



Catherine Hill Bay Water Utility

New Infrastructure Audit (Stage 1 – Interim Scheme)

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Independent Pricing and Regulatory Tribunal

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(Stage 1 – Interim Scheme)

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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 A4** – notwithstanding a suggestion by IPART to the Minister that clause A4 (which relates to documentation of environmental management arrangements) be removed from the Licence, it remains an obligation under the Licence at the time of reporting. In anticipation that clause A4 may be removed from the Licence, Catherine Hill Bay Water has not taken action to fully address the requirements of this clause, notwithstanding that it has partially addressed the requirements.

1.3 Recommendations

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

¹ IPART, *Audit Guideline for Greenfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013.

- **REC-CHB-NIA.001:** It is recommended that, in the event that the Minister rejects IPART’s suggestion to remove clause A4 from the Licence, Catherine Hill Bay Water should:
 - Revise/finalise the Operational Environmental Management Plan (OEMP) in response to IPART’s comments and re-submit it to IPART for approval; and
 - Prepare a “Report” addressing how the environmental mitigation measures identified in the Construction Environmental Management Plan (CEMP) have been implemented during the design and construction of the Relevant Recycling Infrastructure and submit it to IPART for approval.

[In the event that the Minister accepts and acts on IPART’s suggestion, there will be no longer be any requirement in respect of this obligation].

Three (3) opportunities for improvement, which the Licensee may wish to consider, are 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 1 (Interim 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 IPART in providing a recommendation to the Minister to approve the commercial operation of these assets, which are to be operated under WICA Network Operator’s Licence No: 16_035.

² Stage 1 (Interim 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/>). The infrastructure (Stage 1 – Interim Scheme) will initially comprise:

- a potable (drinking) water network that will draw 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 that will initially be charged with potable water via a cross connection from the potable water supply located downstream of the chlorine dosing point.

A wastewater treatment plant is to be commissioned in approximately 12 months' time, following which:⁴

- sewage will be treated at the site to produce recycled water; and
- the non-potable water network will be charged with recycled water.

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 interim arrangements) in accordance with its Licence Plans including:

³ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 1 – Interim Scheme) (Version 2.0)*, 16 August 2017.

⁴ The proposed treatment plant is not included in the scope of this audit.

- Solo Water, *Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017;
- Solo Water, *Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017;
- Solo Water, *Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017; and
- other relevant supporting documentation.

It is noted that, a specific *Water Quality Plan (non-potable water)* has not been prepared for the purposes of the interim scheme.⁵

2.3 Audit Method

2.3.1 Audit Scope

The audit comprised a New Infrastructure Audit conducted pursuant to the *WIC Act Audit Guidelines*.⁶ 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:

- the bulk drinking water supply, including the chlorine monitoring and dosing system, and the drinking water reticulation network;
- the sewage collection system, including the interim pump out tank and arrangements for the disposal of sewage; and
- the recycled water reticulation networks, including the interim cross connection from the bulk drinking water supply.

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 for Greenfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013 (WIC Act Audit Guidelines).

2.3.3 Audit Steps

The audit has been undertaken generally in accordance with the procedure outlined in the *WIC 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 4 July 2017. Some additional items

⁵ The audit has assessed compliance of the non-potable water scheme under the interim arrangements (i.e. during the period it is charged with potable water) on the basis of information presented in other documentation.

⁶ IPART, *Audit Guideline for Greenfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013.

of information and/or clarification were requested following the audit fieldwork and subsequently provided.

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

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 Wynn Owen (Solo Water Director), Craig Heininger (Operations Manager), Brad Irwin (Planning and New Schemes Manager), Steve Scifleet (QSE Manager), Tshinta O’Dwyer (Environment and Quality Coordinator), Alan Irving (Site Manager) and Ross Pascoe (Site Supervisor). IPART representative, Robert Aposhian, 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 *WIC 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 has been provided in the audit on which to make a judgment on all requirements, and all requirements have been met.
Non-compliant Insignificant	There is a deficiency in compliance, however, it does not adversely impact on the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
Non-compliant Significant	There is a deficiency in compliance which adversely impact on the ability of the Licensee to achieve defined objectives or assure controlled processes, products or outcomes.
No Requirement	There was no requirement to comply with the Licence condition 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 for Greenfield Schemes; Water Industry Competition Act 2006 (NSW)*, July 2013;
- *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 1 (Interim Scheme) drinking water, sewerage and recycled water infrastructure at Catherine Hill Bay, with the exception of the following:

- **Network Operator’s Licence clause A4** – Non-compliant – Insignificant:
Notwithstanding a suggestion by IPART to the Minister that clause A4 (which relates to documentation of environmental management arrangements) be removed from the Licence, it remains an obligation under the Licence at the time of reporting. Catherine Hill Bay Water provided evidence that it has submitted an Operational Environmental Management Plan (OEMP); however, IPART has not approved the report. Furthermore, Catherine Hill Bay Water has not provided a “Report” in respect of the implementation of environmental mitigation measures to IPART for approval.

In the event that the Minister rejects IPART’s suggestion to remove clause A4 from the Licence, to achieve full compliance, Catherine Hill Bay Water should:

- Revise/finalise the Operational Environmental Management Plan (OEMP) in response to IPART’s comments and re-submit it to IPART for approval; and
- Prepare a “Report” addressing how the environmental mitigation measures identified in the Construction Environmental Management Plan (CEMP) have been implemented during the design and construction of the Relevant Recycling Infrastructure and submit it to IPART for approval.

[In the event that the Minister accepts and acts on IPART’s suggestion, there will be no longer be any requirement in respect of this obligation].

Detailed assessment in respect of this obligation is presented in **Table A.11** (refer **Appendix A**).

3.2 Review of Actions

Following issue of the draft report, Catherine Hill Bay Water was able to provide evidence that IPART had provided written approval of its proposed arrangements in respect of the disposal of excess sewage, as required pursuant to clause A9 of the Licence; such approval had not been provided at the time of preparing the draft audit report. On this basis, the assessed compliance grade in respect of Network Operator’s Licence clause A9 was revised from “Non-compliant Insignificant” to “Complaint” (refer **Table A.13** in **Appendix A**).

3.3 Opportunities for Improvement

Three (3) opportunities for improvement have been identified in respect of the audited obligations, as follows:

- **OFI-CHB-NIA.001:** It appears that the *Services Agreement* between Catherine Hill Bay Water and Solo Water has not been dated and therefore has no commencement date. It is suggested that action be taken to ensure that the *Services Agreement* is appropriately dated.
- **OFI-CHB-NIA.002:** It is suggested that Catherine Hill Bay Water takes action to ensure that the chlorine solution storage tank bund remains clear of obstruction (including water) at all times.
- **OFI-CHB-NIA.003:** It is suggested that Catherine Hill Bay Water develops and documents a procedure for changeover of the recycled water supply arrangements (i.e. from potable water to recycled water).

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.	Compliant
Risk	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.	Target for Full Compliance
		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 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo, <i>Organisational Chart</i> (MS-OPER-G-8321-SW) (Issue No: 1.0), April 2017. ▪ 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. ▪ Brad Irwin: Curriculum Vitae; Engineers Australia Membership Certificate; and NPER Certificate of Registration. ▪ Craig Heining: 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. ▪ IPART, <i>Assessment of Catherine Hill Bay Water Utility’s network operator’s licence application; Water – Report to the Minister</i>, September 2015. ▪ CHBWU/Solo Water, <i>Service Agreement; Provision of Construction Services, Retail Services and O&M Services at Catherine Hill Bay Development</i>. ▪ Solo Resource Recovery, <i>Terms of Service Agreement</i>, 15 February 2016 (in relation to liquid waste 		

removal).

- *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2015.
- Solo Water, *Operator's Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.
- Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017.
- Solo, *IPART Reporting Procedure* (IMS-OPER-D-8324-SW) (Issue No: 1.0), June 2017.

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*.⁷ Roles and responsibilities are described in summary form in the *Infrastructure Operating Plan*.⁸

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 (specifically in respect of new schemes); knowledge of planning and approval processes; and experience in water and wastewater design, development, construction and operations.⁹
- 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.¹⁰
- 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.¹¹

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

⁷ Solo, *Organisational Chart* (MS-OPER-G-8321-SW) (Issue No: 1.0), April 2017.

⁸ *Infrastructure Operating Plan*, table 4-1.

⁹ Solo, *Planning and New Schemes Manager; Position Description* (IMS-HRPR-P-6233) (Issue No: 1.0), July 2017.

¹⁰ Solo, *Water and Wastewater Utility Engineer; Position Description* (IMS-HRPR-P-6228) (Issue No: 1.0), March 2017.

¹¹ Solo, *Site Supervisor – Solo Water; Position Description* (IMS-HRPR-P-6146) (Issue No: 2.0), March 2016.

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- 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 Heining) – 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

On the basis of the sample of evidence reviewed and discussions with the abovementioned people during the audit fieldwork, 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:¹⁶

“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*.¹⁷ 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 *Services Agreement*¹⁸ between

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

¹³ Craig Heining: 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.

¹⁶ 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.

¹⁷ Solo, *Organisational Chart* (MS-OPER-G-8321-SW) (Issue No: 1.0), April 2017.

¹⁸ *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, undated.

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. It is noted that, although appropriately signed, the *Services Agreement* does not appear to have been dated and therefore has no commencement date; this is presumably an oversight and an opportunity for improvement (**OFI-CHB-NIA.001**) has been identified in respect of this issue.

Catherine Hill Bay Water also has a *Service Agreement*¹⁹ 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*²⁰ 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 an *Operator's Manual*²¹ and an extensive range of procedures and other supporting documentation in place to guide the operation and maintenance of the infrastructure.

Loss of Capacity:

Catherine Hill Bay Water outlines its arrangements for regularly monitoring and reviewing organisational capacity in the *Infrastructure Operating Plan*.²² 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*,²³ the reporting process is outlined in the *IPART Reporting Procedure*.²⁴

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-CHB-NIA.001:** It appears that the *Services Agreement* between Catherine Hill Bay Water and Solo Water has not been dated and therefore has no commencement date. It is suggested that action be taken to ensure that the *Services Agreement* is appropriately dated.

¹⁹ Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).

²⁰ *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2015.

²¹ Solo Water, *Operator's Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.

²² *Infrastructure Operating Plan*, section 4.3.

²³ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017, items 78, 79 & 80.

²⁴ Solo, *IPART Reporting Procedure* (IMS-OPER-D-8324-SW) (Issue No: 1.0), June 2017.

