. Several events with monitoring parameters being outside the CCPs limits occurred during the validation period for the AWTP, however these occurred when the plant was not in production mode, either when not in operation due to periods of low demand, or through engineered controls to return any potentially non-compliant water back to the head of the plant. This demonstrated that the automatic corrective action worked very well in accordance with our water quality management plan and process design.”

Particular items of note from the report include:

- Validation was undertaken over a period of 36 days (5 weeks) in order to capture the requisite number of samples to demonstrate performance.
- Apart from two suspected sampling and analysis errors and two incorrectly labelled bottles, all samples were in line with the recycled water target limits.

⁴⁶ *Recycled Water Quality Management Plan*, appendix C

⁴⁷ *Recycled Water Quality Management Plan*, section 2.3.2.2.

⁴⁸ Solo, *RWTP CCP1 – MBR UF Membranes Management* (IMS-GNRL-D-4411-SW) (Issues No: 1.0), August 2018.

⁴⁹ Solo, *RWTP CCP2 – UV Disinfection Management* (IMS-GNRL-D-4412-SW) (Issues No: 1.0), August 2018.

⁵⁰ Solo, *RWTP CCP3 – Chlorine Contact Tank Management* (IMS-GNRL-D-4413-SW) (Issues No: 1.0), August 2018.

⁵¹ Aquatis, *CHB Recycled Water Treatment Plant; Validation Plan & Validation Results (from 26/09/2018 to 31/10/2018)*, undated.

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- Testing validated plant performance in respect of the claimed log reductions.

Review of the results presented in the *Validation Report* confirmed the assessment made by Catherine Hill Bay Water's consultant. SCADA trends for critical control point parameters showed shutdown/diversion of flow in response to any excursions beyond operational limits. Verification (laboratory) test results demonstrated compliance with targets in all but three abovementioned cases that were clear anomalies, and for which plausible explanation has been provided.

Drinking Water Chlorination Facility:

The dosing facilities for re-chlorination of the drinking water supply are accommodated within the chemical dosing area of the treatment plant building. The sample point for monitoring residual chlorine levels is located downstream of the potable water pumping station, off the supply line to the potable water network; the dosing point is upstream of the pumping station. These arrangements are considered appropriate given that the function of the facility is to maintain chlorine residual in the potable water supplied by Central Coast Council.

The sole nominated critical control point (CCP) for the potable water supply (within the Catherine Hill Bay Water system) is "*Free chlorine residual at the point of supply to the drinking water and recycled water networks*", as nominated in the *CCP Residual Chlorination Management Procedure*;⁵² (which is referenced in the *Drinking Water Quality Management Plan*).⁵³

Review of the limit settings within the SCADA system (instrument AIT5001) confirmed that they were consistent with the requirements documented in the procedure:

- High High/Low Low Setpoints (critical limits): > 4.5 mg/L and < 0.5 mg/L for > 600 seconds (10 minutes); and
- High/Low Setpoints (operational/warning limits): > 3.0 mg/L and < 1.0 mg/L for > 600 seconds (10 minutes)

Summary:

On the basis of the above discussion, it is apparent that the various components of infrastructure have been designed and constructed such that they are capable of being operated safely for their intended purposes.

Resourcing:

As noted above, the safe and reliable performance of infrastructure is in part dependent upon the resources engaged for operation and maintenance. As discussed in Table A.1, Catherine Hill Bay Water has both the technical and organisational capacity to carry out the activities authorised by the Licence.

Catherine Hill Bay Water advised that, during the construction phase, it has maintained a full time (5 days per week) site presence comprising the Site Manager and Site Supervisor positions, with additional support as required from the Solo Water head office. The Site Supervisor will continue in a full time site based operational role. Catherine Hill Bay Water/Solo Water has also appointed a full time Water and Wastewater Systems Operator who will be primarily responsible for operation of the treatment plant. Both will be available for after-hours call-out in response to alarms.

Operation and Maintenance:

As noted above, the safe and reliable performance of infrastructure is also dependent upon the implementation of effective operational, maintenance, condition monitoring and refurbishment /replacement practices. Lifecycle management of the infrastructure, including arrangements in relation to planning and design, asset creation and procurement, operational strategy, maintenance strategy, asset renewal strategy and asset information is documented in the *Infrastructure Operating Plan*.⁵⁴ The *Drinking*

⁵² Solo, *CCP Residual Chlorination Management Procedure* (IMS-GNRL-D-4414-SW), (Issue No: 1.1), September 2018.

⁵³ *Drinking Water Quality Management Plan*, section 2.3.2.

⁵⁴ *Infrastructure Operating Plan*, section 6.

Water Quality Management Plan,⁵⁵ *Recycled Water Quality Management Plan*⁵⁶ and *Sewage Management Plan*⁵⁷ also address the operation of the infrastructure.

More detailed guidance in relation to operation and maintenance of the infrastructure is set out in a number of Operator's Manuals and an extensive portfolio of operational (and maintenance) forms and procedures.

As reported in Table A.1, the Operator's Manuals include (for example):

- *Operator's Manual; Distribution System Networks; Stage 2*;⁵⁸
- *Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2*;⁵⁹
- *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual*;⁶⁰
- *Catherine Hill Bay RWTP; SCADA Operations Manual*;⁶¹
- *Best Practices for CHB Membrane Bioreactor*;⁶² and
- *Catherine Hill Bay Best Practices Training Guidelines*.⁶³

The *Operator's Manual; Distribution System Networks; Stage 2* (as an example) provides an overview of the systems (drinking water, recycled water and sewerage); outlines the procedures for operation of the infrastructure including details of the arrangements in respect of operational monitoring and control; and identifies maintenance requirements. It includes a maintenance schedule and references (via on-line links) to equipment manufacturers' operation and maintenance manuals (a sample of which were provided to the auditors).

Apart from the critical control point (CCP) procedures referenced above, procedures and forms relevant to the infrastructure that is the subject of this audit include (for example):

- *Adjust or Amend a Critical Control Point*,⁶⁴ which outlines the procedures to be followed to adjust or amend a Critical Control Point (CCP). It specifically notes that only the Operations Manager has the authority to adjust a CCP and it must be done in consultation with regulators, primarily HNE Health and IPART.
- *CHB Receipt/ Storage of Chemicals*,⁶⁵ which provides instructions on how to order, receive and store chemicals for the recycled water plant;
- *CHB Asset Inspection Checklist (RWTP)*,⁶⁶ which provides guidance and for undertaking routine operational monitoring of the recycled water plant to ensure that the system operates in a safe and efficient manner and meets the company's obligations to public health and the environment in accordance with the regulatory and licence conditions;
- *CHB Operations Workflow Checklist (RWTP)*,⁶⁷ which is used to records the completion of operational activities that are undertaken on a daily basis, in accordance with the *CHB Asset Inspection Checklist (RWTP)*, and

⁵⁵ *Drinking Water Quality Management Plan*, section 2.4.

⁵⁶ *Recycled Water Quality Management Plan*, section 2.4.

⁵⁷ *Sewage Management Plan*, section 2.4.

⁵⁸ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018.

⁵⁹ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.

⁶⁰ Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; Electrical Operations and Maintenance Manual* (Revision 1.00), 10 October 2018.

⁶¹ Solo Water/Wittcroft Engineering, *Catherine Hill Bay RWTP; SCADA Operations Manual* (Revision 1.00), 12 October 2018.

⁶² Aquatis, *Best Practices for CHB Membrane Bioreactor*, undated.

⁶³ Aquatis, *Catherine Hill Bay Best Practices Training Guidelines*, undated (in relation to the Recycled Water Plant).

⁶⁴ Solo, *Adjust or Amend a Critical Control Point* (INS-OPER-D-8323-SW) (Issue No: 1.1), August 2018.

⁶⁵ Solo, *CHB Receipt/ Storage of Chemicals* (IMS-CONP-D-0861-SW) (Issue No: 1.1), October 2018.

⁶⁶ Solo, *CHB Asset Inspection Checklist (RWTP)* (IMS-CONT-D-1691-SW) (Issue No: 1.0), July 2018.

⁶⁷ Solo, *CHB Operations Workflow Checklist (RWTP)* (IMS-CONT-G-1692-SW) (Issue No: 1.0), July 2018.

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- *CHB Daily Log Sheet (RWTP)*,⁶⁸ which is used to record daily performance monitoring of the treatment plant performance, in accordance with the *CHB Asset Inspection Checklist (RWTP)*.

Living examples of both the *CHB Operations Workflow Checklist (RWTP)* and *CHB Daily Log Sheet (RWTP)* in use were sighted during the audit site inspection.

Although not all procedures and forms have been reviewed as part of the audit, those provided to the auditors appear to address the key operational and maintenance requirements of the Catherine Hill Bay Water drinking water, sewerage and recycled water schemes.

Ongoing operation and maintenance may be contingent upon having appropriate contingency or incident management plans and related procedures in place. The *Incident Response and Notification Protocol*⁶⁹ identifies the key actions to be taken to minimise and control the impacts of an environmental, water quality and/or public health incidents, and nominates staff responsibilities. At a detail level, the *Power Outage Procedure*⁷⁰ (for example) sets out requirements for use of the standby generator at the treatment plant (together with other network related actions) in the event of a power outage.

Safety Management:

From a work health and safety perspective, the *Infrastructure Operating Plan* indicates that:⁷¹

“Safety during any system activities will fall under the Safety Management Plan (IMS-SAFE-B-4801) which will provide the overriding framework in which WHS systems are managed.”

The *Safety Management Plan*⁷² outlines the approach adopted by the Solo Group in respect of safety management across its operations. It is noted that Solo Resource Recovery, parent company of Solo Water/Catherine Hill Bay Water, has a Safety Management System that is accredited to both AS/NZS 4801: 2001 and OHSAS 18001:2007;⁷³ the Catherine Hill Bay site has recently been assessed and added to the certification.

It is noted that appropriate measures including (for example) eye and safety showers, locked caged tank roof access ladders and guard rails were in place as appropriate.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

⁶⁸ Solo, *CHB Daily Log Sheet (RWTP)* (IMS-CONT-G-1693-SW) (Issue No: 1.2), October 2018.

⁶⁹ Solo Water, *Incident Response and Notification Management Plan* (Issue No: 3.1), November 2018.

⁷⁰ Solo, *Power Outage* (IMS-OPER-D-8309-SW) (Issue No: 1.1), October 2018.

⁷¹ *Infrastructure Operating Plan*, section 5.5.

⁷² Solo Group, *Work Health and Safety Management Plan* (IMS-SAFE-B-4801) (Version 5.1), January 2018.

⁷³ TQCSI *Certificates of Registration* of the Solo Resource Recovery Safety Management Systems to AS/NZS 4801: 2001 and OHSAS 18001:2007, in both cases expiring 20 November 2020.

Table A.4 New Infrastructure Audit Table – WIC Reg Sched 1 cl.2(2)(b)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.2(2)(b)	The infrastructure is capable of operating in accordance with its Infrastructure Operating Plan and its Water Quality Plan or Sewage Management Plan, as the case requires.	<div> Compliant</div>
<hr/>		
Risk	Target for Full Compliance	
This presents a high operational risk. The ability of the infrastructure to operate in accordance with the relevant management plan(s) is essential to the effective delivery of agreed levels of service.	Demonstration that the infrastructure is capable of operating in accordance with the relevant management plan(s).	
<hr/>		
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Operator’s Manual; Distribution System Networks; Stage 2</i> (Revision 2.0), 21 September 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Operator’s Manual; Recycled Water Treatment Plant (RWTP); Stage 2</i> (Revision 1.0), 19 September 2018.Solo, <i>CHB Regulatory & Formal Requirements</i> (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018].		
<hr/>		
Summary of reasons for grade		
<p>Catherine Hill Bay Water has demonstrated that the drinking water, sewerage and recycled water infrastructure that is to be brought into service under the Stage 2 Scheme arrangements is capable of operating in accordance with the relevant management plans (<i>Infrastructure Operating Plan, Drinking Water Quality Management Plan, Recycled Water Quality Management Plan</i> and <i>Sewage Management Plan</i> in the context of this audit). Review of a sample of procedures referenced in the management plans reveals no impediment to their implementation and review of the SCADA settings for the recycled water plant critical control points (for example) confirms that they are consistent with the values documented in the <i>Recycled Water Quality Management Plan</i>.</p> <p>Accordingly, it is assessed that Catherine Hill Bay Water is compliant with this obligation.</p>		

Discussion and notes

As discussed in Table A.3, arrangements in relation to operation of the infrastructure are documented in the *Infrastructure Operating Plan*,⁷⁴ *Drinking Water Quality Management Plan*,⁷⁵ *Recycled Water Quality Management Plan*⁷⁶ and *Sewage Management Plan*.⁷⁷ Reference is made in each case to the relevant Operator's Manual(s), as well as relevant procedures and forms, samples of which are identified, and in some cases discussed, in Table A.1 or Table A.3.

An overview of the infrastructure and its intended operating regime is presented in the *Infrastructure Operating Plan*.⁷⁸ As reported in Section 2.2 (of this report), under the Stage 2 Scheme arrangements, new infrastructure (which is the subject of this audit) will comprise:

- a treatment plant for the production of recycled water from sewage;
- facilities for the on-site storage of recycled water prior to distribution; and
- on-site drinking water storage and chlorine dosing facility.

On the basis of the audit site inspections, it is apparent that the infrastructure has been configured to operate in accordance with the documented arrangements. As reported in Table A.3, functional specifications for the Interim Works (chlorine re-dosing skid and sewage collection tank), Bulk Potable Water Pump Station and Network Sewage Pump Stations, which set out the basis for programming of the SCADA monitoring and control system, specify control, monitoring and alarm system arrangements that are appropriate to the proposed operating regime.

The *Infrastructure Operating Plan*⁷⁹ references the *Operator's Manual; Distribution System Networks; Stage 2*⁸⁰ and the *Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2*⁸¹ as the primary sources of guidance for operation and maintenance of the infrastructure. Review of these documents confirms that they appropriate guidance and include reference to the relevant procedures, forms and equipment manufacturer operation and maintenance manuals.

The *Infrastructure Operating Plan*⁸² also references the *Drinking Water Quality Management Plan*, *Recycled Water Quality Management Plan* and *Sewage Management Plan*, the relevant sections^{83,84,85} of which reference the detailed guidance in the Operator's Manuals and the specific operational (and maintenance) procedures and forms that are relevant to the respective scheme. Review of a sample of procedures, including those referenced in Table A.3 (for example) revealed no impediment to their implementation.

As a specific example of implementation/operation in accordance with the management plans, both the *Drinking Water Quality Management Plan*⁸⁶ and *Recycled Water Quality Management Plan*⁸⁷ require the calibration of equipment in accordance with manufacturers' manuals. The site record of the calibration of hand held Free Chlorine Meter YSI 900 against the standard conducted on 16 October 2018, as recorded on form IMS-CONT-F-1695-SW - Process Equipment Calibration Register was sighted.

⁷⁴ *Infrastructure Operating Plan*, section 6.3.

⁷⁵ *Drinking Water Quality Management Plan*, section 2.4.

⁷⁶ *Recycled Water Quality Management Plan*, section 2.4.

⁷⁷ *Sewage Management Plan*, section 2.4.

⁷⁸ *Infrastructure Operating Plan*, section 3.1 (specifically sections 3.1.1 and 3.1.2 (drinking water), 3.1.3 (recycled water), 3.1.4 (wastewater), 3.1.5 (recycled water treatment plant) and 3.1.7 (control philosophy).

⁷⁹ *Infrastructure Operating Plan*, section 6.3.3.

