

Sydney Desalination Plant

Operational Audit

Version 3.0



Independent Pricing and Regulatory Tribunal

IPART reference D19/13464

8th September 2019

Document History

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Independent Pricing and Regulatory Tribunal

This document has been issued and amended as follows:

Version	Date	Description	Created by	Checked by	Approved by
1.0	23 August 2019	Draft	Dan Deere	Jim Sly and Matt Blaikie	N/A
2.0	31 August 2019	Draft Final	Dan Deere and Jim Sly	Jamie Luke	N/A
3.0	8 September 2019	Final	Dan Deere	N/A	Dan Deere

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1. Executive Summary

1.1 Auditor Declaration

This report presents the findings of an Operational Audit of Sydney Desalination Plant Pty Ltd's compliance with the requirements of its Network Operator's Licence (Licence No: 10_010) and the relevant provisions of the *Water Industry Competition (General) Regulation 2008* as they relate to the Sydney Desalination Plant (the Plant).

The auditor confirms that:

- the auditor was provided with sufficient evidence, as described in the *WIC Act Audit Guidelines*,¹ 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* 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 Sydney Desalination Plant began operation to produce drinking water during the audit period and transitioned out of 'Water Security' mode (care and maintenance or 'Mothball' mode). An extensive repair/rebuilding program has been adequately completed and a testing program has been adequately implemented to ensure effective Plant performance following severe storm damage incurred as a result of a tornado that passed through the area on 16 December 2015. The Plant achieved full production by late July 2019, ahead of the required date of 27 September 2019.

The Licensee, Sydney Desalination Plant Pty Ltd, was found to be, to the extent applicable under its licensed operating regime, operating and maintaining the Sydney Desalination Plant in full compliance with the assessed audit criteria.

1.3 Recommendations

No recommendations have been made as a result of this audit in respect of the assessed audit criteria.

One opportunity for improvement was identified in respect of the assessed audit criteria.

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

2. Introduction

2.1 Objectives

This report presents the findings of an Operational 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, Sydney Desalination Plant Pty Ltd (SDP), 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: 10_010) as they relate to the Sydney Desalination Plant (the Plant).

2.2 Licensee's Infrastructure, Systems and Procedures

The infrastructure, systems and procedures subject to audit are those related to the Sydney Desalination Plant (refer: <http://www.sydneydesal.com.au/>). The Sydney Desalination Plant treats seawater using coagulation-flocculation and direct dual media filtration, two-stage reverse osmosis, chlorine disinfection, stabilisation and fluoridation processes to produce a high quality drinking water.

Sydney Desalination Plant Pty Ltd (ACN 125 935 177) is the Licensee, holding Network Operator's Licence No: 10_010. As Licensee, SDP is responsible for the ongoing operation and maintenance of the treatment facility in accordance with its Licence Plans including:

- Versions in place during the audit period:²
 - Infrastructure Operating Plan – Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 3), July 2018; and
 - Water Quality Plan – Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018.
- Updated versions prepared after the audit period but which are referenced in this report in respect of some changes made:
 - Infrastructure Operating Plan – Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 4), July 2019; and
 - Water Quality Plan – Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019.

Subsequent to the storm event of 16 December 2015, an extensive repair/rebuilding program has been completed and a testing program has been implemented to ensure effective Plant performance. By the end of the audit period the Plant was operating in accordance with its drought trigger under the terms of its Licence as per the requirements of the *2017 Metropolitan Water Plan*.

² Previous versions of both the *Infrastructure Operating Plan* (Revision 2, dated April 2015) and *Water Quality Plan* (Revision 3, dated May 2015) were in place during the first month (approximately) of the audit period.

2.3 Audit Method

2.3.1 Audit Scope

The audit comprised an Operational Audit conducted pursuant to the *WIC Act Audit Guidelines*.³ The specific scope of the audit was as defined in IPART's letter to SDP (reference D19/13464) dated 1 July 2019. The nominated scope addresses selected requirements of:

- the *Water Industry Competition (General) Regulation 2008*; and
- Network Operator's Licence No: 10_010.

The audit period (period during which compliance has been assessed) is 2 June 2018 to 30 June 2019.

2.3.2 Audit Standard

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

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

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 one week prior to the audit fieldwork being undertaken. Audit fieldwork comprising a desktop audit of relevant documentation/records and a site inspection of the infrastructure was undertaken on 21 August 2019. The auditor requested some items of additional information and/or clarification following the audit fieldwork; that information was 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 Dan Deere and quality assured by Jim Sly. Both auditors hold relevant Lead Auditor accreditation on IPART's Technical Services and Water Licensing Panel.

SDP was represented by Matt Blaikie (Operations and Maintenance Manager) and Reece Karamihas (Senior Engineer), together with Andrew Richardson (Operations Manager), Will Kerr (Asset Manager), Glenn Phillips (Operations Supervisor), Amid Akhyani (Process Manager), Aal-e Ali (Laboratory Manager), Garrick Lai (Graduate engineer) and Colin Storey

³ IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018.

(SHEQ Manager) of Veolia Water Australia Pty Ltd (Veolia), an “Authorised person” under the Licence.

IPART representative Jamie Luke attended as an observer.

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

2.4 Regulatory Regime

The SDP operates in accordance with the provisions of a Network Operator’s Licence (Licence No: 10_010) issued under the *Water Industry Competition Act 2006* (NSW). Other relevant regulatory instruments and standards/guidelines include:

- *Water Industry Competition (General) Regulation 2008* (NSW);
- IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018;
- *Australian Drinking Water Guidelines 2011* (as amended from time to time under rolling revision);
- *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 **Sections 3 to 6**, and are presented in full detail in **Appendices A to D**.