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
<p>Risk</p> <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>		<p>Target for Full Compliance</p> <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 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017. 		
Summary of reasons for grade		
<p>Catherine Hill Bay Water had not, at the time of the audit fieldwork, brought any water or sewerage infrastructure 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 no infrastructure had been brought into operation at the time of the audit. Inspection at various locations across the development site revealed no evidence to the contrary; no infrastructure that is to be operated and maintained by Catherine Hill Bay Water was found to be operating.</p> <p>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</p>		
Recommendations		
<p>There are no recommendations in respect of this obligation.</p>		
Opportunities for improvement		
<p>No opportunities for improvement have been identified in respect of this obligation.</p>		

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	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.	Target for Full Compliance
		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 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 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. ▪ Pressure Sewer Solutions, <i>Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW</i> (Revision 3), 24 October 2013. ▪ Solo Water, <i>Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services</i> (Drawing Set as issued for construction, including standard drawings). ▪ Witthoft Engineering, <i>Catherine Hill Bay; Functional Specification; Interim Works RTU</i> (Revision 1-01), July 2017. ▪ Witthoft Engineering, <i>Catherine Hill Bay; Functional Specification; Bulk Potable Water Pump Station – WAE Interim Functionality</i> (Revision 0-21), July 2017. ▪ Witthoft Engineering, <i>Catherine Hill Bay; Functional Specification; Network Sewage Pump Stations</i> (Revision 1-10), July 2017. ▪ Inspection and Test Plan standard forms as referenced. ▪ Completed Inspection and Test Plans, Factory Acceptance Test records and Site Acceptance Test records, as referenced. ▪ Solo Water, <i>Operator’s Manual; Catherine Hill Bay Water Utility; Interim Scheme</i> (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017. ▪ Solo, <i>Catherine Hill Bay; Operations Workflow Checklist</i> (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017. ▪ Solo, <i>Field Asset Maintenance Procedure</i> (IMS-OPER-D-8326-SW) (Issue No: 1.0), June 2017. ▪ Solo, <i>Field Asset Maintenance Checklist</i> (IMS-OPER-F-8329-SW) (Issue No: 1.0), May 2017. ▪ Solo, <i>Sewage Spill Procedure</i> (IMS-AIIR-D-0037-SW) (Issue No: 1.0), June 2017. 		

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- Solo, *Corrective Action Request (CAR) Procedure* (IMS-COMP-D-0817) (Issue No: 4.1), June 2017.
 - Solo, *Incident Response and Notification Protocol* (IMS-AIIR-B-0041-SW) (Issue No: 1.2), June 2017.
 - Solo, *Power Outage* (IMS-OPER-D-8309-SW) (Issue No: 1.0), June 2017.
 - 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 2017.
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Summary of reasons for grade

Catherine Hill Bay Water has demonstrated that the Stage 1 (Interim Scheme) drinking water, sewerage and recycled water infrastructure that is to be brought into service is capable of operating safely. Processes have been implemented to ensure that the infrastructure has been properly designed and constructed; 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:

As indicated in the *Infrastructure Operating Plan*,²⁵ the respective Master Plans (*Drinking Water Master Plan*,²⁶ *Sewerage Master Plan*²⁷ and *Recycled Water Master Plan*²⁸) provide the design basis for the schemes at Catherine Hill Bay, including identification of 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.

Review of construction drawings for Stage 1 of the development²⁹ (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.

Review of functional specifications for the Interim Works (which includes control of the chlorine re-dosing skid and sewage collection tank),³⁰ Bulk Potable Water Pump Station³¹ and Network Sewage Pump Stations³² reveals that the specified control, monitoring and alarm arrangements are appropriate.

²⁵ *Infrastructure Operating Plan*, sections 2.4 and 2.5.

²⁶ Pressure Sewer Solutions, *Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.

²⁷ Pressure Sewer Solutions, *Catherine Hill Bay; Pressure Sewerage System Masterplan Report* (Revision 3), 24 October 2013.

²⁸ Pressure Sewer Solutions, *Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.²⁹ Solo Water, *Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services* (Drawing Set as issued for construction, including standard drawings).

²⁹ Solo Water, *Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services* (Drawing Set as issued for construction, including standard drawings).

³⁰ Withthoft Engineering, *Catherine Hill Bay; Functional Specification; Interim Works RTU* (Revision 1-01), July 2017.

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.

Catherine Hill Bay Water provided copies of its standard inspection and test plan (ITP) forms for *Water & Recycled Water and Pressure Sewer Installation*; *Cross Connection Certificate (Main to Meter)*; and *Pressure Sewer On-Lot Works*; together with a *Works Correction Notice* form for review.³³ These ITPs appear to address relevant acceptance criteria.

Review of a sample of completed inspection and test plans and test records, including (for example) the following, revealed that the infrastructure has been constructed to appropriate standards:³⁴

- ITPs for Sections 1 and 2 of the Bulk Water Transfer Main – both were signed-off by the contractor and Catherine Hill Bay Water representative on 1 December 2016.
- Cross Connection ITP for 150 allotments in Stage 2 of the development – signed-off by both parties on 3 November 2016.
- ITPs for Water & Recycled Water and Pressure Sewer Installation in Montefiore Street (Stage 1) – signed off by both parties on 3 November 2016. An associated Works Correction Notice was signed-off on 1 December 2016. Documentation for Hale Street, Surfside Drive and Anouska Street was also sighted.
- Factory Acceptance Test Sheets – testing for Pressure Sewer Unit PSU007 completed on 12 July 2016; testing for the Interim Works Pump Station completed on 30 November 2016.
- Site Acceptance Test Sheet for Pressure Sewer Unit (Network Sewage Pumping Station) No: 001 – testing completed on 5 October 2016.

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 is maintaining 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 as a full time (5 days per week) site based operational role once operation of the scheme commences, with 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*.³⁵ The *Drinking Water Quality Plan*³⁶ and *Sewage Management Plan*³⁷ also address the operation of the infrastructure.

³¹ Witthoft Engineering, *Catherine Hill Bay; Functional Specification; Bulk Potable Water Pump Station – WAE Interim Functionality* (Revision 0-21), July 2017.

³² Witthoft Engineering, *Catherine Hill Bay; Functional Specification; Network Sewage Pump Stations* (Revision 1-10), July 2017.

³³ Inspection and Test Plan standard forms as referenced.

³⁴ Completed Inspection and Test Plans, Factory Acceptance Test records and Site Acceptance Test records, as referenced.

³⁵ *Infrastructure Operating Plan*, section 6.

³⁶ *Drinking Water Quality Plan*, section 2.4.

More detailed guidance in relation to operation and maintenance of the infrastructure is set out in the *Operator's Manual*³⁸ and a portfolio of operational (and maintenance) forms and procedures. The *Operator's Manual* 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).

Procedures and forms include (for example):

- *Operations Workflow Checklist*,³⁹ which includes daily SCADA checks, weekly SCADA trending checks and field checks;
- *Field Asset Maintenance Procedure*⁴⁰ and related *Field Asset Maintenance Checklist*,⁴¹ which is essentially a risk assessment that needs to be completed prior to commencing any maintenance works;
- *Sewage Spill Procedure*,⁴² which (typical of all procedures) includes reference to other relevant procedures, forms and management plans;
- *Water Quality Monitoring Procedure*, which details sampling and testing requirements; and
- *Corrective Action Request (CAR) Procedure*,⁴³ which describes the process that is to be followed when issuing, actioning, closing, verifying and monitoring Corrective Action Requests.

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*⁴⁴ 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*⁴⁵ (for example) sets out requirements for use of an emergency generator; tankering of potable water and pump out of pressure sewer units (PSUs) (as required) in the event of a power outage.

Safety Management:

From a work health and safety perspective, the *Infrastructure Operating Plan* indicates that:⁴⁶

“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* 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 18001:2007.⁴⁷

³⁷ *Sewage Management Plan*, section 2.4.

³⁸ Solo Water, *Operator's Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.

³⁹ Solo, *Catherine Hill Bay; Operations Workflow Checklist* (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017.

⁴⁰ Solo, *Field Asset Maintenance Procedure* (IMS-OPER-D-8326-SW) (Issue No: 1.0), June 2017.

⁴¹ Solo, *Field Asset Maintenance Checklist* (IMS-OPER-F-8329-SW) (Issue No: 1.0), May 2017.

⁴² Solo, *Sewage Spill Procedure* (IMS-AIIR-D-0037-SW) (Issue No: 1.0), June 2017.

⁴³ Solo, *Corrective Action Request (CAR) Procedure* (IMS-COMP-D-0817) (Issue No: 4.1), June 2017.

⁴⁴ Solo, *Incident Response and Notification Protocol* (IMS-AIIR-B-0041-SW) (Issue No: 1.2), June 2017.

⁴⁵ Solo, *Power Outage* (IMS-OPER-D-8309-SW) (Issue No: 1.0), June 2017.

⁴⁶ *Infrastructure Operating Plan*, section 5.5.

⁴⁷ 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 2017.

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.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.	Compliant

Risk

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.

Target for Full Compliance

Demonstration that the infrastructure is capable of operating in accordance with the relevant management plan(s).

Evidence sighted

- Interviews with Catherine Hill Bay Water personnel on 4 July 2017.
- Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017.
- Solo Water, *Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017.
- Solo Water, *Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017.
- Solo Water, *Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017.
- Solo Water, *Operator’s Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.
- Solo, *CCP Free Chlorine Management Procedure* (IMS-OPER-D-8331-SW) (Issue No: 1.0), June 2017.
- Solo, *Catherine Hill Bay; Operations Workflow Checklist* (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017.
- Solo, *CCP Sewage Pump Out Management Procedure* (IMS-OPER-D-8306-SW) (Issue No: 1.0), June 2017.
- Solo, *Suspected Cross Connection Procedure* (IMS-OPER-D-8304-SW) (Issue No: 1.0), June 2017.
- Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017.
- Solo Water, *Catherine Hill Bay; Home Owner’s Manual* (IMS-OPER-C-8312-SW) (Issue No: 1.0), July 2017.

Summary of reasons for grade

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 1 (Interim Scheme) arrangements is capable of operating in accordance with the relevant management plans (*Infrastructure Operating Plan, Drinking Water Quality Plan* and *Sewage Management Plan* in the context of this audit). Although a *Recycled Water Quality Plan* has not yet been documented (as the recycled water infrastructure will initially be charged with potable water), appropriate arrangements are in place to ensure that the recycled water infrastructure is capable of operating (to the extent currently applicable) in accordance with the arrangements typically documented in a compliant *Recycled Water Quality Plan*.