⁸⁰ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018.

⁸¹ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.

⁸² *Infrastructure Operating Plan*, section 6.3.3.

⁸³ *Drinking Water Quality Management Plan*, section 2.4.

⁸⁴ *Recycled Water Quality Management Plan*, section 2.4.

⁸⁵ *Sewage Management Plan*, section 2.4.

⁸⁶ *Drinking Water Quality Management Plan*, section 2.4.4.

⁸⁷ *Recycled Water Quality Management Plan*, section 2.4.4.

Given their criticality to the production of compliant recycled water, a check was made during the audit site inspection to confirm that critical control point (CCP) settings in the SCADA system were consistent with the arrangements specified in the *Recycled Water Quality Management Plan*.⁸⁸ This revealed that all settings were consistent with those documented in the *Plan*, as shown on the following:

- Figure A.4.1 – Instrument AIT1051 MBR Permeate Turbidity (CCP1);
- Figure A.4.2 – Instruments AIT8010 UV Transmittance, AIT8011 UV Intensity AIT-DOSE UV Dose and FIT8010 Flow (CCP2);
- Figure A.4.3 – Instruments AIT8040 Free Chlorine Residual and AIT8041 pH (CCP3).

It is noted (refer Figure A.4.3) that units shown on the setpoint screen for Instrument AIT8011 UV Intensity are incorrectly shown as W/cm², although the values are correct and the correct units (W/m²) are shown on the UV System Status mimic screen. As an opportunity for improvement (**OFI-CHB2-NIA.01**), it is suggested that Catherine Hill Bay Water reviews the SCADA system setup to ensure that the correct units are displayed on the AIT8011 UV Intensity setpoint screen.

To confirm consistency between instrument readings, instrument readings noted at the time of inspection were compared to SCADA records, which revealed that (for example):

- AIT1051 MBR Permeate Turbidity – SCADA display was the same as the instrument reading of 0.035 NTU;
- AIT8040 Free Chlorine Residual – SCADA display showing 2.97 mg/L was consistent with the instrument reading of 2.95 mg/L; and
- AIT8041 pH – SCADA display was the same as the instrument reading of 7.63 pH.

It is understood from discussions with Catherine Hill Bay Water personnel during the audit, that it does not intend to publicise the fact that the recycled water network will be charged with potable water under the Stage 1 (Interim Scheme) operating arrangements. This approach is supported by the auditors as it helps reduce the risk that customers might use potable water supplied via the recycled water system for potable uses and then fail to revert and cease doing so after the scheme is charged with recycled water.

Each of the management plans (*Infrastructure Operating Plan*, *Drinking Water Quality Management Plan* and *Sewage Management Plan*) outlines arrangements in relation to documentation and reporting.

Solo Resource Recovery (Solo Water/Catherine Hill Bay Water's parent company) implements an integrated management system (IMS) that is certified to ISO 9001:2008 (Quality management), ISO 14001:2004 (Environmental management), and AS/NZS 4801:2001 and OHSAS 18001:2007 (Occupational health and safety management); the Catherine Hill Bay site has recently been assessed and added to the certification. Under the IMS, documentation is managed through a Citrix Document Control Platform. All controlled documents, details of which are recorded in the *IMS Master Register*,⁸⁹ are regularly reviewed with review frequencies identified in the *CHB Regulatory & Formal Requirements Register*.⁹⁰ A separate "DITA" platform generates reminders for scheduled document reviews, as well as functions such as training and awareness updates, fire extinguisher (and other safety) testing, water quality monitoring and compliance reporting.

In summary, the new infrastructure that is to be brought into service under the Stage 2 Scheme arrangements is capable of operating in accordance with the *Infrastructure Operating Plan*, the *Drinking Water Quality Management Plan*, the *Recycled Water Quality Management Plan* and the *Sewage Management Plan* as appropriate

⁸⁸ *Recycled Water Quality Management Plan*, section 2.3.2.2 (table 2.5).

⁸⁹ The *IMS Master Register* was viewed on-line as part of the Stage 1 (Interim Scheme) audits and found to be consistent with the revision status documented in a sample of documents.

⁹⁰ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018].

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

The following opportunity for improvement has been identified in respect of this obligation:

- **OFI-CHB2-NIA.01:** It suggested that Catherine Hill Bay Water reviews the SCADA system setup to ensure that the correct units are displayed on the AIT8011 UV Intensity setpoint screen.
-

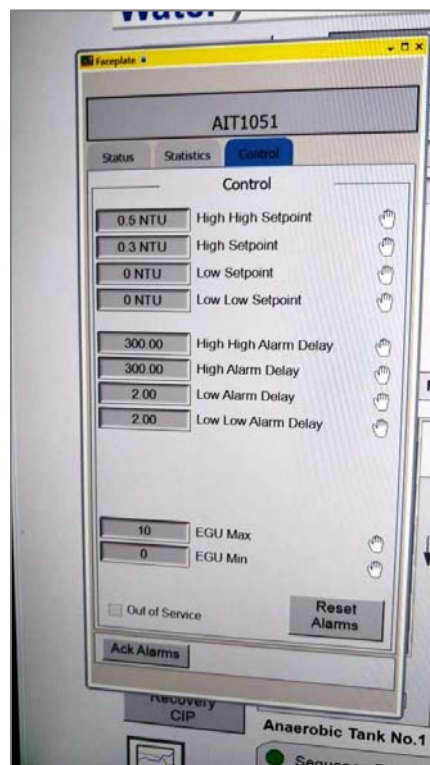


Figure A.4.1 SCADA setpoint screen for Instrument AIT1051 MBR Permeate Turbidity (CCP1)

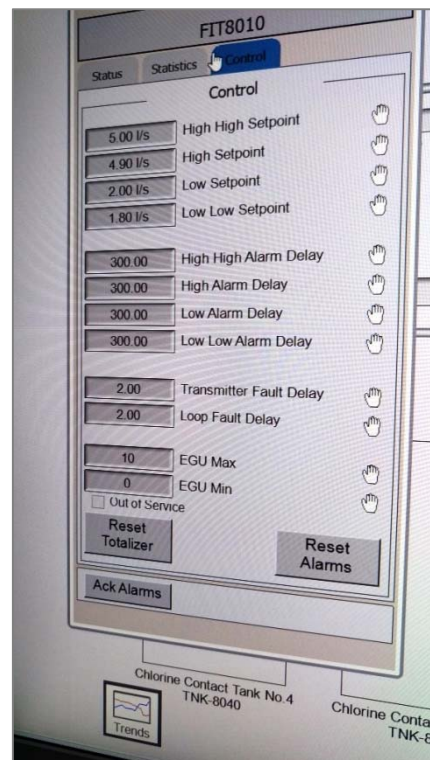
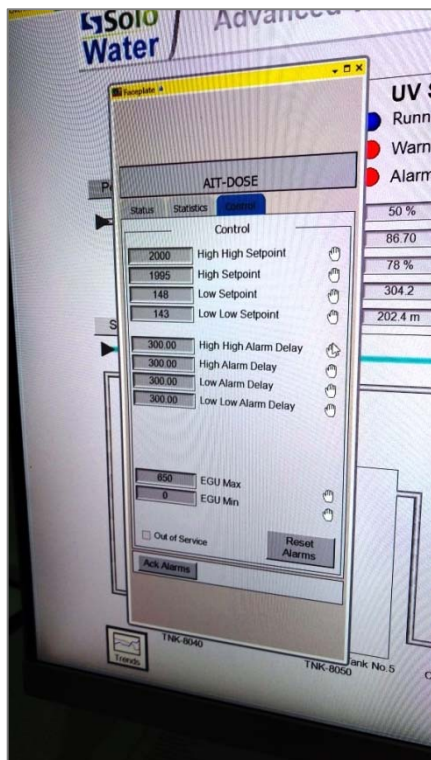
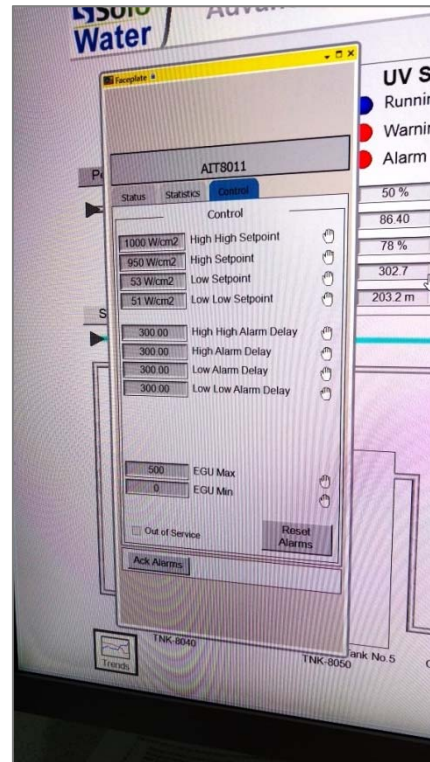
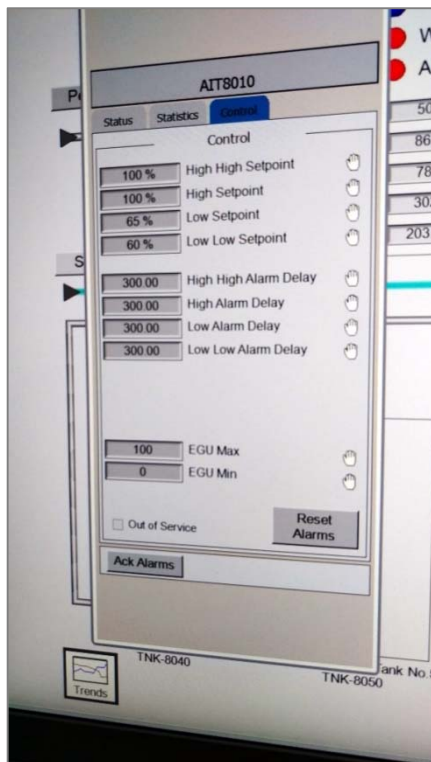


Figure A.4.2 SCADA setpoint screens for Instruments AIT8010 UV Transmittance, AIT8011 UV Intensity FIT8010 Flow and AIT-DOSE UV Dose (CCP2)

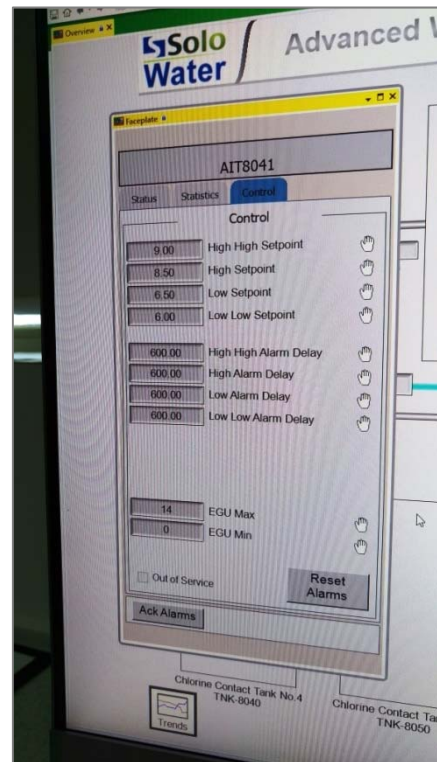
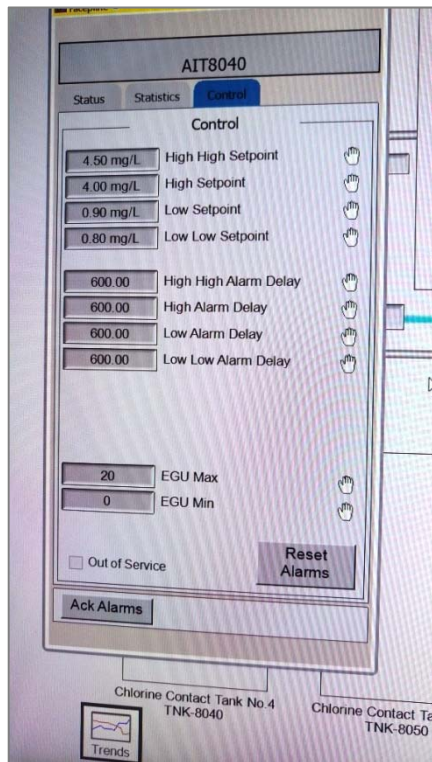



Figure A.4.3 SCADA setpoint screen for Instrument AIT1051 MBR Permeate Turbidity (CCP3)

Table A.5 New Infrastructure Audit Table – WIC Reg Sched 1 cl.3(a), (b) and (c)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.3(a), (b) and (c)	<p>The water or sewerage infrastructure is properly designed and constructed, operated in a safe and reliable manner and maintained in a proper condition, having regard to:</p> <p>(a) the purposes for which it is licensed;</p> <p>(b) the Licence conditions; and</p> <p>(c) any publicly available standards or codes relating to its design, construction, operation and maintenance.</p>	<div></div> <div>Compliant</div>
Risk	Target for Full Compliance	
<p>This represents high operational risk. Proper design and construction, safe and reliable operation and condition maintenance is essential to the effective delivery of agreed levels of service.</p>	<p>Evidence that the infrastructure is properly designed and constructed, and demonstration that it can be operated in a safe and reliable manner and properly maintained, having regard for the purposes for which it is licensed, the Licence conditions and any publicly available standards or codes. Evidence of procedures for ensuring that practices are kept up to date with any changes to such publicly available standards or codes.</p>	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018.NSW Government, <i>Network Operator’s Licence No: 16_035</i> (as issued on 22 March 2016).Planit Consulting, <i>Review of Environmental Factors; Part 5 – EP&A Act, 1979; Sewage Treatment Plant & Sewage Reticulation Network; Catherine Hill Bay Scheme Stages 1 & 2</i> (Revision E), 29 July 2015, section 9.Solo Water, <i>Catherine Hill Bay Water Utility; Operational Environmental Management Plan; Stage 2</i> (Revision 2.0), 10 October 2018, table 2 (page 18).Solo, <i>Internal Recycling and Waste Minimisation Procedure</i> (IMS-ENVM-D-3602) (Issue No: 2.0) August 2017.Pressure Sewer Solutions, <i>Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW</i> (Revision 3), 24 October 2013.Pressure Sewer Solutions, <i>Catherine Hill Bay; Pressure Sewerage System Masterplan Report</i> (Revision 3), 24 October 2013.		

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- Pressure Sewer Solutions, *Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013. Cardno, *Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design* (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018, sections 3.1.1 and 3.1.4.
 - Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.
-

Summary of reasons for grade

Catherine Hill Bay Water demonstrated, through the provision of documentation and audit site inspections, that the Stage 2 Scheme infrastructure that is to be brought into commercial operation has been properly designed and constructed and is capable of being safely operated and maintained having regard for:

- the purposes for which it is licensed;
- the Licence conditions; and
- any publicly available standards or codes relating to its design, construction, operation or maintenance (including typical industry practice).

Accordingly, Catherine Hill Bay Water is deemed to have demonstrated compliance with this obligation.

Discussion and notes

Overview:

A separate Licence Plan Audit,⁹¹ conducted in conjunction with this audit, considers in detail the arrangements in relation to the design, construction, operation and maintenance of the infrastructure. That audit found that:

“The Infrastructure Operating Plan, in conjunction with referenced supporting documentation, appropriately indicates the arrangements adopted in relation to the design, construction, operation, maintenance and renewal (life cycle management) of the infrastructure that is the subject of this audit.”

Implementation of those arrangements has been discussed (in part) in Table A.3 and Table A.4. The manner in which regard has been given to the purposes for which the infrastructure is licensed; the Licence conditions; and the guidance presented in publicly available standards or codes is discussed in the following.

Purposes for which the Infrastructure is Licensed:

Network Operator's Licence No: 16_035 authorises use of the infrastructure for the following purposes:⁹²

- non-potable water infrastructure:
“Toilet flushing, laundry machine cold water connection, irrigation of private lots and footpaths, outdoor cleaning and washdown (including car and bin washing).”
- drinking water infrastructure:
“Drinking water and fire water.”
- sewerage infrastructure:
“Sewage collection, transport, treatment, effluent transfer to non-potable system.”

Following review of the management plans (*Infrastructure Operating Plan, Drinking Water Quality Management*

⁹¹ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 2 Scheme)* (Version 2.0), November 2018, table A.1.

⁹² *Network Operator's Licence*, tables 1.3, 2.3 and 3.3.

Plan and Sewage Management Plan), the design documentation and documented operation and maintenance procedures, as well as inspection of the constructed infrastructure, it is apparent that the infrastructure has been properly designed and constructed, and is capable of being operated in a safe and reliable manner and maintained in a proper condition having regard for the purposes for which it is licensed. This assessment is supported by the more detailed discussion presented in Table A.3.

Licence Conditions:

Licence conditions that impact on the design, construction, operation and maintenance of the infrastructure are principally those included in Schedule A, including:

- Clause A2 requires the implementation of “... *environmental mitigation measures substantially consistent with the environmental risk mitigation measures identified in ... the Review of Environmental Factors (REF) in carrying out any activities authorised under clause S1 and S3 of this Licence.*”

The REF identifies a number of mitigation measures including (for example):⁹³

- *All Membrane Bioreactor biological tanks are fully enclosed and passively ventilated through McBerns activated carbon filters located on the roof of the Sewage Treatment Plant building* (odour mitigation) – all MBR process tanks (anaerobic, anoxic and aeration) where gas is produced are fully enclosed with positive extraction of gases through an odour scrubbing unit (refer Figures A.5.1 and A.5.2).
- *A fire hydrant is to be located at site entrance into the Sewage Treatment Plant to allow for connection to the reticulated water supply and sprinkler system is to be installed between the built structures and bushfire threat* (bushfire) – both a fire hydrant (with standpipe) and sprinkler system (refer Figure A.5.3) were sighted during the audit site inspection.
- *Detailed procedures for waste handling including storage and disposal procedures are to be established and included within the Operation Environmental Management Plan (waste)* – the *Operational Environmental Management Plan (OEMP)*⁹⁴ identifies this requirements and references the *Internal Recycling and Waste Minimisation Procedure*,⁹⁵ which in turn refers to other related procedures (not sighted).
- *A Recycled Water Management Plan and Drinking Water Quality Management Plan are to be prepared* (public health) – both management plans have been prepared and their adequacy assessed as part of a separate Licence Plan Audit.⁹⁶
- *Consultation is to be undertaken with NSW Health regarding the regulation, management and prevention of public health issues as part of the preparation of the Recycled Water Management Plan and Drinking Water Quality Management Plan* (public health) – compliance with this mitigation measure is discussed in detail in Table A.16.

- Clauses A3, A4 and A5 require the development and implementation of environmental management plans in relation to the construction, operation and maintenance of “Relevant Recycling Infrastructure”, being infrastructure described in clause S1 and table 1.2 or clause S3 and table 3.2 (i.e. non-potable water or sewerage infrastructure).

Compliance with the requirements of clause A3 is discussed in Table A.10 and the requirements of clause A4 in Table A.11 (full compliance has been assessed in both cases).

Clause A5 requires the Licensee to operate and maintain the “Relevant Recycling Infrastructure” consistently with the Operational Environmental Management Plan (OEMP). Whilst no evidence to the contrary was identified during the audit site inspection, it is noted that the infrastructure that is the subject of this audit has not yet commenced commercial operation. Accordingly, compliance with the requirements of clause A5 should be further assessed as part of a future Operational Audit.

- Clause A8 requires the development of a strategy for tankering out of excess non-potable water.

⁹³ Planit Consulting, *Review of Environmental Factors; Part 5 – EP&A Act, 1979; Sewage Treatment Plant & Sewage Reticulation Network; Catherine Hill Bay Scheme Stages 1 & 2* (Revision E), 29 July 2015, section 9.

⁹⁴ Solo Water, *Catherine Hill Bay Water Utility; Operational Environmental Management Plan; Stage 2* (Revision 2.0), 10 October 2018, table 2 (page 18).

⁹⁵ Solo, *Internal Recycling and Waste Minimisation Procedure* (IMS-ENVM-D-3602) (Issue No: 2.0) August 2017.

⁹⁶ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 2 Scheme)* (Version 2.0), November 2018, table A.1.

Compliance with this requirement is discussed in Table A.12; full compliance has been assessed.

- Clause A9 requires that arrangements are in place for the disposal of excess sewage (deemed to be sewage generated in the serviced area that cannot be effectively treated by the proposed treatment plant). Compliance with this requirement is discussed in Table A.13; full compliance has been assessed.

Compliance with Standards and Codes:

As reported in Table A.3, the *Drinking Water Master Plan*,⁹⁷ *Sewerage Master Plan*⁹⁸ and *Recycled Water Master Plan*⁹⁹ provide the design basis for the schemes at Catherine Hill Bay. Both the *Infrastructure Operating Plan* and the Master Plans identify the relevant codes and standards for design and construction of the works. Principal amongst these standards are the following codes published by the Water Services Association of Australia (WSAA):

- Water Supply Code of Australia, WSA 03-2012, Sydney Water Edition;
- Sewerage Code of Australia, WSA 02-2009, Sydney Water Edition; and
- Pressure Sewer Code of Australia, WSA 07-2007.

Review of construction drawings for the Stage 2 civil works¹⁰⁰ (for example) reveals that the designs appear to be compliant with standards. The drawings also reference the relevant standards in relation to materials and construction requirements. In addition to the WSAA Codes, these include (for example) AS 1379 *Specification and supply of concrete*, AS 3798 *Guidelines on earthworks for commercial and residential developments* and AS/NZS 3000 *Electrical installations*.

The referenced standards and codes, along with industry practice, provide guidance relevant to the operation and maintenance of the infrastructure, as well as its design and construction. Knowledge of industry practice is held by qualified and experienced personnel; as reported in Table A.1, Catherine Hill Bay Water has the technical capacity (including extensive industry experience) to carry out the activities authorised by the Licence.

Observations made during the audit site inspections confirmed the assessment that the infrastructure is compliant with relevant standards, codes and industry practice. Some relevant observations are summarised as follows:

- Pipe materials – visible pipe is compliant with the relevant standards and is appropriately coloured or labelled (refer Figure A.5.4):
 - Drinking water – blue striped PE with labelling;
 - Recycled water – lilac striped PE with labelling; and
 - Raw sewage and permeate – cream striped PE or black PE with labelling.
- Plant service water is clearly identified as recycled water (refer Figure A.5.5).
- The chemical dosing facilities (refer Figure A.5.6 and A.5.7) appeared to be compliant with requirements, as follows:
 - All chemicals were stored and dosing equipment located within bunded areas, which were clear of obstructions (other than stored chemicals). The capacity of the bunded areas appeared to be well in excess of the volume of chemicals stored therein.
 - All equipment was well labelled.
 - A safety shower and eye wash was installed and a spill kit in place.

⁹⁷ Pressure Sewer Solutions, *Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.

⁹⁸ Pressure Sewer Solutions, *Catherine Hill Bay; Pressure Sewerage System Masterplan Report* (Revision 3), 24 October 2013.

⁹⁹ Pressure Sewer Solutions, *Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.¹⁰⁰ Cardno, *Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design* (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018.

¹⁰⁰ Cardno, *Solo Water; Catherine Hill Bay Water; Waste Water Treatment Plant; Civil Engineering Design* (Drawing Nos: SW-56-WWTP-WAE-1000 to 1032 (27 sheets)) (Revision X), 28 June 2018.

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- All pipework and equipment was well labelled (refer Figures A.5.1 and A.5.8).
 - Backflow prevention was in place on the site recycled water supply (refer Figure A.5.9). Tags indicate test status.
 - Roof access ladders were fitted with safety cages and guard railing fitted to roof access platforms. These appeared to be compliant with the requirements of AS 1657 *Fixed platforms, walkways, stairways and ladders - Design, construction and installation*.
 - The temporary cross connection between the drinking water and recycled (potable and non-potable) water networks was inspected. This connection comprises two isolation valves with a pipe bend between (the bend will facilitate easy removal).
The requirement to physically remove this connection is documented in the *Operator's Manual; Distribution System Networks; Stage 2*.¹⁰¹ The *Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2*¹⁰² also indicates that the cross connection isolation valve (V-GT-9957) is to be closed prior to start-up of the recycled water pumping station.

Summary:

In summary, it is apparent that the infrastructure has been properly designed and constructed, and is capable of being operated in a safe and reliable manner and maintained in a proper condition having regard for any publicly available standards or codes relating to its design, construction, operation and maintenance.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹⁰¹ Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Distribution System Networks; Stage 2* (Revision 2.0), 21 September 2018, sections 3.1.1 and 3.1.4.

¹⁰² Solo Water, *Catherine Hill Bay Water Utility; Operator's Manual; Recycled Water Treatment Plant (RWTP); Stage 2* (Revision 1.0), 19 September 2018.



Figure A.5.1 MBR process tanks (anaerobic, anoxic and aeration) where gas is produced are fully enclosed with positive extraction of gases through an odour scrubbing unit.



Figure A.5.2 McBerns odour scrubbing unit (filter) located adjacent to the treatment plant building.



Figure A.5.3 Fire sprinkler system between the treatment plant building and bushfire threat (bushland).



Figure A.5.4 Pipework labelling and colour coding – blue striped for potable water and cream striped for MBR permeate.



Figure A.5.5 Service water installations are appropriately colour coded. Note signage in the background.



Figure A.5.6 Bunded chemical dosing area; dosing pumps in background.



Figure A.5.7 Bunded chemical dosing area; dosing pumps in background.



Figure A.5.8 Extensive labelling is in place on all tank connections (for example).




Figure A.5.9 Backflow prevention.



Figure A.5.10 Roof access ladders fitted with safety cages and lockable gates.

Table A.6 New Infrastructure Audit Table – WIC Reg Sched 1 cl.6(2)(a) and WIC Reg Sched 1 cl.13(2)(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.6(2)(a) and WIC Reg Sched 1 cl.13(2)(a)	The Infrastructure Operating Plan is fully implemented and kept under regular review and all of the licensee’s activities are carried out in accordance with that Plan.	<div></div> <div>Compliant</div>
Risk	Target for Full Compliance	
This represents high operational risk. Implementation of the <i>Infrastructure Operating Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Infrastructure Operating Plan</i> is fully implemented and the Licensee’s activities are carried out in accordance with that <i>Plan</i> ; evidence that the <i>Plan</i> is kept under regular review.	
Evidence sighted		
<div><div></div><div>Interviews with Catherine Hill Bay Water personnel on 18 October 2018.</div></div> <div><div></div><div>Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.</div></div> <div><div></div><div>Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.</div></div> <div><div></div><div>Solo, <i>CHB Regulatory & Formal Requirements</i> (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018].</div></div>		
Summary of reasons for grade		
Catherine Hill Bay Water demonstrated that the <i>Infrastructure Operating Plan</i> is capable of being fully implemented and, to the extent applicable, is currently being so. Catherine Hill Bay Water also demonstrated that it has arrangements in place to ensure that the <i>Infrastructure Operating Plan</i> is kept under regular review.		
Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.		
Discussion and notes		
Implementation of the Infrastructure Operating Plan:		
As noted in Table A.5, a separate Licence Plan Audit ¹⁰³ conducted in conjunction with this audit assessed that, in compliance with the <i>WIC Regulation</i> , the <i>Infrastructure Operating Plan</i> appropriately details of arrangements in relation to:		
<div><div></div><div>the design, construction, operation and maintenance of the infrastructure;</div></div> <div><div></div><div>the continued safe and reliable performance of the infrastructure;</div></div> <div><div></div><div>the continuity of the water supply and sewerage services;</div></div> <div><div></div><div>alternative water supplies and sewerage services when the infrastructure is inoperable; and</div></div> <div><div></div><div>the maintenance, monitoring and reporting of standards of service.</div></div>		

¹⁰³ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 2 Scheme)* (Version 2.0), November 2018, table A.1.

At the time of the audit, the infrastructure that is the subject of this audit had been designed and constructed, but not yet brought into commercial operation. Notwithstanding, it was found that the infrastructure is ready to commence operation.

Detailed assessment (as documented in this report) has found that:

- the infrastructure is capable of operating safely (refer Table A.3);
- the infrastructure is capable of operating in accordance with its *Infrastructure Operating Plan*, as well as its *Drinking Water Quality Management Plan*, *Recycled Water Quality Management Plan* and *Sewage Management Plan*, as appropriate (refer Table A.4); and
- the infrastructure has been properly designed and constructed and is capable of being safely operated and maintained having regard for the purposes for which it is licensed; the Licence conditions; and any publicly available standards or codes relating to its design, construction, operation or maintenance (including typical industry practice) (refer Table A.5).

It can therefore be reasonably concluded that the *Infrastructure Operating Plan* has been (to the extent applicable) and will be fully implemented and all of the Licensee's activities carried out in accordance with the *Plan*.

Regular Review of Infrastructure Operating Plan:

Catherine Hill Bay Water demonstrated that the *Infrastructure Operating Plan* is kept under regular review. The "Document Status" table indicates that the document has undergone several revisions during its development phase, including update to incorporate the recycled water plant and reflect the Stage 2 scheme arrangements.

Within the *Infrastructure Operating Plan*,¹⁰⁴ it is noted that:

"This plan will be regularly reviewed and updated as part of Solo Water's ongoing commitment to continual improvement in accordance with the IMS document management procedures detailed within the Quality Management Plan (IMS-QUAL-B-8401)."

Details of the responsibilities for review and the review process are also clearly documented.

The review process is managed through the Solo Group Citrix Document Control Platform. The *CHB Regulatory & Formal Requirements Register*¹⁰⁵ indicates that *Infrastructure Operating Plan* is to be reviewed annually; however, the *IMS Master Register* was not viewed to confirm consistency with the "Document Status" table in the *Plan* for the purposes of this audit.¹⁰⁶

On this basis, it is apparent that Catherine Hill Bay Water has arrangements in place to ensure that the *Infrastructure Operating Plan* is kept under regular review.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement


No opportunities for improvement have been identified in respect of this obligation.

¹⁰⁴ *Infrastructure Operating Plan*, section 8.

¹⁰⁵ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017 [updated 16 October 2018], *Network Operator Reporting* worksheet, items 14 and 35.

¹⁰⁶ The *IMS Master Register* was viewed on-line as part of the Stage 1 (Interim Scheme) audits and found to be consistent with the "Document Status" table in the *Infrastructure Operating Plan*.