Accordingly, it is assessed that Catherine Hill Bay Water is compliant with this obligation.

Discussion and notes

As discussed in Table A.3, arrangements in relation to operation of the infrastructure are documented in the *Infrastructure Operating Plan*,⁴⁸ *Drinking Water Quality Plan*⁴⁹ and *Sewage Management Plan*.⁵⁰ Reference is made in each case to the *Operator's Manual*,⁵¹ as well as relevant procedures and forms.

An overview of the infrastructure and its intended operating regime is presented in the *Infrastructure Operating Plan*.⁵² As reported in Section 2.2 (of this report), under the Stage 1 (Interim Scheme) arrangements, the infrastructure will comprise:

- a potable (drinking) water network that will draw 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 that will initially be charged with potable water via a cross connection from the potable water supply located downstream of the chlorine dosing point.

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*,⁵³ *Drinking Water Quality Plan*⁵⁴ and *Sewage Management Plan*⁵⁵ reference the detailed guidance in relation to operation and maintenance of the infrastructure that is set out in the *Operator's Manual*⁵⁶ and a portfolio of operational (and maintenance) forms and procedures. Review of a sample of procedures, including the following (for example) revealed no impediment to their implementation:

- *CCP Free Chlorine Management Procedure*⁵⁷ (referenced in the *Drinking Water Quality Plan*):
 - requires an on-line free chlorine analyser, which was in place;
 - identifies critical limits of <0.5 mg/L, >3 mg/L and operational limits of <1 mg/L, >2 mg/L, which were observed to have been set in the SCADA (refer Figure A.4.1);
 - requires daily checks of the SCADA and daily inspection of the chlorine skid; these requirements are captured in the *Operations Workflow Checklist*,⁵⁸ and
 - references relevant documentation including management plans, manuals, procedures, a form and a register, all of which were in place (and available to the auditor for review).
- *CCP Sewage Pump Out Management Procedure*⁵⁹ (referenced in the *Sewage Management Plan*):
 - requires daily inspection of the Pump Out Tank facility and monitoring of storage levels in the SCADA; these requirements are captured in the *Operations Workflow Checklist*,⁶⁰

⁴⁸ *Infrastructure Operating Plan*, section 6.3.

⁴⁹ *Drinking Water Quality Plan*, section 2.4.

⁵⁰ *Sewage Management Plan*, section 2.4.

⁵¹ Solo Water, *Operator's Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.

⁵² *Infrastructure Operating Plan*, section 3 (specifically sections 3.1.1 (water), 3.1.2 (wastewater) and 3.2 (control philosophy).

⁵³ *Infrastructure Operating Plan*, section 6.3.3.

⁵⁴ *Drinking Water Quality Plan*, section 2.4.

⁵⁵ *Sewage Management Plan*, section 2.4.

⁵⁶ Solo Water, *Operator's Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.

⁵⁷ Solo, *CCP Free Chlorine Management Procedure* (IMS-OPER-D-8331-SW) (Issue No: 1.0), June 2017.

⁵⁸ Solo, *Catherine Hill Bay; Operations Workflow Checklist* (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017.

⁵⁹ Solo, *CCP Sewage Pump Out Management Procedure* (IMS-OPER-D-8306-SW) (Issue No: 1.0), June 2017.

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- o identifies operational and critical limits in respect of tank storage level, together with corrective and preventative actions in each case; although limits set in the SCADA were not reviewed, Catherine Hill Bay Water personnel clearly explained the arrangements during the audit;
 - o references relevant documentation including management plans, a manual, procedures, a form and a drawing, all of which were in place (and available to the auditor for review).

On the basis of the above discussion, it is apparent that the infrastructure is capable and the necessary resources and arrangements are in place to facilitate operation of the infrastructure in accordance with the *Infrastructure Operating Plan, Drinking Water Quality Plan and Sewage Management Plan*.

It is noted that a *Recycled Water Quality Plan* has not yet been documented as the recycled water infrastructure will be charged with potable water under the Stage 1 (Interim Scheme) arrangements. Nonetheless, it is noted that arrangements typically expected to be documented in a compliant *Recycled Water Quality Plan* have been addressed to an appropriate extent, as follows:

- a *Suspected Cross Connection Procedure*⁶¹ is already in place;
- the *Operations Workflow Checklist*⁶² includes daily and weekly inspection requirements for both the drinking and recycled water networks; and
- the *Customer Contract*⁶³ and *Home Owner's Manual*⁶⁴ both provide the end users with information regarding the recycled water system and recycled water use.

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.

Each of the management plans (*Infrastructure Operating Plan, Drinking Water Quality 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 (Occupation health and safety management). 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*,⁶⁵ are regularly reviewed with review frequencies identified in the *CHB Regulatory & Formal Requirements Register*.⁶⁶ 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.

Functionality of the Citrix system was witnessed online during the audit. A sample of documents including the *Drinking Water Quality Plan* and some of the procedures and registers referenced therein was selected for review, as follows:

- Solo Water, *Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017.
- Solo, *Free Chlorine Field Verification Monitoring Procedure* (IMS-OPER-D-8301-SW) (Issue No: 1.0), June 2017, which sets out the procedure for conducting field test for free chlorine.

⁶⁰ Solo, *Catherine Hill Bay; Operations Workflow Checklist* (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017.

⁶¹ Solo, *Suspected Cross Connection Procedure* (IMS-OPER-D-8304-SW) (Issue No: 1.0), June 2017.

⁶² Solo, *Catherine Hill Bay; Operations Workflow Checklist* (IMS-CONT-G-1683-SW) (Issue No: 1.0), May 2017.

⁶³ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017.

⁶⁴ Solo Water, *Catherine Hill Bay; Home Owner's Manual* (IMS-OPER-C-8312-SW) (Issue No: 1.0), July 2017.

⁶⁵ *IMS Master Register* (sighted on-line).

⁶⁶ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017.

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- Solo, *CHB Stakeholder Register* (IMS-CONT-G-1679-SW) (Issue No: 1.0), April 2017, which correctly identified NSW Health, EPA, IPART and other stakeholders.
 - Solo, *CHB Water Quality Monitoring* (IMS-CONT-G01680-SW) (Issue No: 1.0), April 2017, a register that is used to capture records of water quality sample analyses (field and laboratory) and their review. It was noted that the “DITA” online reminder system provides a monthly reminder on the need for water quality testing.
 - Solo, *CHB Free Chlorine Field Verification* (IMS-CONT-G-1675-SW) (Issue No: 1.0), a register that is used to capture and monitor records of twice-weekly hand-held free chlorine field verification checks.

In summary, the infrastructure that is to be brought into service under the Stage 1 (Interim Scheme) arrangements is capable of operating in accordance with the *Infrastructure Operating Plan*, the *Drinking Water Quality Plan* and the *Sewage Management Plan*, as well the relevant provisions that would typically be documented in a compliant *Recycled Water Quality Plan*.

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.

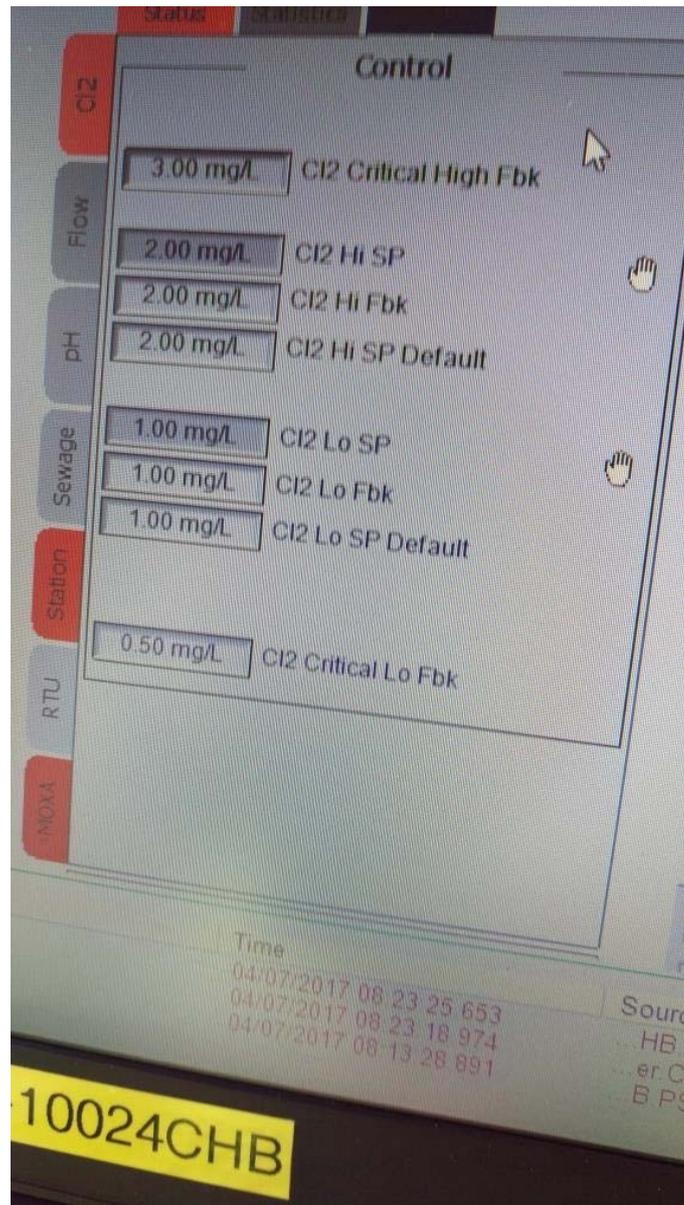


Figure A.4.1 SCADA screen showing operational (<1 mg/L, >2 mg/L) and critical (<0.5 mg/L, >3 mg/L) limit set points for free chlorine.

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)	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: <ul style="list-style-type: none"> (a) the purposes for which it is licensed; (b) the Licence conditions; and (c) any publicly available standards or codes relating to its design, construction, operation and maintenance. 	Compliant
Risk	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.	Target for Full Compliance
		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.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017. ▪ NSW Government, <i>Network Operator’s Licence No: 16_035</i> (as issued on 22 March 2016). ▪ Solo Water, <i>Operator’s Manual; Catherine Hill Bay Water Utility; Interim Scheme</i> (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 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. ▪ Pressure Sewer Solutions, <i>Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW</i> (Revision 3), 24 October 2013. ▪ Solo Water, <i>Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services</i> (Drawing Set as issued for construction, including standard drawings). ▪ Castle Chemicals, <i>Technical Bulletin; Chlor 12 Liquid Chlorine Bleach</i>, November 2016, available at: http://castlechem.com.au/wp-content/uploads/2017/05/Chlor-12_tb.pdf. 		

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- Castle Chemicals, *Material Safety Data Sheet; Chlor 12* (Version 1.2), 14 February 2017.
 - Email dated 5 July 2017 from Castle Chemicals to Catherine Hill Bay Water (re: *Use of Chlor 12 for Chlorinating Potable water*).
 - Solo, *Interim Site Bund Volume Calculations*, 13 July 2017.
 - Solo, *Safety, Environment and Quality Regulatory Compliance Register* (extracts provided).
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Summary of reasons for grade

Catherine Hill Bay Water demonstrated, through the provision of documentation and audit site inspections, that the Stage 1 (Interim 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,⁶⁷ 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, indicates the arrangements adopted in relation to the design, construction, operation, maintenance and renewal (life cycle management) of the infrastructure.”

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:⁶⁸

- 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 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

⁶⁷ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 1 – Interim Scheme) (Version 2.0)*, 16 August 2017, table A.1.

⁶⁸ *Network Operator’s Licence*, tables 1.3, 2.3 and 3.3.

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):

- *All gravity sewers designed to achieve self cleansing velocity to avoid accumulation and breakdown of solids in the network* (odour mitigation) – gravity sewers have been designed in accordance with the WSAA Sewerage Code of Australia, which incorporates this requirement.
 - *Passively ventilated Mcberns activated carbon filters will be used on all air valves in the pressure sewer network* (odour mitigation) – a sample installation was sighted during the audit site inspection.
 - *Actively ventilated Mcberns activated carbon filter on the STP inlet balance tank* (odour mitigation) – the STP inlet balance tank does not form part of the Stage 1 (Interim Scheme); however, a carbon filter is installed on the sewage pump out tank (refer Figure A.5.1).
 - *All sewage pumps in the pressure sewer networks are submersible pumps located below ground level in an enclosed chamber* (noise mitigation) – inspection of a pressure sewer unit during the audit confirmed that submersible pumps have been installed and the chamber (pump well) is fitted with a sealed cover (refer Figure A.5.2).
- 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).

The requirements of clause A3 are discussed in Table A.10 and the requirements of clause A4 in Table A.11.

- Clause A8 requires the development of a strategy for tankering out of excess non-potable water. As the treatment plant that will produce non-potable (recycled) water does not form part of the Stage 1 (Interim Scheme) infrastructure, any specific provisions for tankering out of excess non-potable water are not required at this stage.
- 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).
As noted above, the treatment plant does not form part of the Stage 1 (Interim Scheme) infrastructure; however, under the Stage 1 arrangements, all sewage will be disposed of off-site. Arrangements are in place to facilitate such disposal of “excess sewage” (refer Table A.13 for further related discussion).

Compliance with Standards and Codes:

As reported in Table A.3, the *Drinking Water Master Plan*,⁶⁹ *Sewerage Master Plan*⁷⁰ and *Recycled Water Master Plan*⁷¹ provide the design basis for the schemes at Catherine Hill Bay, including identification of the

⁶⁹ Pressure Sewer Solutions, *Potable Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.

⁷⁰ Pressure Sewer Solutions, *Catherine Hill Bay; Pressure Sewerage System Masterplan Report* (Revision 3), 24 October 2013.

⁷¹ Pressure Sewer Solutions, *Recycled Water Reticulation Master Plan Report; Catherine Hill Bay NSW* (Revision 3), 24 October 2013.⁷² Solo Water, *Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services* (Drawing Set as issued for construction, including standard drawings).

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 03-2002, Hunter Water Edition;
- Sewerage Code of Australia, WSA 02-2002 Version 2.3; and
- Pressure Sewer Code of Australia, WSA 07-2007.

Review of construction drawings for Stage 1 of the development⁷² (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 the *Plumbing Code of Australia* and AS/NZS 3500 *Plumbing and drainage*.

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 knowledge of industry practice) 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 of the observations are summarised as follows:

- Pipe materials – visible pipe is compliant with the relevant standards (as evidenced by markings on stockpiled remnants) and is appropriately coloured or labelled (refer Figure A.5.3):
 - Drinking water – blue PVC or blue striped PE;
 - Recycled water – lilac PVC or lilac striped PE; and
 - Pressure sewer – cream striped PE.
- Valve and hydrant covers are colour coded and have embossed identification:
 - Drinking water – yellow;
 - Recycled water – lilac (refer Figure A.5.4); and
 - Pressure sewer – cream striped PE.
- Above ground components of property service connections are colour coded (refer Figure A.5.5):
 - riser pipe and isolation valves handles for drinking water uncoloured (i.e. bare copper pipe and brass valve); and
 - riser pipe sleeving and isolation valves handles for recycled water are coloured lilac.

Service connections are sealed and appropriately tagged (refer Figure A.5.6).

- Backflow prevention devices are installed and tagged (as record of testing) (refer Figure A.5.7).
- The chlorination installation (refer Figure A.5.8) appeared to be compliant with requirements, as follows:
 - Pipework within the chlorinator room was labelled.
 - Duty/standby dosing pumps were in place.
 - An MSDS (Material Safety Data Sheet) for the Chlor 12 Sodium Hypochlorite, a hazardous chemical stored on site, was available within the chlorinator room.
 - At the time of the audit inspection, the label on the chlorine solution storage tank was not reflective of the solution being used. This was subsequently changed and photographic evidence provided.

The new label correctly referred to Castle Chemicals Chlor 12. Review of the product summary

⁷² Solo Water, *Catherine Hill Bay; Residential Subdivision – Stage 1; Potable Water, Recycled Water and Pressure Sewer Services* (Drawing Set as issued for construction, including standard drawings).

for Chlor 12 revealed that it did not state that Chlor 12 is unsuitable for addition to potable water; nor did it state that it was intended as a drinking water additive.⁷³ However, review of the MSDS revealed that it did state that Chlor 12 was intended as a “potable water sanitiser”.⁷⁴

The suitability of Chlor 12 for potable water use was further endorsed by a communication between the supplier and Catherine Hill Bay Water⁷⁵ that referenced the Australian Drinking Water Guidelines. On this basis, Chlor 12 was considered fit for purpose for sanitising potable water.

- The chlorine solution storage tank appropriately sits above a plastic bund. There was some water (although not deemed to be excessive) in the bund at the time of the audit inspection. As an opportunity for improvement (**OFI-CHB-NIA.002**), it is suggested that Catherine Hill Bay Water takes action to ensure that the bund remains clear of obstruction (including water) at all times.
- A safety shower and eye wash was installed adjacent to the chlorinator room.
- The Sewage Pump Out Tank installation now appears to be consistent with requirements, as follows:
 - At the time of the audit inspection, the tank was sitting within a bunded area (refer Figure A.5.1); however, the capacity of the bunded area was not compliant with the relevant standards (AS 3780 *The storage and handling of corrosive substances* and/or AS/NZS 4452 *The storage and handling of toxic substances*, as appropriate). Bunding was subsequently constructed around the perimeter of the site (the previous bunding remains in place), thereby providing adequate capacity (calculations were provided)⁷⁶ (refer Figure A.5.9). Compaction of the subgrade and bunding (given its minimal height) is considered adequate for containment purposes. Catherine Hill Bay Water advised that all water (including spilt sewage) captured on the site will be returned to the sewage tank for disposal.
 - A sewage spill kit is available on site (photographic evidence provided).
 - The tank outlet valves are fitted with locks to prevent unauthorised (or inadvertent) opening.
 - Whilst the tank is located within a controlled site, at the time of the audit inspection the tank was not labelled as a sewage storage facility. A clearly visible “Sewage Tank” label has subsequently been installed and photographic evidence provided.
- 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).

Given that there is no backflow prevention at this location, it will be imperative that the valves are closed and the bend removed prior to the recycled water network being charged with recycled water. Arrangements to ensure that this action is taken will need to be reviewed as part of a future New Infrastructure Audit in relation to the proposed treatment plant. As an opportunity for improvement (**OFI-CHB-NIA.003**), it is suggested that Catherine Hill Bay Water develops and documents a procedure for changeover of the recycled water supply arrangements.
- Under the Stage 1 (Interim Scheme) arrangements, water will be supplied directly from the Potable Water Transfer Pumping Station into the drinking and recycled water networks. The pumping station will be controlled by pressure in the downstream pipeline; a control valve with pressure sustaining and reducing functions has been installed to ensure that supply pressures within the reticulation networks comply with desirable maximum and minimum pressures.

⁷³ Castle Chemicals, *Technical Bulletin; Chlor 12 Liquid Chlorine Bleach*, November 2016, available at: http://castlechem.com.au/wp-content/uploads/2017/05/Chlor-12_tb.pdf

⁷⁴ Castle Chemicals, *Material Safety Data Sheet; Chlor 12* (Version 1.2), 14 February 2017.

⁷⁵ Email dated 5 July 2017 from Castle Chemicals to Catherine Hill Bay Water (re: *Use of Chlor 12 for Chlorinating Potable water*).

⁷⁶ Solo, *Interim Site Bund Volume Calculations*, 13 July 2017.

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.

Catherine Hill Bay Water maintains a *Safety, Environment and Quality Regulatory Compliance Register*,⁷⁷ which identifies all relevant codes and standards. Currency of standards and codes is managed through the Solo Group Citrix Document Control Platform.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

The following opportunities for improvement have been identified in respect of this obligation:

- **OFI-CHB-NIA.002:** It is suggested that Catherine Hill Bay Water takes action to ensure that the chlorine solution storage tank bund remains clear of obstruction (including water) at all times.
 - **OFI-CHB-NIA.003:** It is suggested that Catherine Hill Bay Water develops and documents a procedure for changeover of the recycled water supply arrangements (i.e. from potable water to recycled water).
-

⁷⁷ Solo, *Safety, Environment and Quality Regulatory Compliance Register* (extracts provided).



Figure A.5.1 Sewage Pump Out Tank showing (a) carbon filter fitted at the top of the tanks; and (b) bunding immediately around the tank.



Figure A.5.2 Pressure Sewer Unit showing (a) discharge pipework from submersible pumpsets; and (b) cover with rubber seal (at left).



Figure A.5.3 Drinking water and recycled water pipe materials.