Table A.7 New Infrastructure Audit Table – WIC Reg Sched 1 cl.8

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.8	<p>[8(1)] Any water meter that is connected to a licensee’s water main must comply with the requirements of the <i>Plumbing Code of Australia</i>, produced for all State governments by the Australian Building Codes Board, as in force from time to time.</p> <p>[8(2)] While water is being supplied to premises in respect of which a water meter has been installed, the licensee must ensure that:</p> <p>(a) the water meter is properly maintained and periodically tested;</p> <p>(b) the water meter is read at intervals of no more than 4 months; and</p> <p>(c) written notice of each meter reading is sent to the relevant licensed retail supplier.</p>	<p>Clauses 8(1) and 8(2):</p> <div><p>No Requirement</p></div>
Risk	Target for Full Compliance	
<p>This represents medium business risk.</p> <p>Non-compliant and/or inaccurate water meters may result in incorrect water consumption readings which are then reflected in customer billing.</p>	<p>Evidence that meters are compliant with the <i>Code</i>; that there are documented procedures for the management of the meter fleet; that meters are read at the required interval; and that readings are passed on to the relevant retail supplier.</p>	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.		
Summary of reasons for grade		
<p>There are no water meters used for billing purposes connected to the infrastructure that is the subject of this audit. Accordingly, it is assessed that there is no requirement for compliance with the requirements of either clause 8(1) or 8(2) of Schedule 1 of the <i>Regulation</i> for the purposes of this audit.</p>		
Discussion and notes		
<p>As the scope of this audit is limited to the treatment plant, on-site storage facilities for both recycled water and drinking water, the drinking water chlorine dosing facility and associated infrastructure to be operated by Catherine Hill Bay Water, there are no water meters used for billing purposes connected directly to the Licensee’s infrastructure that is subject to audit. Accordingly, for the purposes of this audit there is no requirement for compliance with this obligation.</p> <p>It is noted that compliance with the requirements of this obligation was assessed as part of the New Infrastructure Audit undertaken in respect of the Stage 1 (Interim Scheme) arrangements, which included the recycled water, drinking water and sewerage distribution/reticulation infrastructure.¹⁰⁷ That audit</p>		

¹⁰⁷ Cobbitty Consulting, *Catherine Hill Bay Water Utility; New Infrastructure Audit (Stage 1 – Interim Scheme)* (Revision 2.0), 17 August 2017, table A.7.

found that Catherine Hill Bay Water had demonstrated full compliance (to the extent applicable at the time) with the requirements of both clauses 8(1) and 8(2), although noted that implementation in respect of these obligations should be further assessed as part of a future Operational Audit.


Recommendations

There are no recommendations in respect of these obligations.

Opportunities for improvement


No opportunities for improvement have been identified in respect of these obligations.

Table A.8 New Infrastructure Audit Table – WIC Reg Sched 1 cl.11

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.11	Customer's installations are not connected to the licensee's water main or sewer main unless the installation complies with the <i>Plumbing and Drainage Act 2011</i> (NSW).	 No Requirement
Risk		Target for Full Compliance
This represents high operational risk. Compliance of customer installation with appropriate standards is essential to ensuring safe and reliable service delivery.		Evidence of customer installation compliance with the Plumbing Code of Australia.
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Catherine Hill Bay Water personnel on 18 October 2018. Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018. 		
Summary of reasons for grade		
There are no Customer's installations connected directly to the infrastructure that is the subject of this audit. Accordingly, it is assessed that there is no requirement for compliance with the requirements of clause 11 of the <i>Regulation</i> for the purposes of this audit.		
Discussion and notes		
<p>As the scope of this audit is limited to the treatment plant, on-site storage facilities for both recycled water and drinking water, the drinking water chlorine dosing facility and associated infrastructure to be operated by Catherine Hill Bay Water, there are no Customer's installations connected directly to the Licensee's infrastructure that is subject to audit. Accordingly, for the purposes of this audit there is no requirement for compliance with this obligation.</p> <p>It is noted that compliance with the requirements of this obligation was assessed as part of the New Infrastructure Audit undertaken in respect of the Stage 1 (Interim Scheme) arrangements, which included the recycled water, drinking water and sewerage distribution/reticulation infrastructure.¹⁰⁸ That audit found that Catherine Hill Bay Water had demonstrated full compliance (to the extent applicable at the time) with the requirements of this obligation, although noted that implementation in respect of this obligation should be further assessed as part of a future Operational Audit.</p>		
Recommendations		
There are no recommendations in respect of this obligation.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this obligation.		

¹⁰⁸ Cobbitty Consulting, *Catherine Hill Bay Water Utility; New Infrastructure Audit (Stage 1 – Interim Scheme)* (Revision 2.0), 17 August 2017, table A.8.

Table A.9 New Infrastructure Audit Table – Network Operator’s Licence cl.S1.1, S2.1 and S3.1

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.S1.1, S2.1 and S3.1	<p>In respect of non-potable water supply (S1.1), drinking water supply (S2.1) and sewerage services (S3.1):</p> <p>(a) The Licensee and the authorised third parties have constructed, operated and/or maintained the water industry infrastructure.</p> <p>(b) The Licensee and the authorised third parties have constructed, operated and/or maintained the water industry infrastructure specified in the Licence.</p> <p>(c) The Licensee and the authorised third parties have constructed, operated and/or maintained the water industry infrastructure for the authorised purposes.</p> <p>(d) The water industry infrastructure operated and/or maintained by the Licensee or an authorised third party does not extend outside the area of operations.</p>	<div> Compliant</div>
Risk	Target for Full Compliance	
This presents moderate risk that the appropriate operational controls may not be in place.	Evidence that the Licensee and authorised third parties have operated and/or maintained the specified infrastructure for the authorised purposes only within the area of operations.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018.Solo Water, <i>Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018;Solo Water, <i>Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018;Solo Water, <i>Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018;NSW Government, <i>Network Operator’s Licence No: 16_035</i> (as issued on 22 March 2016).Solo Water, <i>Process Flow Diagram; Drinking Water Stage 2</i> (Drawing No: 56-PW-PFD-ST2, Rev 1), 21 August 2017.Solo Water, <i>Process Flow Diagram; Stage 1 & 2 Recycled Water Supply</i> (Drawing No: 56-RW-PFD-ST1&2-2), 5 November 2018.Licence Application, Appendix 4.1.3, viewed at: https://www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/appendix_4_part_a_-_wica_licence_application_-_network_operator_-_catherine_hill_bay_water_utility_-_july_2013.pdf		

Summary of reasons for grade

On the basis of the documentation reviewed, observations made during site inspections and discussions with Catherine Hill Bay Water personnel during the audit, it was assessed that the specified water industry infrastructure that is to be brought into commercial operation under Stage 2 of the scheme development (and is the subject of this audit) has been constructed and will be operated and/or maintained by the Licence Holder and/or the authorised third parties for the authorised purposes and does/will not extend outside the specified area of operations. Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.

Discussion and notes

Evidence was sought that the Licensee and any authorised persons have constructed and are operating and/or maintaining the infrastructure specified in the Licence for the authorised purposes and that the infrastructure does not extend outside the specified area of operations.

Network Operator's Licence No: 16_035, as issued to Catherine Hill Bay Water Utility Pty Ltd (Catherine Hill Bay Water) on 22 March 2016, authorises activities associated with the supply of recycled (non-potable) water, the supply of drinking water and the provision of sewerage services. The specific provisions of the Licence are discussed in the following, noting that this audit relates to the infrastructure that is to be brought into commercial operation under Stage 2, including:

- a treatment plant for the production of recycled water from sewage;
- facilities for the on-site storage of recycled water prior to distribution; and
- on-site drinking water storage and chlorine dosing facility.

Once the treatment plant commences operation, recycled water be distributed for use via the recycled water network, which is currently charged with potable water.

Authorised persons:

The Licence nominates "*Solo Water Pty Ltd (ACN 160 013 614)*" as an "Authorised persons" in relation to the supply non-potable (recycled) water, the supply of drinking water and the provision of sewerage services.¹⁰⁹

On the basis of explanations provided and observations made during the audit, it is understood that the treatment plant, recycled water storage, potable water storage, chlorine dosing facility and all associated infrastructure has been constructed by contractors engaged directly by Catherine Hill Bay Water (or Solo Water). Catherine Hill Bay Water has retained overall responsibility for oversight of the construction activities; it has maintained a site presence comprising a Site Manager and Site Supervisor whose roles have been (in part) to ensure that all quality management procedures (including inspection and testing) have been satisfactorily completed (refer Table A.3 for more detailed discussion).

Review of documentation and audit discussions also confirms that operation and maintenance of the infrastructure will be managed by Catherine Hill Bay Water with support from Solo Water (its parent company). Roles and responsibilities are identified in the *Infrastructure Operating Plan*.¹¹⁰

Water industry infrastructure:

The Licence nominates the following infrastructure as specified "Water industry infrastructure" that includes the Stage 2 infrastructure:

- for use in the supply of non-potable water:¹¹¹

"1) *A treatment plant for non-potable water and other water infrastructure used, or to be used, in connection with the treatment plant, where components of the treatment plant or the other water infrastructure may also be used for*

¹⁰⁹ *Network Operator's Licence*, tables 1.1, 2.1 and 3.1.

¹¹⁰ *Infrastructure Operating Plan*, table 4-1.

¹¹¹ *Network Operator's Licence*, table 1.2.

-
- one or more of the following:*
- a) production of non-potable water;*
 - b) treatment of non-potable water;*
 - c) filtration of non-potable water;*
 - d) storage of non-potable water; and*
 - e) conveyance of non-potable water.*
- 2) *A reticulation network for non-potable water and other water infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or other water infrastructure may also be used for one or more of the following:*
- a) storage of non-potable water;*
 - b) conveyance of non-potable water; and*
 - c) treatment of non-potable water.”*
- for use in the supply of drinking water:¹¹²
- “A reticulation network for drinking water and other water infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or other water infrastructure may also be used for one or more of the following:*
- a) storage of drinking water;*
 - b) conveyance of drinking water; and*
 - c) treatment of drinking water.”*
- for use in the provision of sewerage services:¹¹³
- “1) treatment plant for sewage and other sewerage infrastructure used, or to be used, in connection with the treatment plant, where components of the treatment plant or the other sewerage infrastructure may also be used for one or more of the following:*
- a) production of treated non-potable water from sewage;*
 - b) treatment of sewage;*
 - c) filtration of sewage;*
 - d) storage of sewage; and*
 - e) conveyance of sewage.*
- 2) *A reticulation network for sewage and other sewerage infrastructure used, or to be used, in connection with the reticulation network, where components of the reticulation network or other sewerage infrastructure may also be used for one or more of the following:*
- a) storage of sewage; and*
 - b) conveyance of sewage.”*

Observations made during the audit and review of the documentation provided confirmed that the infrastructure to be operated by Catherine Hill Bay Water and the Authorised Persons under the Stage 2 scheme arrangements is consistent with the specified water industry infrastructure.

Authorised purposes:

The Licence nominates the following as the “Authorised purposes” for which the specified “Water industry infrastructure” can be used:¹¹⁴

- non-potable water infrastructure:
“Toilet flushing, laundry machine cold water connection, irrigation of private lots and footpaths, outdoor cleaning and washdown (including car and bin washing).”
 - drinking water infrastructure:
“Drinking water and fire water.”
-

¹¹² *Network Operator’s Licence*, table 2.2.

¹¹³ *Network Operator’s Licence*, table 3.2.

¹¹⁴ *Network Operator’s Licence*, tables 1.3, 2.3 and 3.3.

■ sewerage infrastructure:

“Sewage collection, transport, treatment, effluent transfer to non-potable system.”

The *Recycled Water Management Quality Management Plan* indicates that:¹¹⁵

“Recycled water taken from the recycled water supply network can be used for the following uses:

- Toilet flushing;*
- Laundry washing machine cold water tap;*
- Irrigation of private lots and footpaths;*
- Outdoor cleaning including bin & car washing and hosing down external paths & walls.”*

It is noted that the *Recycled Water Quality Management Plan* as initially submitted for the purposes of this audit (Version 1.0, dated 28 August 2018) indicated that recycled water would also be used for *“Supply to approved construction contractors water tankers for use in construction activities”*, including dust suppression and irrigation. It is understood that this use was identified in the management plans submitted with Catherine Hill Bay Water’s licence application, and is a use for which the supplied water would be suitable and safe; however, it was not reflected in the granted Licence and Catherine Hill Bay Water has updated the management plans (and advised that recycled water will not now be used for this purpose) to ensure compliance.

The *Process Flow Diagram; Drinking Water Stage 2*,¹¹⁶ which is included in the *Drinking Water Quality Management Plan*¹¹⁷ (and the *Infrastructure Operating Plan*),¹¹⁸ indicates that the proposed uses for drinking water are as follows:

“All potable water uses including:

- Drinking water;*
- Bathroom taps & shower;*
- Kitchen taps and dishwasher;*
- Laundry taps;*
- Hot water service;*
- Pool top-up;*
- Fire hydrants.”*

The *Process Flow Diagram; Stage 2 Recycled Water Treatment and Supply*,¹¹⁹ which is included in both the *Infrastructure Operating Plan*¹²⁰ and *Sewage Management Plan*,¹²¹ clearly shows that relevant components of the Stage 2 infrastructure will be used for the collection and transport of sewage.

Whilst specific end uses were not inspected as part of this audit, review of the documentation provided, observations made during the site inspections and discussions with Catherine Hill Bay Water personnel provided no indication that the infrastructure has been or will be used for non-authorised purposes.

Area of operations:

The Licence nominates the area of operations, i.e. the area within which the water industry infrastructure may be operated.¹²² The area of operations is defined by listing Lot/Deposited Plan (DP) numbers, which makes it difficult to clearly assess; however, the area within which the infrastructure is located appears to be consistent with the areas/allotments shown on the plans submitted in Appendix 4.1.3 of the Licence Application.¹²³

¹¹⁵ *Recycled Water Quality Management Plan*, section 2.2.1.2.

¹¹⁶ Solo Water, *Process Flow Diagram; Drinking Water Stage 2* (Drawing No: 56-PW-PFD-ST2, Rev 1), 21 August 2017.

¹¹⁷ *Drinking Water Quality Management Plan*, Appendix B.

¹¹⁸ *Infrastructure Operating Plan*, Appendix A.

¹¹⁹ Solo Water, *Process Flow Diagram; Stage 1 & 2 Recycled Water Supply* (Drawing No: 56-RW-PFD-ST1&2-2), 5 November 2018.

¹²⁰ *Infrastructure Operating Plan*, Appendix A.

¹²¹ *Sewage Management Plan*, Appendix B.

¹²² *Network Operator’s Licence*, tables 1.4, 2.4 and 3.4).

¹²³ Licence Application, Appendix 4.1.3, viewed at:

https://www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/appendix_4_part_a_-_wica_licence_application_-_network_operator_-_catherine_hill_bay_water_utility_-_july_2013.pdf

On this basis, it is assessed that the infrastructure to be operated and/or maintained by Catherine Hill Bay Water lies within the specified area of operations.


Recommendations

There are no recommendations in respect of these obligations.

Opportunities for improvement

No opportunities for improvement have been identified in respect of these obligations.