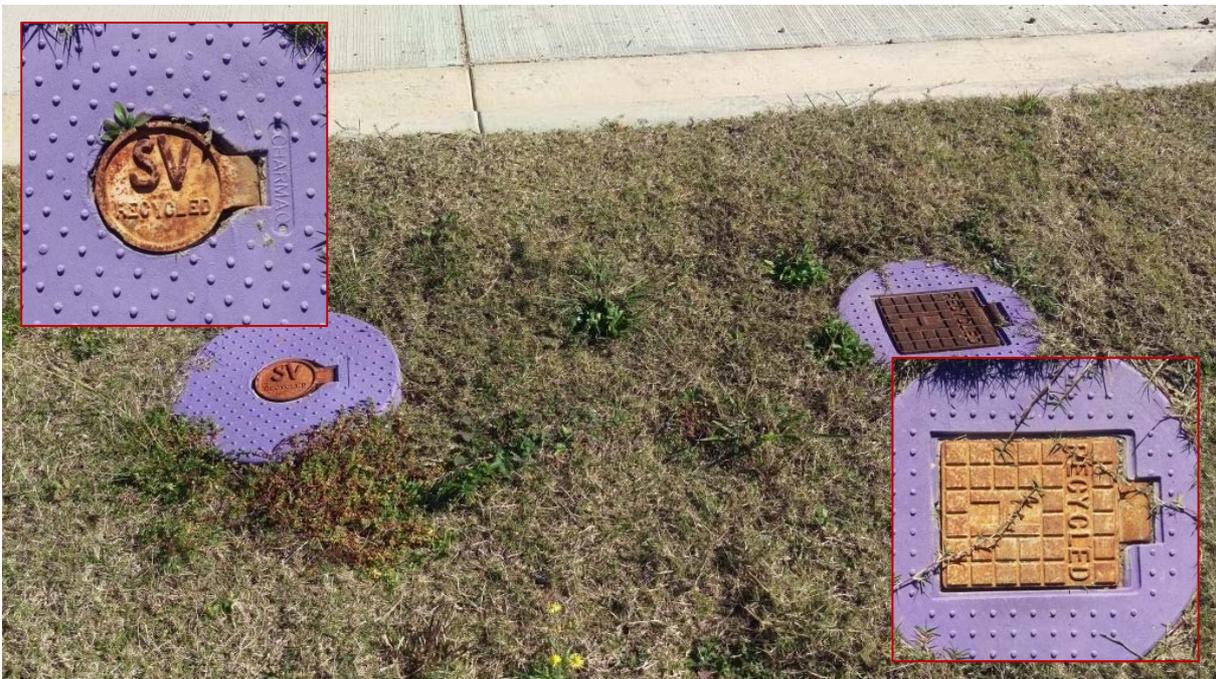


Figure A.5.4 Recycled water valve and hydrant covers.



Figure A.5.5 Property service connections showing (a) lilac sleeving and isolation valve on recycled water connection; and (b) appropriate separation between drinking water and recycled water services.



Figure A.5.6 Property service connections are appropriately sealed and tagged.



Figure A.5.7 Backflow prevention on domestic supply to the site office (and ultimately the treatment plant site).
Test tag is in place.



Figure A.5.8 Chlorinator Room.



Figure A.5.9 Earth bunding around perimeter of site is in place to capture sewage spills. Note that bunding immediately around the Sewage Pump Out Tank remains in place.

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.	Compliant
Risk 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.		Target for Full Compliance 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		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo, <i>CHB Regulatory & Formal Requirements</i> (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017. ▪ <i>IMS Master Register</i> (sighted on-line). 		
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		
<i>Implementation of the Infrastructure Operating Plan:</i>		
As noted in Table A.5, a separate Licence Plan Audit ⁷⁸ 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:		
<ul style="list-style-type: none"> ▪ the design, construction, operation and maintenance of the infrastructure; ▪ the continued safe and reliable performance of the infrastructure; ▪ the continuity of the water supply and sewerage services; ▪ alternative water supplies and sewerage services when the infrastructure is inoperable; and ▪ the maintenance, monitoring and reporting of standards of service. 		

⁷⁸ Cobbitty Consulting/Water Futures, *Catherine Hill Bay Water Utility; Licence Plan Audit (Stage 1 – Interim Scheme) (Version 2.0)*, 16 August 2017, table A.1.

At the time of the audit, the infrastructure 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 Plan* and *Sewage Management Plan* (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.

Within the Infrastructure Operating Plan,⁷⁹ 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*⁸⁰ indicates that *Infrastructure Operating Plan* is to be reviewed annually; the entry in the *IMS Master Register*⁸¹ indicates that the current version is Revision 1.0, which is consistent with “Document Status” table.

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.

⁷⁹ *Infrastructure Operating Plan*, section 8.

⁸⁰ Solo, *CHB Regulatory & Formal Requirements* (IMS-CONT-G-1677-SW) (Issue No: 1.0), April 2017.

⁸¹ *IMS Master Register* (sighted on-line).

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>	Compliant
Risk	<p>This represents medium business risk. Non-compliant and/or inaccurate water meters may result in incorrect water consumption readings which are then reflected in customer billing.</p>	Target for Full Compliance
		<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 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Operator’s Manual; Catherine Hill Bay Water Utility; Interim Scheme</i> (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017. ▪ Solo Water, <i>Customer Contract</i> (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017. ▪ Solo, <i>GIS Meter Procedure</i> (IMS-OPER-D-8315-SW) (Issue No: 1.0), June 2017. 		
Summary of reasons for grade		
<p>At the time of the audit, no water supply infrastructure (drinking water or recycled water) had been brought into commercial operation and no water meters had been connected to the Licensee’s water mains. Nonetheless, Catherine Hill Bay Water demonstrated that water meters to be connected to its recycled water mains will comply with the <i>Plumbing Code of Australia</i>, and that it has documented its approach to water meter maintenance, testing and renewal, which is generally consistent with industry practice.</p>		
<p>As no meters had been installed at the time of audit, no meter reading had been undertaken. Catherine Hill Bay Water’s documentation (<i>Operator’s Manual</i> and <i>Customer Contract</i>) indicated that water meters are to be read at least 4-monthly (as required by the Licence) and that it will endeavour to read them every 3 months.</p>		

As Catherine Hill Bay Water (Network Operator) and Solo Water (parent company and Retail Supplier) are essentially the same company, notification of meter readings is, in practice, not required.

Whilst assessed to be compliant for the purposes of this audit, implementation in respect of these obligations should be further assessed as part of a future Operational Audit.

Discussion and notes

Overview:

At the time of the audit, no water supply infrastructure (drinking water or non-potable water) had been brought into commercial operation and no water meters had been installed (i.e. connected to the Licensee's water mains. Pursuant to Catherine Hill Bay Water/Solo Water's internal procedures,⁸² it requires a "... *Fair Trade plumbing inspection certificate of compliance to demonstrate compliance with AS3500 before a water meter will be issued for connection.*"

Notwithstanding, compliance with the requirements of clause 8 of the Licence is assessed as discussed in the following.

Meter Compliance (clause 8(1)):

Catherine Hill Bay Water advised that meters to be installed to both drinking water and recycled water property services are Elster V100 DCV meters (the same as used by Hunter Water), which is confirmed by reference to the *Operator's Manual*,⁸³ recycled water meters are to be coloured lilac.

The *Operator's Manual* further indicates that:⁸⁴

"All meters in the V100 (PSM-T) range meet the Metrological and Technical requirements of NMI R 49-1: Water Meters Intended for the Metering of Cold Potable Water and Hot Water and are Standards Mark certified to AS 3565.1 by SAI Global under Licence No: SMKP20052."

Samples of both a drinking water and recycled water meter were sighted at the audit (refer Figure A.7.1). It is noted that the thread (connection) size for the sample DN20 meters is different for the drinking and recycled water meters, thereby preventing inadvertent installation on the wrong service. Both meters include dual check valves, as required under the *Plumbing Code of Australia*.⁸⁵

Whilst the specific requirements of the *Plumbing Code of Australia* in respect of meters are difficult to identify, and are typically expressed as "deemed to comply", the auditor is satisfied that given the water meters are NMI rated and are standard marked, they can be deemed to meet the requirements of the *Code*.

Maintenance and Testing (clause 8(2)(a)):

The *Operator's Manual* indicates that:⁸⁶

"The Operators are to ensure that the water meters are to be periodically tested in accordance with AS3565.4 Meters for cold and heated drinking and non-drinking water supplies, Part 4: In-service compliance testing.

The installed and verified meters have an initial compliance testing period of 1,920 KL or 8 years (whichever comes first). The meters age and usage are to be monitored as part of the meter reading activities and meters tested in accordance with AS3565.4 once the initial compliance testing procedure is exceeded."

Furthermore, the *Customer Contract* outlines:

- the arrangements in respect of testing of a meter (at the customer's request);⁸⁷ and
 - situations in which a meter will be replaced, which include the meter being found to be defective; the meter can no longer be reasonably maintained; or the meter is replaced as part of a meter
-

⁸² *Operator's Manual*, sections 3.1.5 (drinking water) and 3.1.6 (recycled water).

⁸³ *Operator's Manual*, sections 3.1.5 (drinking water) and 3.1.6 (recycled water).

⁸⁴ *Operator's Manual*, section 4.5.9.

⁸⁵ ABCB, *National Construction Code; Volume 3 Plumbing Code of Australia*, 2016, clause B1.4.

⁸⁶ *Operator's Manual*, section 4.5.9.

⁸⁷ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017, section 10.3.

replacement program.⁸⁸

Catherine Hill Bay Water advised that a representative sample of meters replaced under the meter replacement program will be tested for accuracy and, if appropriate, the replacement strategy may be revised on the basis of the results.

Catherine Hill Bay Water's approach to water meter maintenance and testing is considered to be consistent with the approach typically adopted by Australian water utilities.

Meter Reading (clause 8(2)(b)):

The *Operator's Manual* indicates that:⁸⁹

“The Operators are to ensure that the water meters are read at least every 4-months in accordance with the GIS Meter Procedure (IMS-OPER-B-8315).”

The *GIS Meter Procedure*⁹⁰ provides instructions in relation to the performance of meter readings and the management of meter read data. It also indicates the action to be taken if a meter cannot be read; some twenty (20) potential situations are identified and response actions specified.

The *Customer Contract* indicates that:⁹¹

“We will endeavour to provide an actual meter reading once every 3 months, inclusive of meter readings taken by you on our behalf.”

These references indicate that meters are to be read at least 4-monthly (as required by the Licence) and that Catherine Hill Bay Water/Solo Water will endeavour to read them every 3 months, i.e. more regularly than the minimum requirement.