Table A.10 New Infrastructure Audit Table – Network Operator’s Licence cl.A3

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.A3	<p>Licensee must not commence, or authorise the commencement of, construction of any water industry infrastructure which is:</p> <p>a) described in Clause S1 and Table 1.2; and</p> <p>b) described in Clause S3 and Table 3.2.</p> <p>(Relevant Recycling Infrastructure)</p> <p>until after the Licensee has provided IPART with a Construction Environmental Management Plan (CEMP), and IPART has provided written approval of the CEMP to the Licensee.</p>	<div> Compliant</div>
Risk	Target for Full Compliance	
This represents moderate risk that environment may not be appropriately protected during construction of the infrastructure.	Evidence that the Licensee has provided IPART with a Construction Environmental Management Plan (CEMP) and that IPART has provided written approval prior to commencing construction of the identified infrastructure.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Letter (reference: D16/18237) dated 22 July 2016 from IPART to Catherine Hill Bay Water (re: <i>Notification of Approval of Construction Environmental Management Plan and Recycled Water Off-Site Disposal Plan for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)</i>).Planit Consulting, <i>Construction and Environment Management Plan; Wastewater Treatment Plant and Reticulation Network; Catherine Hill Bay Scheme Stages 1&2; 85 & 95 Flowers Drive, 6 Keene Street & 12 Montefiore Street, Catherine Hill Bay</i> (Version 3), June 2016.		
Summary of reasons for grade		
<p>Catherine Hill Bay Water provided evidence that IPART had approved, in writing, the <i>Construction Environmental Management Plan</i> in relation to the construction of the non-potable (recycled) water and sewerage infrastructure that is the subject of this report. Construction of the infrastructure had not commenced prior to IPART’s approval.</p> <p>Accordingly, Catherine Hill Bay Water is assessed to have demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>Catherine Hill Bay Water provided evidence that IPART has approved, in writing, a <i>Construction Environmental Management Plan</i> in relation to the construction of infrastructure at Catherine Hill Bay (referenced as the <i>CEMP (prepared by Planit Consulting, V3 dated June 2016)</i>).¹²⁴ By inference, it is also apparent that Catherine Hill Bay Water had submitted the <i>Construction Environmental Management Plan</i> (CEMP)¹²⁵ to IPART for review.</p>		

¹²⁴ Letter dated 22 July 2016 from IPART to Catherine Hill Bay Water (re: *Notification of Approval of Construction Environmental Management Plan and Recycled Water Off-Site Disposal Plan for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)*).

¹²⁵ Planit Consulting, *Construction and Environment Management Plan; Wastewater Treatment Plant and Reticulation Network; Catherine Hill Bay Scheme Stages 1 & 2; 85 & 95 Flowers Drive, 6 Keene Street & 12 Montefiore Street, Catherine Hill Bay* (Version 3), June 2016.

The CEMP is required in relation to construction of the non-potable water (clause S1 and table 1.2 of the Licence) and sewerage (clause S3 and table 3.2 of the Licence) infrastructure. It is understood that the intent of this requirement relates more specifically to the proposed treatment plant (the subject of this audit), construction of which had not commenced at the time of the previous audit conducted in July 2017. Given that IPART's approval of the CEMP was provided in July 2016, it is apparent that construction of the infrastructure had not commenced prior to IPART's approval.


Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table A.11 New Infrastructure Audit Table – Network Operator’s Licence cl.A4

Clause	Requirement	Compliance Grade
Network Operator's Licence cl.A4	<p>In addition to any requirements imposed by or under the Act or the Regulation, the Licensee must not commence commercial operation of, or authorise commercial operation of, the Relevant Recycling Infrastructure until the Licensee has provided:</p> <p>a) a report addressing how the environmental mitigation measures identified in the CEMP have been implemented during the design and construction of the Relevant Recycling Infrastructure (Report); and</p> <p>b) an Operational Environmental Management Plan (OEMP),</p> <p>to IPART, and IPART has provided written approval of the Report and the OEMP to the Licensee.</p>	<div></div> <div>Compliant</div>
Risk	Target for Full Compliance	
This represents moderate risk to the environment. It is important that measures to protect the environment are implemented both during construction and the subsequent operation and maintenance of the infrastructure.	Evidence that the Licensee has provided a Report and an Operational Environmental Management Plan (OEMP) to IPART and IPART has provided written approval of them.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Planit Consulting, <i>Construction and Environment Management Plan; Wastewater Treatment Plant and Reticulation Network; Catherine Hill Bay Scheme Stages 1&2; 85 & 95 Flowers Drive, 6 Keene Street & 12 Montefiore Street, Catherine Hill Bay</i> (Version 3), June 2016.Solo Water, <i>Licence Condition A4 a) CEMP Implementation Report</i>, 15 October 2018 (report in letter format).Email dated 16 October 2018 from Solo Water to IPART (re: <i>CHBWU CEMP Implementation Report 2018</i>).Solo Water, <i>Catherine Hill Bay Water Utility; Operational Environmental Management Plan; Stage 2</i> (Revision 2.0), 10 October 2018.Email dated 10 October 2018 from Solo Water to IPART (re: <i>OEMP Stage 2</i>).Letter (reference: D18/34568) dated 19 November 2018 from IPART to Solo Water /Catherine Hill Bay Water (re: <i>Notification of approval CEMP Implementation Report and OEMP for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)</i>).		
Summary of reasons for grade		
<p>Catherine Hill Bay Water provided evidence that it has submitted both a <i>CEMP Implementation Report</i> and an <i>Operational Environmental Management Plan</i> (OEMP) in respect of the Stage 2 infrastructure that is that subject of this report. It also provided evidence that IPART had subsequently approved both documents.</p> <p>Accordingly, it is assessed that Catherine Hill Bay Water has demonstrated compliance with this obligation.</p>		

Discussion and notes

Catherine Hill Bay Water provided evidence that it had submitted the following to IPART in relation to the infrastructure that is the subject of this audit, i.e. the recycled water plant and associated infrastructure:

- a report on the implementation of the *Construction Environmental Management Plan* (CEMP),¹²⁶ i.e. a *CEMP Implementation Report*¹²⁷ was submitted on 16 October 2018;¹²⁸ and
- an *Operational Environmental Management Plan* (OEMP)¹²⁹ was submitted on 10 October 2018.¹³⁰

Catherine Hill Bay Water subsequently provided evidence that IPART has approved, in writing, both the *CEMP Implementation Report* and *Operational Environmental Management Plan* for the: “... stage 2 works that include construction of CHBWU’s recycled water treatment plant and the associated plant, buildings and equipment”.¹³¹

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹²⁶ Planit Consulting, *Construction and Environment Management Plan; Wastewater Treatment Plant and Reticulation Network; Catherine Hill Bay Scheme Stages 1 & 2; 85 & 95 Flowers Drive, 6 Keene Street & 12 Montefiore Street, Catherine Hill Bay* (Version 3), June 2016.

¹²⁷ Solo Water, *Licence Condition A4 a) CEMP Implementation Report*, 15 October 2018 (report in letter format).


¹²⁸ Email dated 16 October 2018 from Solo Water to IPART (re: CHBWU CEMP Implementation Report 2018).

¹²⁹ Solo Water, *Catherine Hill Bay Water Utility; Operational Environmental Management Plan; Stage 2* (Revision 2.0), 10 October 2018.

¹³⁰ Email dated 10 October 2018 from Solo Water to IPART (re: OEMP Stage 2).

¹³¹ Letter (reference: D18/34568) dated 19 November 2018 from IPART to Solo Water/Catherine Hill Bay Water (re: *Notification of approval CEMP Implementation Report and OEMP for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)*).

Table A.12 New Infrastructure Audit Table – Network Operator’s Licence cl.A8

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.A8	<p>Licensee must not commence, or authorise the commencement of, construction of any water industry infrastructure described in clause S1.1 and Table 1.2 paragraph (1) until:</p> <p>(a) the Licensee has provided IPART a report prepared by a suitably qualified environmental consultant on the Licensee’s proposed strategy of tankering out excess non-potable water as set out in its REF. The report should include:</p> <ul style="list-style-type: none"> i) modelling of truck movements during significant wet weather events or periods in the 10 year period prior to the grant of this Licence at times when irrigation would not have been undertaken; ii) an estimation of the costs of trucking during those wet weather events or periods; iii) identification of Appropriate Facilities that have the capacity to accept excess recycled water (including during wet weather periods); iv) evidence of agreements with the Appropriate Facilities setting arrangements for accepting excess non-potable water; and v) confirmation that the configuration and size of the non-potable water storage tanks (as described in the REF) is adequate for the activities authorised by the Licence or, if the configuration or size of the non-potable water storage tanks is not considered adequate, advice as to any changes required to the configuration or size of the non-potable water storage tanks; and <p>(b) IPART has provided written approval of the report.</p>	<div style="text-align: center;">  Compliant </div>
Risk	Target for Full Compliance	
<p>This represents a low environmental risk. Notwithstanding, it is important that arrangements are in place for the disposal of excess recycled water in the event that the volume of recycled water produced exceeds demand.</p>	<p>Evidence that the Licensee has provided a report outlining its strategy for tankering out excess potable water to IPART and IPART has provided written approval of such report.</p>	
Evidence sighted	<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 18 October 2018. ▪ Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. ▪ Letter (reference: D16/18237) dated 22 July 2016 from IPART to Catherine Hill Bay Water (re: <i>Notification of Approval of Construction Environmental Management Plan and Recycled Water Off-Site Disposal Plan for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)</i>). 	

Summary of reasons for grade

Catherine Hill Bay Water provided evidence that IPART has approved a report that outlines its strategy for tankering out excess non-potable water. Such approval was provided prior to the commencement of construction of the nominated infrastructure.

Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.

Discussion and notes

Catherine Hill Bay Water provided evidence that IPART has approved, in writing, a report (referenced as the *Recycled Water Off-Site Disposal Plan (prepared by CARDNO, V3 dated 10 June 2016)*) which outlines Catherine Hill Bay Water's strategy for tankering out excess non-potable water.¹³² By inference, it is also apparent that Catherine Hill Bay Water had submitted such report to IPART for review.

As reported in Table A.2, Catherine Hill Bay Water has not yet commenced commercial operation of the infrastructure described in clause S1.1 and Table 1.2 paragraph (1), i.e. a treatment plant for non-potable water and associated infrastructure. Such infrastructure is the subject of this audit and will only commence commercial operation once approved .

Construction of infrastructure described in clause S1.1 and Table 1.2 paragraph (1), i.e. a treatment plant for non-potable water and associated infrastructure had not commenced at the time of the previous audit conducted in July 2017. Given that IPART's approval of the strategy for off-site disposal of excess non-potable water was provided in July 2016, it is apparent that construction of the infrastructure had not commenced prior to IPART's approval.

Recommendations


There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹³² Letter dated 22 July 2016 from IPART to Catherine Hill Bay Water (re: *Notification of Approval of Construction Environmental Management Plan and Recycled Water Off-Site Disposal Plan for Catherine Hill Bay Water Utility Pty Ltd (CHBWU)*).

Table A.13 New Infrastructure Audit Table – Network Operator’s Licence cl.A9

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.A9	<p>Before the Licensee brings the Water Industry Infrastructure described in Table 3.2 into commercial operation, the Licensee must provide written evidence of the following to IPART:</p> <ol style="list-style-type: none"> details of Appropriate Facilities that have the capacity to accept excess sewage; and evidence of agreements with the Appropriate Facilities setting out the arrangements for accepting excess sewage, and the Licensee must obtain IPART's written approval. 	 Compliant

Risk	Target for Full Compliance
This represents a high risk as it is essential that all sewage collected by the licensed sewerage infrastructure can be disposed of without detrimental impact to the environment.	Evidence that the Licensee has provided IPART with written evidence in relation to the disposal of excess sewage.

Evidence sighted

- Interviews with Catherine Hill Bay Water personnel on 18 October 2018.
- Solo Water, *Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2* (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018;
- Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).
- *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2018.
- Email chain of communication between IPART and Catherine Hill Bay Water with entries dated 22 November 2016, 16 May 2017 and 17 May 2017 (re: *CHB - IPART acknowledgement of Operational environmental management plan* [although relating to the requirements of Licence clause A9]).
- Letter (reference: D17/15821) dated 11 August 2017 from IPART to Catherine Hill Bay Water (re: *Notification of Approval – Condition A9 of Catherine Hill Bay Water Utility Pty Ltd’s Network Operator’s Licence No: 16_035*).

Summary of reasons for grade

Catherine Hill Bay Water demonstrated that it has arrangements in place in respect of the disposal of “excess sewage”, that it had provided details of such arrangements to IPART for review, and that IPART had subsequently provided written approval of those arrangements. It is noted that the agreement with the “Appropriate Facilities” for the disposal of excess sewage has recently been renewed.

Accordingly, Catherine Hill Bay Water is now assessed to be fully compliant with this obligation.

Discussion and notes

Under the Stage 2 scheme arrangements, whereby the sewage treatment plant will be operational and producing recycled water, excess sewage will be only be disposed of off-site during periods of abnormal operation or emergency conditions. Under normal operation, all sewage will be treated for re-use as recycled water.¹³³

¹³³ *Sewage Management Plan*, section 1.3.

Catherine Hill Bay Water has a *Service Agreement*¹³⁴ with Solo Resource Recovery (parent company of Solo Water/Catherine Hill Bay Water) in relation to the transport and disposal of sewage. Solo Resource Recovery, in turn, has a *Tankering Agreement*¹³⁵ with Hunter Water for the disposal of sewage into its system. Under the *Tankering Agreement*, which is valid for a period of three (3) years from the date of the Agreement (i.e. until 30 October 2021), Solo Resource Recovery “*may discharge a maximum of 150 kL per day of waste type unless given prior approval by the Corporation [Hunter Water]*”.

When assessing compliance with this obligation for the Stage 1 (Interim Scheme) New Infrastructure Audit, the auditor sighted various items of correspondence between Catherine Hill Bay Water and IPART,¹³⁶ including the provision of calculations to demonstrate that under the ultimate development of the Catherine Hill Bay schemes (which is understood to equate to 470 ET (allotments)), all sewage flows will be accommodated by the proposed treatment plant. As all flows will be accommodated by the plant, Catherine Hill Bay Water contends that there will be no excess sewage flows. Notwithstanding, it will retain the capacity to discharge sewage by tanker (subject to disposal agreement being renewed in the longer term).¹³⁷

IPART subsequently provided written approval¹³⁸ of Catherine Hill Bay Water’s arrangements for the disposal of excess sewage as required pursuant to this obligation.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹³⁴ Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).


¹³⁵ *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2018.

¹³⁶ Email chain of communication between IPART and Catherine Hill Bay Water with entries dated 22 November 2016, 16 May 2017 and 17 May 2017 (re: *CHB - IPART acknowledgement of Operational environmental management plan* [although relating to the requirements of Licence clause A9]).

¹³⁷ As noted above, the disposal agreement (*Tankering Agreement* with Hunter Water) has recently been renewed for a period of three (3) years.

¹³⁸ Letter dated (reference: D17/15821) 11 August 2017 from IPART to Catherine Hill Bay Water (re: *Notification of Approval – Condition A9 of Catherine Hill Bay Water Utility Pty Ltd’s Network Operator’s Licence No: 16_035*).

Table A.14 New Infrastructure Audit Table – Network Operator’s Licence cl.B2

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B2	<p>Before commencing to commercially operate the Specified Water Industry Infrastructure under this Licence, the Licensee must:</p> <ul style="list-style-type: none">(a) obtain insurance that is appropriate for the size and nature of the activities authorised under this Licence;(b) provide a certificate of currency of the insurance obtained to IPART; and(c) demonstrate that the insurance obtained is appropriate for the size and nature of the activities authorised under the Licence by providing a report to IPART from an Insurance Expert that:<ul style="list-style-type: none">(i) certifies that in an Insurance Expert’s opinion, the type and level of insurance obtained by the Licensee is appropriate for the size and nature of the activities authorised by the Licence;(ii) is in the form prescribed in the Reporting Manual.	<div></div> Compliant
Risk	Target for Full Compliance	
This presents no significant risk to the operational safety of the scheme, however, may present commercial risk to the Licensee.	<p>Evidence that the Licensee has:</p> <ul style="list-style-type: none">▪ obtained insurance appropriate for the size and nature of the Licensed activities;▪ provided copies of certificates of currency to IPART; and▪ provided the requisite report from an Insurance Expert to IPART; <p>prior to the commencement of commercial operation.</p>	
Evidence sighted		
<ul style="list-style-type: none">▪ Interviews with Catherine Hill Bay Water personnel on 18 October 2018.▪ Australian Insurance Solutions, <i>Catherine Hill Bay – Insurance Expert’s Report – Operational Use</i>, 16 October 2018 (report in letter format).▪ Email dated 16 October 2018 from Catherine Hill Bay Water to IPART (re: <i>CHB Insurance Experts Report - 2018 New Infrastructure Audit</i>).		
Summary of reasons for grade		
<p>Catherine Hill Bay Water demonstrated that it had obtained insurance in respect of the activities authorised under the Licence and submitted an Insurance Expert’s Report (including copies of insurance certificates of currency) that certified the appropriateness of that insurance to IPART for review.</p> <p>Accordingly, Catherine Hill Bay Water is assessed to be compliant with the requirements of this obligation.</p>		

Discussion and notes

Catherine Hill Bay Water provided a copy of an Insurance Expert's Report¹³⁹ which:

- indicated that (at the time of preparing the report, i.e. October 2018), Catherine Hill Bay Water and Solo Water had in place insurance policies in respect of the following that are relevant to the activities authorised by the Licence:
 - Industrial Special Risks (Property and Business Interruption);
 - Liability;
 - Professional Indemnity;
 - Contract Works Material Damage.
- included copies of each certificate of currency; and
- certified that:

“Australian Insurance Solutions certifies to IPART that in its opinion, the Licensee’s Insurance Arrangements are appropriate for the size and nature of the activities authorised under the Licence.”

and detailed the basis upon which the insurance expert had reached this opinion.

Catherine Hill Bay Water also provided evidence that the Insurance Expert's Report (including copies of the insurance certificates of currency) had been submitted to IPART.¹⁴⁰ Although reviewed in detail, the Insurance Expert's Report appears to be in the required format, as prescribed in the *Reporting Manual*.

Recommendations

There are no recommendations in respect of these obligations.



Opportunities for improvement

No opportunities for improvement have been identified in respect of these obligations.

¹³⁹ Australian Insurance Solutions, *Catherine Hill Bay – Insurance Expert's Report – Operational Use*, 16 October 2018.

¹⁴⁰ Email dated 16 October 2018 from Catherine Hill Bay Water to IPART (re: *CHB Insurance Experts Report - 2018 New Infrastructure Audit*).

Table A.15 New Infrastructure Audit Table – Network Operator’s Licence cl.B3

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B3	[B3.1] The Licensee must maintain insurance that is appropriate for the size and nature of the activities authorised under the Licence.	Clauses B3.1, B3.2 and B3.5:
	[B3.2] The Licensee must provide a copy of each certificate of currency of the insurance maintained by the Licensee to IPART in accordance with the Reporting Manual.	 Compliant
	[B3.3] If there is, or is to be, a change in:	Clauses B3.3 and B3.4:
	(a) the insurer, or underwriting panel in respect of an insurance policy held by the Licensee; or	 No Requirement
	(b) the type, scope or limit on the amount of insurance policy held by the Licensee,	
	in relation to the activities authorised under the Licence, the Licensee must provide a report to IPART in accordance with the Reporting Manual.	
	[B3.4] From time to time when requested in writing by IPART, the Licensee must provide a report to IPART, in the manner, form and time specified by IPART, from an Insurance Expert, certifying that in the Insurance Expert’s opinion, the type, scope or limit on the amount of insurance held by the Licensee is appropriate for the size and nature of the activities authorised under the Licence.	
	[B3.5] The Licensee must maintain professional indemnity insurance during the Design Phase and for a minimum period of 6 years from the date of completion of the Design Phase.	
<hr/>		
Risk	Target for Full Compliance	
This presents no significant risk to the operational safety of the scheme, however, may present commercial risk to the Licensee.	Evidence that the Licensee has: <ul style="list-style-type: none">maintained insurance appropriate for the size and nature of the Licensed activities;provided copies of certificates of currency to IPART as required;notified IPART of any changes to the insurance cover; andprovided a report from an Insurance Expert to IPART upon request.	
<hr/>		
Evidence sighted	<ul style="list-style-type: none">Interviews with Catherine Hill Bay Water personnel on 18 October 2018.Australian Insurance Solutions, <i>Catherine Hill Bay – Insurance Expert’s Report – Operational Use</i>, 16 October 2018 (report in letter format).Email dated 16 October 2018 from Catherine Hill Bay Water to IPART (re: <i>CHB Insurance Experts Report - 2018 New Infrastructure Audit</i>).IPART, <i>Network Operator’s Reporting Manual</i> (Issue No: 6), 29 June 2018.	

Summary of reasons for grade

Catherine Hill Bay Water demonstrated by the provision of insurance certificates of currency that, at the time of reporting, it continues to maintain insurance appropriate for the size and nature of the activities authorised under the Licence; such insurance includes professional indemnity insurance. The certificates of currency were provided in support of an Insurance Expert's Report (prepared and submitted pursuant to clause B2 of the Licence), consistent with the requirements of the Reporting Manual.

There have been no changes to the insurance arrangements detailed in the Insurance Expert's Report; accordingly there has been no requirement any such change to IPART. Furthermore, IPART has not requested the provision of a further Insurance Expert's Report pursuant to clause B3.4, so there has again been no requirement to do so.

Catherine Hill Bay Water is therefore assessed to have demonstrated compliance with the obligations under clauses B3.1, B3.2 and B3.5; however, there has been no requirement to comply with clauses B3.3 or B3.4.

Discussion and notes

Clause B3.1 – Maintaining appropriate insurance:

As reported in Table A.14, Catherine Hill Bay Water provided a copy of an Insurance Expert's Report¹⁴¹ which included certification that:

“Australian Insurance Solutions certifies to IPART that in its opinion, the Licensee's Insurance Arrangements are appropriate for the size and nature of the activities authorised under the Licence.”

Given that the insurance cover as assessed by the Insurance Expert remains in place at the time of reporting (certificates of currency included in the Insurance Expert's Report indicate that all policies expire on 1 December 2018), it is apparent that appropriate insurance continues to be maintained.

Clause B3.2 – Provision of insurance certificates of currency:

The *Reporting Manual* requires that insurance certificates of currency are provided to IPART:

- as evidence of policy in support of an Insurance Expert's Report, where required;¹⁴² and
- as evidence in the event of any change in insurance coverage.¹⁴³

As reported in Table A.14, Catherine Hill Bay Water demonstrated that it had submitted a copy of an Insurance Expert's Report, which included copies of the relevant insurance certificates of currency, to IPART as required by the *Reporting Manual*.

As reported below, there has been no change in insurance subsequent to submission of the most recent Insurance Expert's Report, so there has no requirement to submit certificates of currency for that purpose.

Clause B3.3 – Notification of changes to insurance arrangements:

Catherine Hill Bay Water advised that there has been no change to its insurance arrangements subsequent to submission of the most recent Insurance Expert's Report. Given that the insurance cover as assessed by the Insurance Expert remains in place at the time of reporting, it is apparent that there has been no change to Catherine Hill Bay Water's insurance arrangements in relation to the activities authorised under the Licence.

Accordingly, there has been no requirement to report any changes to IPART.

¹⁴¹ Australian Insurance Solutions, *Catherine Hill Bay – Insurance Expert's Report – Operational Use*, 16 October 2018.

¹⁴² *Reporting Manual*, section 2.3.1 and appendix F.

¹⁴³ *Reporting Manual*, section 2.3.2.

Clause B3.4 – Provision of Insurance Expert’s Report:

As reported in Table A.14, Catherine Hill Bay Water demonstrated that it had provided an Insurance Expert’s Report pursuant to the requirements of clause B2 of the Licence. IPART has not requested the provision of an Insurance Expert’s Report pursuant to clause B3.4; accordingly, there has been no requirement for Catherine Hill Bay Water to do so.

Clause B3.5 – Professional Indemnity Insurance:

The insurance detailed in the above referenced Insurance Expert’s Report and to which the certificates of currency appended to the report relate includes professional indemnity insurance. As reported above, the certificates of currency indicate that the current policies expire on 1 December 2018; therefore, the required professional indemnity insurance continues to be maintained at the time of reporting.


Recommendations

There are no recommendations in respect of these obligations.

Opportunities for improvement

No opportunities for improvement have been identified in respect of these obligations.

Table A.16 New Infrastructure Audit Table – Network Operator’s Licence cl.B4

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B4	<p>The Licensee must carry out activities authorised by the licence in compliance with any requirements of NSW Health that:</p> <p>(a) IPART has agreed to; and</p> <p>(b) are notified from time to time to the Licensee by IPART in writing.</p>	 Compliant
Risk	Target for Full Compliance	
<p>This potentially presents high operational risk. Compliance with agreed requirements of NSW Health is essential to ensuring that the activities authorised by the Licence are carried out in a manner that ensures public health and safety.</p>		<p>Evidence that the Licensee is carrying out its authorised activities in compliance with any requirements of NSW Health with which IPART has notified the Licensee that it must comply.</p>
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Catherine Hill Bay Water personnel on 18 October 2018. Letter (reference: D16/9122) dated 15 April 2016 from IPART to Catherine Hill Bay Water (re: <i>Notification of Determination of Licence Application under Water Industry Competition Act 2006 (NSW)</i>). Email chain of communication between NSW Health and Catherine Hill Bay Water with entries dated 26 May 2017, 1 June 2017, 8 June 2017, 13 June 2017 and 19 June 2017 (re: <i>Draft Water Quality Monitoring Procedure and Incident Response and Notification Procedure</i>). Solo, <i>Catherine Hill Bay Water Utility; Interim Water Supply Risk Assessment</i> (IMS-ENVM-G-3635-SW) (Version 2.1), 6 June 2017. Solo, <i>Catherine Hill Bay Water Utility; Risk Register – Stage 2</i> (IMS-ENVM-G-3761-SW) (Version 3.0), 17 July 2018. Letter (reference: D17/29411) dated 7 December 2017 from IPART to Catherine Hill Bay Water (re: <i>Notification of NSW Health Requirements under Licence Clause B4</i>). Email dated 28 August 2018 from Catherine Hill Bay Water to NSW Health (re: <i>CHB Recycled Water Management Plan Consultation</i>). Email dated 4 September 2018 from Catherine Hill Bay Water to NSW Health (re: <i>Revised DWQMP, SMP and INRNP</i>). Email from NSW Health to Catherine Hill Bay Water and response both dated 10 October 2018 (re: <i>Revised DWQMP, SMP and INRNP</i>) [also related to the RWQMP]. Solo Water, <i>Incident Response and Notification Management Plan</i> (Issue No: 3.1), November 2018. Solo, <i>Customer Complaints Procedure</i> (IMS-OPER-D-8313-SW) (Issue No: 2.1), November 2018. Email dated 19 November 2018 from Catherine Hill Bay Water to NSW Health (re: <i>Reporting Health Related Complaints - Doc Update</i>). 		

Summary of reasons for grade

Catherine Hill Bay Water demonstrated that it had addressed the requirements of NSW Health, which IPART had agreed to and notified it in writing, to the satisfaction of NSW Health. This includes requirements of which Catherine Hill Bay Water was notified at the time that its Licence was granted (April 2016) and subsequently (December 2017).

Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.

Discussion and notes

NSW Health requirements – as notified April 2016:

As reported in more detail for the Stage 1 (Interim Scheme) New Infrastructure Audit,¹⁴⁴ when notifying Catherine Hill Bay Water of the Minister's determination in respect of its Network Operator's Licence application,¹⁴⁵ IPART advised Catherine Hill Bay Water that it had agreed to, and was notifying Catherine Hill Bay Water of, the following requirements of NSW Health:

- *“CHBWU must consult with NSW Health in developing its risk assessments for managing drinking water and non-potable water*
- *CHBWU should develop a mosquito risk assessment and management plan that addresses impacts of artificial wetlands planned for the non-potable water process, including the collective detention and storage areas in the wastewater and reverse osmosis brine transpiration areas, and*
- *CHBWU must consult with NSW Health in developing incident and emergency response protocols (as outlined in the Australian Drinking Water Guidelines (ADWG) and Australian Guidelines for Water Recycling (AGWR)).”*

Catherine Hill Bay Water provided a copy of email correspondence¹⁴⁶ showing that NSW Health had provided comments in respect of documentation and Catherine Hill Bay Water had revised the documentation in response to those comments. It also showed that NSW Health had advised of its satisfaction with the documentation and the consultation process:

“Hunter New England Population Health acknowledges receipt of the finalised documents being:

- *Water Quality Monitoring Procedure*
- *Incident Response and Notification Plan*
- *CCP Free Chlorine Management Procedure*
- *Free Chlorine Field Verification Monitoring Procedure*
- *Adjusting CCP free chlorine set points at Chlorine skid*
- *Free Chlorine Sampling sites*
- *Risk Register – Interim Scheme - Drinking Water May 17*
- *CCP Sewage Pump Out Management Procedure*
- *Risk Register – Interim Scheme – Sewage May 17*

Thank you for engaging with this Office as part of the process in establishing appropriate protocols etcetera for the Catherine Hill Bay development.

From a health perspective, the documentation is to the satisfaction of this Office and we look forward to a continued relationship with regard to Catherine Hill Bay including any review of risk assessments and the like into the future.”

¹⁴⁴ Cobbitty Consulting, *Catherine Hill Bay Water Utility; New Infrastructure Audit (Stage 1 – Interim Scheme)* (Revision 2.0), 17 August 2017, table A.15.

¹⁴⁵ Letter (reference: D16/9122) dated 15 April 2016 from IPART to Catherine Hill Bay Water (re: *Notification of Determination of Licence Application under Water Industry Competition Act 2006 (NSW)*).

¹⁴⁶ Email chain of communication between NSW Health and Catherine Hill Bay Water with entries dated 26 May 2017, 1 June 2017, 8 June 2017, 13 June 2017 and 19 June 2017 (re: *Draft Water Quality Monitoring Procedure and Incident Response and Notification Procedure*).

Catherine Hill Bay Water also demonstrated that NSW Health had participated in workshops for both the original Interim Scheme risk assessment (May 2016) and the 12-month review and update of the risk assessment (May 2017).¹⁴⁷

It is noted that Catherine Hill Bay Water has not yet fully addressed the requirement in respect of a mosquito risk assessment and management plan; however, this is not yet required as wetlands do not form part of the non-potable water process under either Stage 1 or Stage 2 of the scheme development. Catherine Hill Bay Water advised that it has consulted with NSW Health in respect of this matter, and review of the *Risk Register – Stage 2*¹⁴⁸ reveals that “Vermin, mosquito or animal access to storage” was identified as a hazardous event and the associated risk assessed.