As documented in the *GIS Meter Procedure*, Catherine Hill Bay Water proposes to use an “... *ArcGIS Online Geoform app on a tablet device* ...” for the field collection of meter readings. This will help to ensure that all meters are read and readings are allocated correctly.

Notification to Retail Supplier (clause 8(2)(c)):

Solo Water Pty Ltd (Catherine Hill Bay Water's parent company) holds the Retail Suppliers Licence in respect of the Catherine Hill Bay drinking water and recycled water infrastructure; accordingly notification of meter readings is, in practice, not required as the Network Operator and Retail Supplier are, for purposes of this requirement, the same entity.

Notwithstanding, Catherine Hill Bay Water advised that it will adopt a formal issue procedure for transfer of meter reading data to Solo Water (Retail Supplier). Solo Water will engage UnityWater to produce accounts to be issued to customer, as described in the *GIS Meter Procedure*.

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.

⁸⁸ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017, section 10.4.

⁸⁹ *Operator's Manual*, section 4.5.9.

⁹⁰ Solo, *GIS Meter Procedure* (IMS-OPER-D-8315-SW) (Issue No: 1.0), June 2017.

⁹¹ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017, section 10.1.



Figure A.7.1 Sample of Recycled Water Meter (left) and Drinking Water Meter (right), showing different connection sizes.

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).	Compliant

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

- Interviews with Catherine Hill Bay Water personnel on 4 July 2017.
- Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017.
- Solo Water, *Operator’s Manual; Catherine Hill Bay Water Utility; Interim Scheme* (IMS-OPER-B-8298-SW) (Revision 1.1), 6 July 2017.
- Solo Water, *Plumbing Connection Process* (SW-BUILDERS GUIDE STAGE 1 160928), undated, available at: <http://www.solowater.com.au/wp-content/uploads/2017/02/SW-Builders-Guide-Stage-1-160928-1.pdf>
- Solo Water, *Application for Service Connection*, available at: <http://www.solowater.com.au/wp-content/uploads/2016/08/SW-Connection-Application-Form.pdf>
- Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017.
- Solo Water, *Catherine Hill Bay; Home Owner’s Manual* (IMS-OPER-C-8312-SW) (Issue No: 1.0), July 2017.

Summary of reasons for grade

At the time of the audit, no water supply (drinking water or recycled water) or sewerage infrastructure had been brought into commercial operation and no customer installations had been connected. Nonetheless, Catherine Hill Bay Water demonstrated that it has procedures in place to ensure that customer installations comply with the *Plumbing and Drainage Act 2011* (NSW) prior to connection to its water and/or sewer mains. Accordingly, it is assessed that Catherine Hill Bay Water is compliant with this obligation.

Whilst assessed to be compliant for the purposes of this audit, implementation in respect of this obligation should be further assessed as part of a future Operational Audit.

Discussion and notes

Under the provisions of Section 7(1) of the *Plumbing and Drainage Act 2011* (NSW),⁹² plumbing and drainage works must comply with the *Plumbing Code of Australia* and any other standards or requirements prescribed by the regulations. The *Plumbing and Drainage Regulation 2012*⁹³ does not prescribe any other standards or requirements.

At the time of the audit, the drinking water, recycled water supply and sewerage infrastructure had not been brought into commercial operation and no customer installations had been connected. Accordingly, compliance of any customer installations with the *Plumbing and Drainage Act 2011* (NSW) or the *Plumbing*

⁹² http://www.austlii.edu.au/au/legis/nsw/consol_act/pada2011174/s7.html accessed on 28 July 2017.

⁹³ http://www.austlii.edu.au/au/legis/nsw/consol_reg/padr2012265/ accessed on 28 July 2017.

Code of Australia had not been (and could not be) assessed.

Notwithstanding, Catherine Hill Bay Water demonstrated that pursuant to its internal procedures (specifically its *Operator's Manual*),⁹⁴ it requires a "... *Fair Trade plumbing inspection certificate of compliance to demonstrate compliance with AS3500 before a water meter will be issued for connection.*"

The requirement for certified plumbing compliance is detailed in the *Plumbing Connection Process* guideline⁹⁵ and the *Application for Service Connection* form,⁹⁶ both of which are available on the Solo Water website.

The requirement is reiterated in the *Customer Contract*, which indicates that:⁹⁷

"Connection to our water, wastewater or system must be approved by us and comply with the conditions we set to ensure the safe and reliable supply of services. The connection must be undertaken by an accredited installer, licensed plumber or drainer and in accordance with plumbing, drainage or other regulations or standards that may apply."

and similarly:⁹⁸

"Connections to our water or wastewater systems are to be made using the services of a Solo Water accredited installer, licensed plumber or drainer and in accordance with plumbing, drainage or other regulations or standards that may apply."

The *Home Owner's Manual*⁹⁹ also refers to cross-connection tests being undertaken by Lake Macquarie City Council¹⁰⁰ prior to house occupation and the need to engage a plumber licensed by NSW Fair Trading to undertake any future plumbing work.

Catherine Hill Bay Water/Solo Water is identified as a referral authority for all Development Applications, which must be approved by Lake Macquarie City Council before building can commence. Applicants' proposals (house plans) are checked in relation to building location; the location of recycled water taps and washing machines; and BASIX provisions (ensures that rainwater tanks are removed from plans). Catherine Hill Bay Water advised that it has stamped approximately 45 house plans to date; a sample Stamped Plan and Conditions (dated 13 January 2017) for Lot 1021/No 8 Quinn Street was sighted.

Catherine Hill Bay Water indicated that an issue of concern, which it is addressing by way of the Development Approvals, is limiting backwash discharge from swimming pools into the sewerage system. It is recommending use of a filter that doesn't require backwashing, or alternatively requiring the installation of a buffer tank with throttled discharge before swimming pool installation is approved.

As discussed in Table A.5, inspection of customer service lines up to the point of connection of the customer's installations (Catherine Hill Bay Water assets) at Lots 2026, 2027 and 2018 found them to be visibly compliant with code requirements. Similarly, the pressure sewer units (PSUs) (each servicing four to five allotments) and associated boundary kits (again Catherine Hill Bay Water assets) appeared to be appropriately installed. This provides an appropriate example for customer installation compliance.

Recommendations

There are no recommendations in respect of this obligation.

⁹⁴ *Operator's Manual*, sections 3.1.5 (drinking water) and 3.1.6 (recycled water).

⁹⁵ Solo Water, *Plumbing Connection Process* (SW-BUILDERS GUIDE STAGE 1 160928), undated, available at: <http://www.solowater.com.au/wp-content/uploads/2017/02/SW-Builders-Guide-Stage-1-160928-1.pdf>

⁹⁶ Solo Water, *Application for Service Connection*, available at: <http://www.solowater.com.au/wp-content/uploads/2016/08/SW-Connection-Application-Form.pdf>

⁹⁷ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017, section 4.9.2.

⁹⁸ Solo Water, *Customer Contract* (IMS-OPER-G-8299-SW) (Issue No: 1.0), July 2017, section 8.8.

⁹⁹ Solo Water, *Catherine Hill Bay; Home Owner's Manual* (IMS-OPER-C-8312-SW) (Issue No: 1.0), July 2017, section 5.3.

¹⁰⁰ Lake Macquarie City Council holds delegated authority from NSW Fair Trading to undertake plumbing and drainage inspections where services are not provided by Hunter Water.

Opportunities for improvement

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

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>	Compliant
Risk	<p>This presents moderate risk that the appropriate operational controls may not be in place.</p>	Target for Full Compliance
		<p>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.</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017. ▪ NSW Government, <i>Network Operator’s Licence No: 16_035</i> (as issued on 22 March 2016). ▪ Solo Water, <i>Process Flow Diagram; Interim Potable System</i> (Rev 3), 11 May 2017. ▪ Solo Water, <i>Process Flow Diagram; Interim Sewage System</i> (Rev 2), 11 May 2017. ▪ 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 the Stage 1 (Interim Scheme) arrangements 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 Stage 1 (Interim Scheme) arrangements whereby the recycled water reticulation network will be charged with potable water and sewage will be collected in an interim pump out tank (for disposal of sewage by road tanker), i.e. the proposed wastewater treatment plant will not be in place.

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.¹⁰¹

On the basis of explanations provided and observations made during the audit, it is understood that the reticulation infrastructure has been constructed by contractors engaged by land developer (Rose Property Group), and that the potable water transfer pumping station and chlorine dosing facility have been constructed by contractors engaged directly by Catherine Hill Bay Water. In either case, Catherine Hill Bay Water retains overall responsibility for oversight of the construction activities; it maintains a site presence comprising a Site Manager and Site Supervisor whose roles are (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*.¹⁰²

Water industry infrastructure:

The Licence nominates the following infrastructure as specified “Water industry infrastructure” that will comprise the Stage 1 (Interim Scheme) infrastructure:

- for use in the supply of non-potable water:¹⁰³
 - “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.”*

¹⁰¹ *Network Operator's Licence*, tables 1.1, 2.1 and 3.1.

¹⁰² *Infrastructure Operating Plan*, table 4-1.

¹⁰³ *Network Operator's Licence*, table 1.2.

-
- for use in the supply of drinking water:¹⁰⁴
 - “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:¹⁰⁵
 - “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 interim 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:¹⁰⁶

- 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.”

The *Process Flow Diagram; Interim Potable System*,¹⁰⁷ which is included in both the *Infrastructure Operating Plan*¹⁰⁸ and *Drinking Water Quality Plan*,¹⁰⁹ indicates that the proposed uses are as follows:

- for the non-potable (recycled) water infrastructure (which will initially be charged with potable water):
 - “Approved non-potable water uses:
 - Toilet flushing;
 - Laundry washing machine cold water;
 - Irrigation;
 - Outdoor cleaning and washdown.”
- for the drinking water infrastructure:
 - “All potable water uses including:
 - Drinking water;
 - Bathroom taps & shower;
 - Kitchen taps and dishwasher;

¹⁰⁴ *Network Operator’s Licence*, table 2.2.

¹⁰⁵ *Network Operator’s Licence*, table 3.2.

¹⁰⁶ *Network Operator’s Licence*, tables 1.3, 2.3 and 3.3.

¹⁰⁷ Solo Water, *Process Flow Diagram; Interim Potable System* (Rev 3), 11 May 2017.

¹⁰⁸ *Infrastructure Operating Plan*, Appendix A.

¹⁰⁹ *Drinking Water Quality Plan*, Appendix B.