NSW Health requirements – as notified December 2017:

In a letter dated 7 December 2017,¹⁴⁹ IPART notified Catherine Hill Bay Water of the following requirements of NSW Health with which it is required to comply under this clause of the Licence:

“In accordance with clause B4, IPART has agreed to the following requirements of NSW Health:

- 1. The licensee must consult with NSW Health during the:*
 - a) detailed risk assessments for drinking and recycled water, as relevant*
 - b) technology assessments for drinking and recycled water, as relevant*
 - c) development of management plans for drinking and recycled water, as relevant, and*
 - d) development of an incident notification protocol with NSW Health for drinking and recycled water, as relevant.*
- 2. The licensee must:*
 - a) provide NSW Health with a copy of the new infrastructure audit report when it is provided to IPART and/or the Minister*
 - b) notify NSW Health when commencing commercial operation*
 - c) consult with NSW Health during the development of (and any amendment of) a procedure for notifying NSW Health of health-related complaints, and*
 - d) include a procedure for notifying NSW Health of health-related complaints, agreed to by NSW Health, in the retail supply management plan.”*

Compliance with each of these requirements is considered in the following:

■ *Item 1(a) – Consultation during detailed risk assessments:*

Review of the *Risk Register – Stage 2*¹⁵⁰ indicates that, further to involvement in workshops for both the original Interim Scheme risk assessment in May 2016 and the 12-month review and update of the risk assessment in May 2017, NSW Health (represented by Philippe Porigneaux, Environmental Health Manager, NSW Health Hunter New England Population Health) participated in a major review of the risk assessment “to incorporate the MBR/ AWTP, recycled water and onsite storages/ booster systems” in July 2018.

¹⁴⁷ Solo, *Catherine Hill Bay Water Utility; Interim Water Supply Risk Assessment* (IMS-ENVM-G-3635-SW) (Version 2.1), 6 June 2017, *Risk Register Drinking Water* worksheet.

¹⁴⁸ Solo, *Catherine Hill Bay Water Utility; Risk Register – Stage 2* (IMS-ENVM-G-3761-SW) (Version 3.0), 17 July 2018, *Risk Register Recycled Water* worksheet.

¹⁴⁹ Letter (reference: D17/29411) dated 7 December 2017 from IPART to Catherine Hill Bay Water (re: *Notification of NSW Health Requirements under Licence Clause B4*).

¹⁵⁰ Solo, *Catherine Hill Bay Water Utility; Risk Register – Stage 2* (IMS-ENVM-G-3761-SW) (Version 3.0), 17 July 2018.

Catherine Hill Bay Water also provided evidence to demonstrate that:

- the *Recycled Water Risk Assessment* (extract from the *Risk Register – Stage 2*) had been provided to NSW Health as an appendix to the *Recycled Water Quality Management Plan* on 28 August 2018;¹⁵¹ and
- the *Drinking Water Supply Risk Assessment* (extract from the *Risk Register – Stage 2*) had been provided to NSW Health as an appendix to the *Drinking Water Quality Management Plan* on 4 September 2018.¹⁵²

NSW Health subsequently (8 October 2018) provided comments in respect of both the *Drinking Water Supply Risk Assessment* and *Recycled Water Risk Assessment* to which Catherine Hill Bay Water responded on the same day, noting an intent to discuss the comments the following day.¹⁵³

This demonstrates that NSW Health was consulted during the detailed risk assessments.

■ Item 1(b) – *Consultation during technology assessments:*

Catherine Hill Bay Water has not undertaken a Technology Assessment, instead relying on an assessment of the treatment process as part of the Licence Plan Audit and site validation of plant performance, which has now been completed (refer Table A.3). Accordingly, there has been no requirement to consult with NSW Health in respect of this matter.

It is noted that, whilst the conduct of a Technology Assessment is encouraged, it remains voluntary under the *WTC Act Audit Guidelines*.

■ Item 1(c) – *Consultation during development of management plans:*

Catherine Hill Bay Water demonstrated that it had provided its Water Quality Management and Sewage Management Plans to NSW Health for comment, as follows:

- the *Recycled Water Quality Management Plan* and the following related procedures were provided on 28 August 2018:¹⁵⁴
 - *RWTP CCP 1 – MBR UF Membranes Management Procedure;*
 - *RWTP CCP 2 – UV Disinfection Management Procedure;*
 - *RWTP CCP 3 – Chlorine Contact Tank Management Procedure;*
 - *CCP Residual Chlorination Management Procedure;*
 - *Free Chlorine Field Verification Monitoring Procedure;* and
 - *Water Quality Verification Monitoring Procedure;* and
- the *Drinking Water Quality Management Plan* and *Sewage Management Plan* were provided on 4 September 2018.¹⁵⁵ As reported above, procedures related to drinking water quality management had previously been provided.

NSW Health subsequently (8 October 2018) provided comments in respect of both the *Drinking Water Quality Management Plan* and *Recycled Water Quality Management Plan* to which Catherine Hill Bay Water responded on the same day, noting an intent to discuss the comments the following day.¹⁵⁶

This demonstrates that NSW Health was consulted during development of the relevant management plans.

¹⁵¹ Email dated 28 August 2018 from Catherine Hill Bay Water to NSW Health (re: *CHB Recycled Water Management Plan Consultation*).

¹⁵² Email dated 4 September 2018 from Catherine Hill Bay Water to NSW Health (re: *Revised DWQMP, SMP and INRNP*).

¹⁵³ Email from NSW Health to Catherine Hill Bay Water and response both dated 10 October 2018 (re: *Revised DWQMP, SMP and INRNP*) [also related to the *RWQMP*].

¹⁵⁴ Email dated 28 August 2018 from Catherine Hill Bay Water to NSW Health (re: *CHB Recycled Water Management Plan Consultation*).

¹⁵⁵ Email dated 4 September 2018 from Catherine Hill Bay Water to NSW Health (re: *Revised DWQMP, SMP and INRNP*).

¹⁵⁶ Email from NSW Health to Catherine Hill Bay Water and response both dated 10 October 2018 (re: *Revised DWQMP, SMP and INRNP*) [also related to the *RWQMP*].

■ Item 1(d) – *Consultation during development of incident notification protocol:*

Catherine Hill Bay Water demonstrated that it had provided its *Incident Response and Notification Protocol*¹⁵⁷ to NSW Health for comment, as follows:

- Version 1.0, dated April 2017 was provided in April/May 2017,¹⁵⁸ and subsequently updated in May 2017 (Version 1.1) and June 2017 (Version 1.2) in response to NSW Health's comments.
- Version 3.0, dated August 2018 was provided on 4 September 2018.

NSW Health subsequently (8 October 2018) provided comments in respect of *Incident Response and Notification Protocol* to which Catherine Hill Bay Water responded on the same day, noting an intent to discuss the comments the following day.¹⁵⁹

This demonstrates that NSW Health was consulted during development of the *Incident Response and Notification Protocol*.

■ Item 2(a) – *Provision of copy of New Infrastructure Audit Report:*

A copy of the New Infrastructure Audit Report (this report) will be submitted to NSW Health upon finalisation. At the time of writing, the report is not yet available for submission to NSW Health.

■ Item 2(b) – *Notification when commencing commercial operation:*

Catherine Hill Bay Water has not, at the time of reporting, commenced commercial operation of the infrastructure that is the subject of this audit. Accordingly, it has not yet been necessary to notify NSW Health of the commencement of commercial operation pursuant to this requirement.

■ Item 2(c) – *Consultation during development/amendment of a procedure for notification of health-related complaints:*

Catherine Hill Bay Water has referenced the *Incident Response and Notification Protocol* in relation to arrangements in respect of the notification of health-related complaints. The *Customer Complaints Procedure*¹⁶⁰ identifies the need to notify NSW Health of any health-related complaints in accordance with the *Incident Response and Notification Protocol*.

Catherine Hill Bay Water provided evidence that it submitted both the *Incident Response and Notification Protocol* and *Customer Complaints Procedure* to NSW Health for comment following update to include reference to NSW Health notification of all health related customer complaints.¹⁶¹

■ Item 2(d) – *Inclusion of a procedure for notification of health-related complaints in the retail supply management plan:*

This requirement relates to the obligations of a Retail Supplier, and is therefore not applicable under the scope of this audit.

On the basis of this analysis, it is assessed that Catherine Hill Bay Water has complied with the requirements of NSW Health, as notified by IPART in writing, to the extent applicable (noting that some requirements (Items 2(a) and 2(b)) cannot yet be fulfilled).

Recommendations

There are no recommendations in respect of this obligation.

¹⁵⁷ Solo Water, *Incident Response and Notification Management Plan* (Issue No: 3.1), November 2018.

¹⁵⁸ Email chain of communication between NSW Health and Catherine Hill Bay Water with entries dated 26 May 2017, 1 June 2017, 8 June 2017, 13 June 2017 and 19 June 2017 (re: *Draft Water Quality Monitoring Procedure and Incident Response and Notification Procedure*).

¹⁵⁹ Email from NSW Health to Catherine Hill Bay Water and response both dated 10 October 2018 (re: *Revised DWQMP, SMP and INRNP*) [also related to the RWQMP].


¹⁶⁰ Solo, *Customer Complaints Procedure* (IMS-OPER-D-8313-SW) (Issue No: 2.1), November 2018.

¹⁶¹ Email dated 19 November 2018 from Catherine Hill Bay Water to NSW Health (re: *Reporting Health Related Complaints - Doc Update*).

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table A.17 New Infrastructure Audit Table – Network Operator’s Licence cl.B7

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B7	<p>Within 14 days of any change in relation to the following, the Licensee must notify IPART, and provide IPART with details, of the change in accordance with the Reporting Manual:</p> <ul style="list-style-type: none"> (a) any source from which the water handled by the Specified Water Industry Infrastructure is derived; (b) the Authorised Purposes of the water handled by the Specified Water Industry Infrastructure; (c) the identity of each licensed retail supplier or public water utility that has access to the infrastructure services provided by the Specified Water Industry Infrastructure for the purpose of supplying water to its customers; (d) any other water infrastructure to which the Specified Water Industry Infrastructure is connected; (e) the identity of each licensed retail supplier or public water utility that has access to infrastructure services provided by the Specified Water Industry Infrastructure for the purpose of providing sewerage services to its customers; (f) any other sewerage infrastructure to which the Specified Water Industry Infrastructure is connected; and (g) the arrangements for the disposal of waste from the Specified Water Industry Infrastructure. 	 No Requirement
Risk	Target for Full Compliance	
This presents a moderate risk. Notification to IPART is required so that it can assess the impact of the change on the safe operation of the specified water industry infrastructure.		In the event that the Licensee makes any change in respect of the provisions nominated under this obligation, it has provided the requisite notification to IPART.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 18 October 2018. ▪ Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. ▪ Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018. ▪ Solo Water, <i>Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018; ▪ Solo Water, <i>Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018; ▪ Solo Water, <i>Catherine Hill Bay Water Utility; Sewage Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3728-SW) (Revision 2.1), 5 November 2018. 		

Summary of reasons for grade

Catherine Hill Bay Water has not made, nor does it currently plan to make, any changes in respect of the provisions nominated under this obligation. Accordingly, notification to IPART has not been required and a “No Requirement” compliance grade has been assigned in respect of this obligation.

Discussion and notes

Evidence was sought that Catherine Hill Bay Water had not made any changes in respect of the provisions nominated under this obligation or, if it had made any such changes, it had notified IPART within 14 days in accordance with the *Reporting Manual*.

Catherine Hill Bay Water advised that it has not, nor does it propose at this stage to make any changes in respect of the nominated provisions. No evidence to the contrary was identified as part of the Audit.


Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

Table A.18 New Infrastructure Audit Table – Network Operator’s Licence cl.B10

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B10	<p>[B10.1] If a code of conduct has not been established under cl.25 of the Regulation, the Licensee must establish its own code of conduct (Licensee’s Code of Conduct) by the date specified by IPART in accordance with this clause B.10.</p> <p>[B10.2] The Licensee’s Code of Conduct must set out the respective responsibilities of:</p> <ul style="list-style-type: none"> (a) the Licensee; (b) each licensed network operator, licensed retail supplier and/or public water utility that: <ul style="list-style-type: none"> (i) supplies water or provides sewerage services by means of; or (ii) constructs, maintains or operates, any other water industry infrastructure in the Specified Area of Operations, <p>by, at a minimum, providing for:</p> <ul style="list-style-type: none"> A who is responsible for repairing, replacing or maintaining any pipes, pumps, valves, storages or other infrastructure connecting the Specified Water Industry Infrastructure to the water industry infrastructure; B who is responsible for water quality; C who is liable in the event of unavailability of water; D who is liable in the event of failure of the Specified Water Industry Infrastructure; E the fees and charges payable in respect of the use of the Specified Water Industry Infrastructure; and F who is responsible for handling customer complaints. <p>[B10.3] Before the Licensee brings the Specified Water Industry infrastructure into commercial operation or by a later date specified by IPART (if any), the Licensee’s Code of Conduct must be agreed in writing between the Licensee and other licensed network operators, licensed retail suppliers and/or public water utilities referred to in clause B10.2.</p> <p>[B10.4] <i>[Not applicable]</i></p> <p>[B10.5] The Licensee must not contravene the Licensee’s Code of Conduct to the extent that it makes the Licensee responsible or liable for the matters set out in it.</p>	 <p>Non-compliant (non-material)</p>

Risk

This presents a high operational risk. In the absence of a clear definition of responsibilities, there is no guarantee that the licensed services will continue to be delivered in a safe and effective manner.

Target for Full Compliance

Evidence that, in the event that a code of conduct has not been established under cl 25 of the Regulation, there is an agreement setting out the respective responsibilities of the Licensee and the party(ies) that are responsible for connected infrastructure.

Evidence sighted

- Interviews with Catherine Hill Bay Water personnel on 18 October 2018.
- Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev0), 17 May 2017.
- Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev2), 5 July 2017.
- Email dated 11 May 2017 from Catherine Hill Bay Water to Central Coast Council (re: *FW: Pumpstation Meter Reading and Contact Details*).
- Email chain of communication between Catherine Hill Bay Water and Central Coast Council with entries dated 11 May 2017, 1 June 2017, 6 June 2017, 15 June 2017, 27 June 2017 and 30 June 2017 (re: *Solo Water code of conduct - Catherine Hill Bay*).
- Email dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *CHB-CCC-Code of Conduct -Draft 170511 Rev2 5_7_17.docx*).
- Letter dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Letter – Code of Conduct*).
- Email dated 7 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Interim Letter to Solo Water - Code of Conduct*).
- Letter (reference: D18/25784) dated 26 September 2018 from IPART to Catherine Hill Bay Water (re: *Clause B10.3 of Catherine Hill Bay Water Utility Pty Ltd's (CHBWU) network operator's licence No. 16_035 and clause B9.3 of Solo Water Pty Ltd's (Solo Water) retail supplier's licence No 15_036R*).
- Letter dated 1 March 2018 from the Department of Planning and Environment to Catherine Hill Bay Water (re: *Catherine Hill Bay Water Utility Pty Ltd – Network Operator's Licence No. 16_035*).
- Letter dated 27 March 2018 from Catherine Hill Bay Water to the Department of Planning and Environment (re: *Solo Water Retail Licence No. 15_036R and CHBWU Network Operator Licence No. 16_035 – Monopoly Supplier consideration*).
- Letter dated 10 August 2018 from the Minister for Energy and Utilities to Catherine Hill Bay Water (re: *Catherine Hill Bay Water Utility Pty Ltd – Network Operator's Licence No. 16_035*).
- Email dated 23 August 2018 from Catherine Hill Bay Water to IPART (re: *Request for Extension of Time for completion of the Code of Conduct with CCC*).
- Letter (reference: D18/25784) dated 26 September 2018 from IPART to Catherine Hill Bay Water (re: *Clause B10.3 of Catherine Hill Bay Water Utility Pty Ltd's (CHBWU) network operator's licence No. 16_035 and clause B9.3 of Solo Water Pty Ltd's (Solo Water) retail supplier's licence No 15_036R*).
- Letter dated 8 October 2018 from Catherine Hill Bay Water to IPART (re: *Code of Conduct – Central Coast Council; Catherine Hill Bay Water Utility Scheme*).
- Letter (reference: D18/32108) dated 6 November 2018 from IPART to Catherine Hill Bay Water (re: *Compliance with the Water Industry Competition Act 2006 - Voluntary Undertaking*).