-
- *Laundry taps;*
 - *Hot water service;*
 - *Pool top-up;*
 - *Fire hydrants.”*

Furthermore, the *Process Flow Diagram; Interim Sewage System*,¹¹⁰ which is included in both the *Infrastructure Operating Plan*¹¹¹ and *Sewage Management Plan*,¹¹² clearly shows that the Stage 1 (Interim Scheme) infrastructure will be used for the collection and transport of sewage.

Whilst specific end uses were not inspected as part of this audit (the infrastructure was not yet operating), 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.¹¹³ 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.¹¹⁴

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.

¹¹⁰ Solo Water, *Process Flow Diagram; Interim Sewage System* (Rev 2), 11 May 2017.

¹¹¹ *Infrastructure Operating Plan*, Appendix A.

¹¹² *Sewage Management Plan*, Appendix B.

¹¹³ *Network Operator's Licence*, tables 1.4, 2.4 and 3.4).

¹¹⁴ 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

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>	Compliant
Risk	<p>This represents moderate risk that environment may not be appropriately protected during construction of the infrastructure.</p>	Target for Full Compliance
		<p>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.</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Letter 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		
<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. Construction of the infrastructure (specifically the proposed treatment plant) had not commenced prior to IPART’s approval.</p>		
<p>On that basis, Catherine Hill Bay Water is assessed to have been compliant 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>).¹¹⁵ By inference, it is also apparent that Catherine Hill Bay Water had submitted the <i>Construction Environmental management Plan (CEMP)</i> to IPART for review.</p>		
<p>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, construction of which had not commenced at the time of the audit.</p>		

¹¹⁵ 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)*).

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>	Non-compliant Insignificant
Risk	<p>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.</p>	<p>Target for Full Compliance</p> <p>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.</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Letter dated 9 May 2017 from IPART to Catherine Hill Bay Water (re: <i>Suggestion to remove licence conditions from Catherine Hill Bay Water Utility Pty Ltd’s network operator’s licence (no. 16_035)</i>). ▪ Email dated 16 November 2016 from Catherine Hill Bay Water to Risk Edge and IPART (re: <i>#203 Deed Poll</i> [although relating to the submission of management plans and other information in preparation for audit]). ▪ Email dated 22 November 2016 from IPART to Catherine Hill Bay Water (re: <i>CHB - IPART acknowledgement of Operational environmental management plan</i>). ▪ Email dated 19 January 2017 from IPART to Catherine Hill Bay Water (re: <i>Review comments - interim OEMP - Catherine Hill Bay</i>) with attachment (letter from IPART’s consultant). 		
Summary of reasons for grade		
<p>Notwithstanding a suggestion by IPART to the Minister that clause A4 be removed from the Licence, it remains an obligation under the Licence at the time of reporting. Catherine Hill Bay Water provided evidence that it has submitted an Operational Environmental Management Plan (OEMP); however, IPART has not approved the report. Furthermore, Catherine Hill Bay Water has not provided a “Report” in respect of the implementation of environmental mitigation measures to IPART for approval.</p> <p>Accordingly, it is assessed that Catherine Hill Bay Water has not demonstrated compliance with this obligation. In light of IPART’s suggestion to the Minister and the action taken by Catherine Hill Bay Water to date, the non-compliance is considered insignificant at this stage; however, in the event that the Minister rejects the suggestion, the non-compliance would be deemed significant.</p>		

Discussion and notes

Catherine Hill Bay Water provided a copy of advice received from IPART advising it that IPART has suggested to the Minister that the Minister consider removing clauses A4 and A5 from Catherine Hill Bay Water's Network Operator's Licence (Licence No: 16_035).¹¹⁶ Notwithstanding, given that at the time of reporting the Minister had not acted on IPART's suggestion, clause A4 remains as an obligation under the Licence.

Catherine Hill Bay Water provided evidence that it had submitted an Operational Environmental Management Plan (OEMP) to IPART for review on 16 November 2016,¹¹⁷ and that IPART had acknowledged receipt on 22 November 2016.¹¹⁸ It also provided an email (with attachment)¹¹⁹ which presented comments in respect of the OEMP.

Catherine Hill Bay Water advised that, in view of IPART's advice of its suggestion to the Minister, it had taken no further action in respect of:

- Revising/finalising the Operational Environmental Management Plan (OEMP) in response to IPART's comments; or
- Preparing a "Report" addressing how the environmental mitigation measures identified in the Construction Environmental Management Plan (CEMP) have been implemented during the design and construction of the Relevant Recycling Infrastructure.

The auditors consider this restraint of further action to be reasonable in light of IPART's advice.

Notwithstanding, it must (at this stage) be assessed that Catherine Hill Bay Water has not demonstrated compliance with this obligation.

Recommendations

The following recommendation is made in respect of this obligation:

- **REC-CHB-NIA.001:** It is recommended that, in the event that the Minister rejects IPART's suggestion to remove clause A4 from the Licence, Catherine Hill Bay Water should:
 - Revise/finalise the Operational Environmental Management Plan (OEMP) in response to IPART's comments and re-submit it to IPART for approval; and
 - Prepare a "Report" addressing how the environmental mitigation measures identified in the Construction Environmental Management Plan (CEMP) have been implemented during the design and construction of the Relevant Recycling Infrastructure and submit it to IPART for approval.

[In the event that the Minister accepts and acts on IPART's suggestion, there will be no longer be any requirement in respect of this obligation].

Opportunities for improvement

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

¹¹⁶ Letter dated 9 May 2017 from IPART to Catherine Hill Bay Water (re: *Suggestion to remove licence conditions from Catherine Hill Bay Water Utility Pty Ltd's network operator's licence (no. 16_035)*).

¹¹⁷ Email dated 16 November 2016 from Catherine Hill Bay Water to Risk Edge and IPART (re: #203 Deed Poll [although relating to the submission of management plans and other information in preparation for audit]).

¹¹⁸ Email dated 22 November 2016 from IPART to Catherine Hill Bay Water (re: *CHB - IPART acknowledgement of Operational environmental management plan*).

¹¹⁹ Email dated 19 January 2017 from IPART to Catherine Hill Bay Water (re: *Review comments - interim OEMP - Catherine Hill Bay*) with attachment (letter from IPART's consultant).

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>	Compliant

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

- Interviews with Catherine Hill Bay Water personnel on 4 July 2017.
- Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017.
- 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)*).

Summary of reasons for grade

Although this audit does not specifically address the infrastructure described in clause S1.1 and Table 1.2 paragraph (1) (i.e. a treatment plant for non-potable water), Catherine Hill Bay Water provided evidence that IPART has approved a report that outlines Catherine Hill Bay Water’s strategy for tankering out excess non-potable water. Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.

Discussion and notes

Catherine Hill Bay Water has not yet commenced construction of the infrastructure described in clause S1.1 and Table 1.2 paragraph (1) (i.e. a treatment plant for non-potable water); such infrastructure is not the subject of this audit.

Notwithstanding, 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.¹²⁰ By inference, it is also apparent that Catherine Hill Bay Water had submitted such report to IPART for 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.

¹²⁰ 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	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: <ul style="list-style-type: none"> a) details of Appropriate Facilities that have the capacity to accept excess sewage; and b) 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	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.	Target for Full Compliance
		Evidence that the Licensee has provided IPART with written evidence in relation to the disposal of excess sewage.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Resource Recovery, <i>Terms of Service Agreement</i>, 15 February 2016 (in relation to liquid waste removal). ▪ <i>Tankering Agreement</i> between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2015. ▪ 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: <i>CHB - IPART acknowledgement of Operational environmental management plan</i> [although relating to the requirements of Licence clause A9]). ▪ Letter dated 11 August 2017 from IPART to Catherine Hill Bay Water (re: <i>Notification of Approval – Condition A9 of Catherine Hill Bay Water Utility Pty Ltd’s Network Operator’s Licence No: 16_035</i>). 		
Summary of reasons for grade		
Catherine Hill Bay Water demonstrated that it has arrangements in place, and has provided details of such arrangements to IPART for review, in respect of the disposal of “excess sewage”. Although at the time of preparing the draft audit report there was no evidence that IPART had provided written approval of those arrangements, such written approval has subsequently been provided.		
Accordingly, Catherine Hill Bay Water is now assessed to be fully compliant with this obligation.		

Discussion and notes

Under the Stage 1 (Interim Scheme) arrangements, all sewage will be disposed of off-site. Catherine Hill Bay Water has a *Service Agreement*¹²¹ 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*¹²² 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 2019), Solo Resource Recovery “*may discharge a maximum of 150 kL per day of waste type unless given prior approval by the Corporation [Hunter Water]*”. The Interim Scheme, under which all sewage is to be disposed of off-site, will cater for a maximum of 112 ET (allotments).^{123,124} In correspondence with IPART,¹²⁵ Catherine Hill Bay Water has suggested a sewage generation rate of 500 litres per allotment per day (which the auditor considers to be conservative). On this basis, the volume of sewage generated, and which must be disposed of, under the Interim Scheme arrangements amounts to 56 kilolitres per day. This is significantly less than permitted under the *Tankering Agreement*.

In response to clarification sought by IPART in an email dated 16 May 2017,¹²⁶ Catherine Hill Bay Water provided 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).

Whilst no assessment of proposed treatment plant capacity has been made as part of this audit, the arrangements outlined by Catherine Hill Bay Water are deemed to demonstrate that adequate arrangements are (for the Interim Scheme), and will be (for the ultimate development), in place for the disposal or treatment of the sewage generated by the scheme.

Although Catherine Hill Bay Water had submitted details of its arrangements in relation to this Licence obligation to IPART, at the time of preparing the draft audit report IPART had not provided its written approval of those arrangements. IPART did, however, subsequently provide the required written approval¹²⁷ and Catherine Hill Bay Water is now assessed to be fully compliant with 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.

¹²¹ Solo Resource Recovery, *Terms of Service Agreement*, 15 February 2016 (in relation to liquid waste removal).

¹²² *Tankering Agreement* between Hunter Water Corporation and Solo Resource Recovery, dated 30 October 2015.

¹²³ *Infrastructure Operating Plan*, section 2.1.

¹²⁴ For the purposes of discussion an ET (equivalent tenement) is effectively one allotment.

¹²⁵ 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]).

¹²⁶ 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]).

¹²⁷ Letter 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*).