Summary of reasons for grade

Although a Licensee's Code of Conduct has not yet been formally agreed, a draft *Code of Conduct* has been established and Central Coast Council has provided a letter indicating its intent to enter into the proposed *Code of Conduct* with Catherine Hill Bay Water (in relation to the supply of bulk potable water to the Catherine Hill Bay Water schemes). Review of the draft *Code of Conduct* available at the time of reporting reveals that it addresses the requisite matters, and there is no evidence that the terms of the proposed *Code of Conduct* have been contravened.

However, as the proposed *Code of Conduct* has not yet been formalised (agreed in writing by the two parties), Catherine Hill Bay Water has not demonstrated full compliance with this obligation. Given that the draft *Code of Conduct* remains in place and IPART has accepted a Voluntary Undertaking from Catherine Hill Bay Water in respect of this matter, the non-compliance is not considered to be material.

Discussion and notes

Overview:

As reported in respect of the Stage 1 (Interim Scheme) New Infrastructure Audit,¹⁶² the drinking water infrastructure to be owned and/or operated by Catherine Hill Bay Water will be connected to potable (drinking) water infrastructure owned and operated by Central Coast Council; Council will supply bulk potable water to Catherine Hill Bay Water (which has also been used to charge the recycled water network during Stage 1 (Interim Scheme) operation).

Accordingly, in the absence of a Code of Conduct being established under clause 25 of the Regulation, it is necessary for Catherine Hill Bay Water to establish a Licensee's Code of Conduct with Central Coast Council pursuant to clause B10 of its Network Operator's Licence.

Under the Stage 2 scheme arrangements Central Coast Council, remains the only other licensed network operator, licensed retail supplier and/or public water utility for the purposes of these obligations (the licensed retail supplier for the area to be serviced by the Catherine Hill Bay Water schemes is Solo Water Pty Ltd, parent company of Catherine Hill Bay Water Utility Pty Ltd).

Clause B10.1 – Establishment of a Licensee's Code of Conduct:

Catherine Hill Bay Water has prepared a draft *Code of Conduct*¹⁶³ which was submitted to Central Coast Council on 11 May 2017¹⁶⁴ for review/comment prior to signing. There is evidence of follow-up by Catherine Hill Bay Water on 18 May 2017, 6 June 2017, 15 June 2017 and 27 June 2017,¹⁶⁵ prior to a meeting being held on 5 July 2017.

Following the meeting on 5 July 2017:

- Central Coast Council provided comments on the draft *Code of Conduct* prepared by Catherine Hill Bay Water;^{166,167} and
- Central Coast Council provided a letter confirming Council's intent to enter into the agreement (Code of Conduct).^{168,169}

¹⁶² Cobbitty Consulting, *Catherine Hill Bay Water Utility; New Infrastructure Audit (Stage 1 – Interim Scheme)* (Revision 2.0), 17 August 2017, table A.17.

¹⁶³ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev0), 17 May 2017.

¹⁶⁴ Email dated 11 May 2017 from Catherine Hill Bay Water to Central Coast Council (re: FW: *Pumpstation Meter Reading and Contact Details*).

¹⁶⁵ Email chain of communication between Catherine Hill Bay Water and Central Coast Council with entries dated 11 May 2017, 1 June 2017, 6 June 2017, 15 June 2017, 27 June 2017 and 30 June 2017 (re: *Solo Water code of conduct - Catherine Hill Bay*).

¹⁶⁶ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev2), 5 July 2017.

¹⁶⁷ Email dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *CHB-CCC-Code of Conduct -Draft 170511 Rev2 5_7_17.docx*).

The letter of intent from Council indicates that:

“We understand that as a condition of your WICA licence for the Catherine Hill Bay Scheme you are required to enter into a Code of Conduct with Central Coast Council in relation to the bulk water connection point at the Kanangra Drive Reservoir.

We are in the process of reviewing the draft Code of Conduct provided by Solo Water. Subject to our detailed review of this and satisfactory endorsement by senior management and Central Coast Council, we can confirm that we have intention to enter into this agreement with Solo Water.

Until the Code of Conduct is finalised and agreed between the parties, we can confirm that the Catherine Hill Bay Water Utility Scheme will be managed as a critical water user as per our Drinking Water Management System and the s307 approval already issued under the Water Management Act (2000).

We trust this adequate to allow for you to commence commercial operation of the Catherine Hill Bay Water Utility Scheme.”

It is therefore apparent that Catherine Hill Bay Water has taken steps to establish a Licensee’s Code of Conduct and that Central Coast Council has advised of its intent to enter into such arrangement (subject to final review and internal approval).

Clause B10.2 – Responsibilities to be addressed by the Code of Conduct:

Review of the revised draft *Code of Conduct*¹⁷⁰ (i.e. the version including Council’s comments, which remains current) reveals that the requisite matters are addressed as follows:

- Repair, replacement and maintenance of infrastructure – clause 1.4 *Delineation of Responsibilities* (in relation to all aspects of the potable water system upstream and downstream of the designated Connection Point);
- Water quality – clause 1.7 *Water Quality*;
- Unavailability of water – clause 1.6 *Water Outages/ Continuity of Supply*;
- Infrastructure failure – clause 1.4 *Delineation of Responsibilities* and clause 1.6 *Water Outages/ Continuity of Supply*;
- Fees and charges – clause 1.12 *Fees and Charges*; and
- Customer complaints – clause 1.11 *Customer Complaints*.

Accordingly, Catherine Hill Bay Water is considered to have demonstrated compliance with the requirements of clause B10.2, provided the draft *Code of Conduct* is formally agreed in its current form.

Clause B10.3 – Agreement by parties to the Licensee’s Code of Conduct:

Notwithstanding the provision of a letter a letter confirming Central Coast Council’s intent to enter into the agreement (the Licensee’s Code of Conduct)^{171,172} in July 2017, at the time of writing the *Code of Conduct* remains unsigned, i.e. it has not yet been agreed in writing by Catherine Hill Bay Water and Central Coast Council.

¹⁶⁸ Letter dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Letter – Code of Conduct*).

¹⁶⁹ Email dated 7 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Interim Letter to Solo Water – Code of Conduct*).

¹⁷⁰ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev2), 5 July 2017.

¹⁷¹ Letter dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Letter – Code of Conduct*).

¹⁷² Email dated 7 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Interim Letter to Solo Water – Code of Conduct*).

It is understood (based on reference in correspondence from IPART to Catherine Hill Bay Water)¹⁷³ that IPART granted an extension of time (beyond the commencement of commercial operation of the Stage 1 (Interim Scheme) infrastructure) such that Catherine Hill Bay Water to agree in writing a Code of Conduct with Central Coast Council by 30 June 2018.

Catherine Hill Bay Water advised that it had not pursued finalisation of the Code of Conduct whilst it awaited clarification in respect of a possible monopoly supplier declaration in relation to the Catherine Hill Bay Water schemes, which would likely have impacted any pricing arrangements between Catherine Hill Bay Water and Central Coast Council. The Department of Planning and Environment had notified Catherine Hill Bay Water of the possibility of such declaration in its potential in early March 2018,¹⁷⁴ Catherine Hill Bay Water had responded in late-March 2018;¹⁷⁵ however, advice from the Minister for Energy and Utilities that the declaration would not be made was not provided until August 2018.¹⁷⁶

Catherine Hill Bay Water requested as further extension to the time by which the Code of Conduct was to be in place (which had then passed);¹⁷⁷ however, IPART denied the request and in turn requested that Catherine Hill Bay Water provide a Voluntary Undertaking in respect of clause B10.3.¹⁷⁸ Catherine Hill Bay Water has provided such Voluntary Undertaking, which commits to have a Code of Conduct in place by 30 November 2019;¹⁷⁹ IPART has subsequently accepted that undertaking, noting that until such time that a Code of Conduct is formalised, Catherine Hill Bay Water will remain non-compliant with the requirements of clause B10.3.¹⁸⁰

Accordingly, Catherine Hill Bay Water is assessed to be non-compliant in respect of clause B10.3; however, given that:

- a draft *Code of Conduct* and Central Coast Council's letter of intent remains in place; and
 - IPART has accepted Catherine Hill Bay Water's Voluntary Undertaking in respect of this matter,
- the non-compliance is not deemed to be material (at this time).

Clause B10.5 – Contravention of the Licensee's Code of Conduct:

Although a formal Licensee's Code of Conduct is not yet in place, the auditors identified no evidence to indicate that Catherine Hill Bay Water has contravened the intent of the draft *Code of Conduct* (which remains in place).

¹⁷³ Letter (reference: D18/25784) dated 26 September 2018 from IPART to Catherine Hill Bay Water (re: *Clause B10.3 of Catherine Hill Bay Water Utility Pty Ltd's (CHBWU) network operator's licence No. 16_035 and clause B9.3 of Solo Water Pty Ltd's (Solo Water) retail supplier's licence No 15_036R*).

¹⁷⁴ Letter dated 1 March 2018 from the Department of Planning and Environment to Catherine Hill Bay Water (re: *Catherine Hill Bay Water Utility Pty Ltd – Network Operator's Licence No. 16_035*).

¹⁷⁵ Letter dated 27 March 2018 from Catherine Hill Bay Water to the Department of Planning and Environment (re: *Solo Water Retail Licence No. 15_036R and CHBWU Network Operator Licence No. 16_035 – Monopoly Supplier consideration*).

¹⁷⁶ Letter dated 10 August 2018 from the Minister for Energy and Utilities to Catherine Hill Bay Water (re: *Catherine Hill Bay Water Utility Pty Ltd – Network Operator's Licence No. 16_035*).

¹⁷⁷ Email dated 23 August 2018 from Catherine Hill Bay Water to IPART (re: *Request for Extension of Time for completion of the Code of Conduct with CCC*).

¹⁷⁸ Letter (reference: D18/25784) dated 26 September 2018 from IPART to Catherine Hill Bay Water (re: *Clause B10.3 of Catherine Hill Bay Water Utility Pty Ltd's (CHBWU) network operator's licence No. 16_035 and clause B9.3 of Solo Water Pty Ltd's (Solo Water) retail supplier's licence No 15_036R*).

¹⁷⁹ Letter dated 8 October 2018 from Catherine Hill Bay Water to IPART (re: *Code of Conduct – Central Coast Council; Catherine Hill Bay Water Utility Scheme*).

¹⁸⁰ Letter (reference: D18/32108) dated 6 November 2018 from IPART to Catherine Hill Bay Water (re: *Compliance with the Water Industry Competition Act 2006 - Voluntary Undertaking*).

Recommendations


The following recommendation is made in respect of these obligations:

- **REC-CHB2-NIA.01:** It is recommended that Catherine Hill Bay Water takes action to ensure that it updates the draft *Code of Conduct* (as necessary) and agrees in writing a Licensee's Code of Conduct with Central Coast Council no later than 30 November 2019, as committed in the Voluntary Undertaking dated 8 October 2018 that has been accepted by IPART.

Opportunities for improvement

No opportunities for improvement have been identified in respect of these obligations.

Table A.19 New Infrastructure Audit Table – Network Operator’s Licence cl.B11

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B11	If the Licensee proposes to operate the Specified Water Industry Infrastructure to supply water for an end-use which is not set out in the most recent Water Quality Plan provided to IPART, the Licensee must notify IPART in writing at least 3 months before commencing such operation.	 No Requirement
Risk	Target for Full Compliance	
This presents a moderate risk. Notification to IPART is required so that it can assess the impact of the change on the safe operation of the Specified Water Industry Infrastructure.		Evidence that, in the event that the Licensee has proposed to operate the Specified Water Industry Infrastructure to supply water for an end-use which is not set out in the most recent Water Quality Plan provided to IPART, the Licensee has provided the requisite 3 months notification before commencing such operation.
Evidence sighted		
<ul style="list-style-type: none"> Interviews with Catherine Hill Bay Water personnel on 18 October 2018. Site inspection of Stage 2 infrastructure at Catherine Hill Bay on 18 October 2018. Solo Water, <i>Process Flow Diagram; Drinking Water Stage 2</i> (Drawing No: 56-PW-PFD-ST2, Rev 1), 21 August 2017. Solo Water, <i>Catherine Hill Bay Water Utility; Infrastructure Operating Plan; Stage 2</i> (reference: IMS-OPER-B-8297-SW) (Revision 2.1), 5 November 2018. Solo Water, <i>Catherine Hill Bay Water Utility; Drinking Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 2.0), 31 August 2018; Solo Water, <i>Catherine Hill Bay Water Utility; Recycled Water Quality Management Plan; Stage 2</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.1), 5 November 2018; NSW Government, <i>Network Operator’s Licence No: 16_035</i> (as issued on 22 March 2016). 		
Summary of reasons for grade		
Catherine Hill Bay Water has not commenced, and does not plan to commence, distribution of water for an end-use that is not set out in the most recent <i>Water Quality Plans</i> (drinking water and recycled water) provided to IPART.		
Accordingly, notification to IPART has not been required and a “No Requirement” compliance grade has been assigned in respect of this obligation.		
Discussion and notes		
The water industry infrastructure that is the subject of this audit includes the infrastructure that will be used to:		
<ul style="list-style-type: none"> store and re-chlorinate (as necessary) drinking water, i.e. the on-site drinking water storage and chlorine dosing facility; and produce and store non-potable (recycled) water, i.e. the treatment plant and on-site recycled water storage. 		

Other infrastructure that forms part of Stage 2 of the Catherine Hill Bay schemes was the subject of a previous New Infrastructure Audit.

The *Process Flow Diagram; Drinking Water Stage 2*,¹⁸¹ which is included in the *Drinking Water Quality Management Plan*¹⁸² (and the *Infrastructure Operating Plan*),¹⁸³ indicates that the proposed uses for drinking water are as follows:

“All potable water uses including:

- Drinking water;
- Bathroom taps & shower;
- Kitchen taps and dishwasher;
- Laundry taps;
- Hot water service;
- Pool top-up;
- Fire hydrants.”

The *Recycled Water Management Quality Management Plan* indicates that:¹⁸⁴

“Recycled water taken from the recycled water supply network can be used for the following uses:

- Toilet flushing;
- Laundry washing machine cold water tap;
- Irrigation of private lots and footpaths;
- Outdoor cleaning including bin & car washing and hosing down external paths & walls.”

As reported in Table A.9, these uses are consistent with those authorised by the Licence.¹⁸⁵

Evidence was sought that Catherine Hill Bay Water had not commenced, nor does it plan to commence, distribution of water for an end use other than that set out in the *Water Quality Management Plans* (drinking water or recycled water) most recently provided to IPART or, if it had commenced distribution of water for such an alternative end use, that it had notified IPART in writing at least 3 months prior to commencing the distribution.

Catherine Hill Bay Water confirmed that it had not proposed to nor commenced distribution of water for an end-use which is not set out in its *Drinking Water Quality Management Plan* or *Recycled Water Quality Management Plan* (as applicable). No evidence to the contrary was identified as part of the audit.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

No opportunities for improvement have been identified in respect of this obligation.

¹⁸¹ Solo Water, *Process Flow Diagram; Drinking Water Stage 2* (Drawing No: 56-PW-PFD-ST2, Rev 1), 21 August 2017.

¹⁸² *Drinking Water Quality Management Plan*, Appendix B.

¹⁸³ *Infrastructure Operating Plan*, Appendix A.

¹⁸⁴ *Recycled Water Quality Management Plan*, section 2.2.1.2.

¹⁸⁵ *Network Operator's Licence*, tables 1.3 and 2.3.