Table A.14 **New Infrastructure Audit Table – Network Operator’s Licence cl.B2.1 and cl.B3.1, B3.2, B3.3 and B3.4**

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B2.1 and cl.B3.1, B3.2, B3.3 and B3.4	<p>[B2.1] 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. <p>[B3.1] The Licensee must maintain insurance that is appropriate for the size and nature of the activities authorised under the Licence.</p> <p>[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.</p> <p>[B3.3] If there is, or is to be, a change in:</p> <ul style="list-style-type: none"> (a) the insurer, or underwriting panel in respect of an insurance policy held by the Licensee; or (b) the type, scope or limit on the amount of insurance policy held by the Licensee, <p>in relation to the activities authorised under the Licence, the Licensee must provide a report to IPART in accordance with the Reporting Manual.</p> <p>[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.</p>	Compliant

Risk

This presents no significant risk to the operational safety of the scheme, however, may present commercial risk to the Licensee.

Target for Full Compliance

Evidence that the Licensee has:

- Obtained/maintained 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;

prior to the commencement of commercial operation.

Evidence sighted

- Interviews with Catherine Hill Bay Water personnel on 4 July 2017.
 - Email chain between Catherine Hill Bay Water and IPART with entries on 25 July 2017 and 26 July 2017 (re: *Catherine Hill Bay Application - Insurance Expert Report*).
 - Email dated 31 July 2017 from IPART to Cobbitty Consulting (and Catherine Hill Bay Water) (re: *Catherine Hill Bay Water – Insurance*).
-

Summary of reasons for grade

Catherine Hill Bay Water demonstrated that it had submitted an Insurance Expert's report in respect of the adequacy of its insurance to IPART for review. IPART has subsequently confirmed that the insurances currently held match previously approved requirements, and noted that certificates of currency have been provided.

Accordingly, Catherine Hill Bay Water is assessed to be compliant with the obligations in respect of insurance.

Discussion and notes

Catherine Hill Bay Water advised (and provided evidence)¹²⁸ that it had submitted an Insurance Expert's report in respect of the adequacy of its insurance to IPART for review. Receipt of the report was acknowledged by IPART.¹²⁹

It is understood that the report had previously been submitted to IPART; however, it had not been presented in the required format and needed to be revised.

IPART has subsequently advised that:¹³⁰

“I received the insurance expert's report, and advise as follows:

- *It is in the correct form as per the Reporting Manual (App I);*
- *The insurances match the insurance requirements that were approved at assessment stage, in type and quantum;*
- *Relevant CoCs were provided for 'General Liability' and 'Professional Indemnity'.*

Therefore the insurance report is adequate.”

¹²⁸ Email chain between Catherine Hill Bay Water and IPART with entries on 25 July 2017 and 26 July 2017 (re: *Catherine Hill Bay Application - Insurance Expert Report*).

¹²⁹ Email chain between Catherine Hill Bay Water and IPART with entries on 25 July 2017 and 26 July 2017 (re: *Catherine Hill Bay Application - Insurance Expert Report*).

¹³⁰ Email dated 31 July 2017 from IPART to Cobbitty Consulting (and Catherine Hill Bay Water) (re: *Catherine Hill Bay Water – Insurance*).

On this basis, it is assessed that Catherine Hill Bay Water is compliant with the obligations in respect of insurance.

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

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B4	The Licensee must carry out activities authorised by the licence in compliance with any requirements of NSW Health that: <ul style="list-style-type: none"> (a) IPART has agreed to; and (b) are notified from time to time to the Licensee by IPART in writing. 	Compliant
Risk	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.	Target for Full Compliance
		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.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Letter 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 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 (IMS-ENVM-3635-SW)</i> (Version 2.1), 6 June 2017. 		
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. Accordingly, Catherine Hill Bay Water is assessed to be compliant with this obligation.		
Discussion and notes		
In notifying Catherine Hill Bay Water of the Minister’s determination in respect of its Network Operator’s Licence application, ¹³¹ IPART advised Catherine Hill Bay Water that it had agreed to, and was notifying it of, the following requirements of NSW Health:		
<ul style="list-style-type: none"> ▪ “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 <i>Australian Drinking Water Guidelines (ADWG)</i> and <i>Australian Guidelines for Water Recycling (AGWR)</i>).” 		

¹³¹ Letter 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)*).

Catherine Hill Bay Water provided a copy of email correspondence¹³² 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.”

It is also noted 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).¹³³

Accordingly, it is assessed that Catherine Hill Bay Water has complied with NSW Health’s requirements.

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 Email chain 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*).

¹³³ Solo, *Catherine Hill Bay Water Utility; Interim Water Supply Risk Assessment (IMS-ENVM-3635-SW)* (Version 2.1), 6 June 2017.

Table A.16 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	<p>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.</p>	Target for Full Compliance
		<p>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.</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Catherine Hill Bay Water personnel on 4 July 2017. ▪ Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017. ▪ Solo Water, <i>Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017. ▪ Solo Water, <i>Sewage Management Plan; Catherine Hill Bay Water Utility Interim Scheme</i> (reference: IMS-ENVM-B-3728-SW) (Revision 1.0), 13 June 2017. 		

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.17 **New Infrastructure Audit Table – Network Operator’s Licence cl.B10.1, B10.2(a) to (h), B10.3 and B10.5**

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B10.1, B10.2(a) to (h), B10.3 and B10.5	<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>[B10.5] 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>	Compliant

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 4 July 2017.
- 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*).
- Email dated 7 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Interim Letter to Solo Water - Code of Conduct*).
- Letter dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Letter – Code of Conduct*).

Summary of reasons for grade

Although a Licensee’s Code of Conduct has not yet been formally agreed, Central Coast Council has provided a letter indicating its intent to enter into the proposed *Code of Conduct* with Solo 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. There is no evidence that the terms of the proposed *Code of Conduct* have been contravened (noting that the infrastructure to which the *Code* relates has not yet commenced operation).

On the basis of Council’s “letter of intent”, it is assessed that an (interim) *Code of Conduct* is effectively in place, and Catherine Hill Bay Water is deemed to have demonstrated compliance with these obligations. Nonetheless, confirmation that the *Code of Conduct* has been signed should be assessed as part of a future Operational Audit.

Discussion and notes

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 will also be 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 pursuant to clause B10 of its Network Operator’s Licence.

Catherine Hill Bay Water has prepared a draft *Code of Conduct*¹³⁴ which was submitted to Central Coast Council on 11 May 2017¹³⁵ 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 2017,¹³⁶ 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;^{137,138} and
- Central Coast Council provided a letter confirming Council's intent to enter into the agreement (Code of Conduct).^{139,140}

Review of the revised draft *Code of Conduct*¹⁴¹ (i.e. the version including Council's comments) 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*.

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).

¹³⁴ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev0), 17 May 2017.

¹³⁵ Email dated 11 May 2017 from Catherine Hill Bay Water to Central Coast Council (re: *FW: Pumpstation Meter Reading and Contact Details*).

¹³⁶ 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*).

¹³⁷ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev2), 5 July 2017.

¹³⁸ 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*).

¹³⁹ Letter dated 5 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Letter – Code of Conduct*).

¹⁴⁰ Email dated 7 July 2017 from Central Coast Council to Catherine Hill Bay Water (re: *Interim Letter to Solo Water - Code of Conduct*).

¹⁴¹ Solo Water, *Catherine Hill Bay Water Utility; Solo Water and Central Coast Council; Code of Conduct – Interconnections* (Rev2), 5 July 2017.

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

As the infrastructure to which the proposed *Code of Conduct* relates has not yet commenced operation, contravention of the terms of the *Code* is considered unlikely. The auditors identified no evidence to the contrary.

In summary:

- Catherine Hill Bay Water is in the process of establishing a Code of Conduct with Central Coast Council, 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).
- Although not yet signed, the draft *Code of Conduct* (as at the time of reporting) addresses the requisite matters.
- Central Coast Council has provided a letter indicating its intent to enter into the proposed *Code of Conduct*.
- There is no evidence that the terms of the proposed *Code of Conduct* have been contravened.

On this basis, it is considered that an (interim) *Code of Conduct* is effectively in place, and Catherine Hill Bay Water is deemed to have demonstrated compliance with the intent of these obligations.

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.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

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.

Target for Full Compliance

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

- Interviews with Catherine Hill Bay Water personnel on 4 July 2017.
- Site inspection of Stage 1 (Interim Scheme) infrastructure at Catherine Hill Bay on 4 July 2017.
- Solo Water, *Process Flow Diagram; Interim Potable System* (Rev 3), 11 May 2017.
- Solo Water, *Infrastructure Operating Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-OPER-B-8297-SW) (Revision 1.0), 13 June 2017.
- Solo Water, *Drinking Water Quality Management Plan; Catherine Hill Bay Water Utility Interim Scheme* (reference: IMS-ENVM-B-3727-SW) (Revision 1.0), 13 June 2017.
- NSW Government, *Network Operator’s Licence No: 16_035* (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 *Drinking Water Quality Plan* provided to IPART. It is noted that a *Recycled Water Quality Plan* has not yet been documented as the recycled water infrastructure will initially be charged with potable water.

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 supply infrastructure that is the subject of this audit includes the infrastructure that will be used to supply drinking water and non-potable (recycled) water to Stage 1 of “The Beaches” land and housing development at Catherine Hill Bay.

The *Process Flow Diagram; Interim Potable System*,¹⁴² which is included in both the *Infrastructure Operating Plan*¹⁴³ and *Drinking Water Quality Plan*,¹⁴⁴ indicates that the proposed uses are as follows:

¹⁴² Solo Water, *Process Flow Diagram; Interim Potable System* (Rev 3), 11 May 2017.

¹⁴³ *Infrastructure Operating Plan*, Appendix A.

¹⁴⁴ *Drinking Water Quality Plan*, Appendix B.

-
- for the drinking water infrastructure:
 - “*All potable water uses including:*
 - *Drinking water;*
 - *Bathroom taps & shower;*
 - *Kitchen taps and dishwasher;*
 - *Laundry taps;*
 - *Hot water service;*
 - *Pool top-up;*
 - *Fire hydrants.”*

 - for the non-potable (recycled) water infrastructure (which will initially be charged with potable water):
 - “*Approved non-potable water uses:*
 - *Toilet flushing;*
 - *Laundry washing machine cold water;*
 - *Irrigation;*
 - *Outdoor cleaning and washdown.”*

As reported in Table A.9, these uses are consistent with those authorised by the Licence.¹⁴⁵

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 Plan (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 Plan*, noting that a *Recycled Water Quality Plan* has not yet been documented as the recycled water infrastructure will initially be charged with potable water.

Given that, at the time of the audit, neither the drinking water or recycled water infrastructure had yet been brought into commercial operation, 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.

¹⁴⁵ *Network operator's Licence*, tables 1.3 and 2.3.