It is noted that Licence clause numbers referenced in this report are clause numbers as identified in Network Operator's Licence No: 10_010 issued to Sydney Desalination Plant, as varied on 3 November 2017.

3. General Obligations of a Network Operator

3.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of the *Water Industry Competition (General) Regulation 2008* related to the *General Obligations of a Network Operator*.

3.2 Review of Actions

The Licensee provided some general some commentary and clarification on terminology and other minor matters in reviewing the draft audit report, but no material changes were made prior to the final report being issued.

3.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the audited *WIC Regulation* clauses related to the *General Obligations of a Network Operator*.

4. Water Supply Infrastructure

4.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of the *Water Industry Competition (General) Regulation 2008* related to *Water Supply Infrastructure*.

4.2 Review of Actions

The Licensee provided some general commentary and clarification on terminology and other minor matters in reviewing the draft audit report, but no material changes were made prior to the final report being issued.

4.3 Opportunities for Improvement

One opportunity for improvement was identified in respect of the audited *WIC Regulation* clauses related to the *Water Supply Infrastructure* as follows:

- 2019-SDP-OFI1: As Veolia and SDP gain more experience with the Plant, there will be the opportunity to refine and streamline the choice of CCPs, critical limits and their alert criteria as part of continuous improvement. This would have the benefit of better-focusing operators and management staff on the most important and critical processes and monitoring systems.

5. Schedule B to the Network Operator's Licence

5.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of *Schedule B to the Network Operator's Licence*.

5.2 Review of Actions

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

5.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the audited clauses of *Schedule B to the Network Operator's Licence*.

6. Water Industry Competition Act 2006

6.1 Summary of Findings

There were no identified non-compliances in respect of the audited clauses of the *Water Industry Competition Act (WIC Act)*.

6.2 Review of Actions

The Licensee provided some general some commentary and clarification on terminology and other minor matters in reviewing the draft audit report, but no material changes were made prior to the final report being issued.

6.3 Opportunities for Improvement

No opportunities for improvement have been identified in respect of the audited clauses of the *WIC Act*.

Appendix A Detailed Audit Findings **– General Obligations of a Network Operator**

Detailed audit findings in respect of the *General Obligations of a Network Operator* are presented in this Appendix.

Table A.1 General Obligations – WIC Reg Sched 1 cl.2(1), 2(2)(a) and 2(2)(b)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.2(1), 2(2)(a) and 2(2)(b)	<p>[2(1)] A network operator must not bring any new water or sewerage infrastructure into commercial operation without the written approval of the Minister.</p> <p>[2(2)(a)] The network operator must provide to the Minister a report, prepared by an approved auditor that indicates that the infrastructure complies with the requirements of the Regulation and any licence conditions.</p> <p>[2(2)(b)] The network operator must provide to the Minister a report, prepared by an approved auditor that indicates that the infrastructure is capable of operating safely and in accordance with its infrastructure operating plan and its water quality or sewage management plan, as the case requires.</p>	 No Requirement

Risk

This requirement reflects 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.

Target for Full Compliance

Evidence that the written approval of the Minister was obtained prior to bringing new water or sewerage infrastructure into service.

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.

Summary of reasons for grade

No new water or sewerage infrastructure had been brought into commercial operation during the audit period; accordingly, there was “No Requirement” to audit clauses 2(1), 2(2)(a) or 2(2)(b) during the audit period.

Discussion and notes

SDP advised that no new water or sewerage infrastructure had been brought into commercial operation during the audit period. Observations made during inspection of the Plant revealed no evidence to the contrary. Although extensive repair/rebuilding work had been undertaken following storm damage to the infrastructure,⁴ this does not constitute new infrastructure for the purposes of this obligation.

It is understood that the infrastructure that constitutes the Sydney Desalination Plant was in place and already operating (available for operation) at the time the Licence was granted. Accordingly, the scheme was considered to be a “brownfield” scheme for which Ministerial approval to commence commercial operation was not required.

⁴ These works were commenced prior to and completed during the audit period.

Accordingly, it was evident that SDP had not brought any new infrastructure into commercial operation during the audit period such that there was “No Requirement” for compliance with this obligation during the audit period.

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.2 General Obligations – WIC Reg Sched 1 cl. 3(a) and 3(c)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl.3(a) and cl.3(c)	<p>[3(a)] 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 the purposes for which it is licensed.</p> <p>[3(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 any publicly available standards or codes relating to its design, construction, operation and maintenance.</p>	 Compliant
Risk	Target for Full Compliance	
<p>This requirement reflects a high operational risk. Proper design and construction, safe and reliable operation, and maintenance of infrastructure in proper condition is essential to the effective (safe and reliable) delivery of agreed levels of service.</p>	<p>Evidence that the Licensee has procedures in place for ensuring that practices are kept up to date with changes to such standards or codes.</p>	
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 2), April 2015 [former <i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 3), May 2015 [former <i>Water Quality Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 3), July 2018 [<i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 4), July 2018 [<i>Water Quality Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 4), July 2019 [<i>Updated Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 5), July 2019 [<i>Updated Water Quality Plan</i>]. 		
Summary of reasons for grade		
<p>No new infrastructure was constructed or brought into commercial operation during the audit period; however, extensive repair/rebuilding work was undertaken following extensive storm damage that occurred in December 2015; that work was completed during the audit period. On the basis that the infrastructure was repaired/rebuilt on a “like for like” basis and it was previously assessed that the existing infrastructure was designed and constructed having regard to the purposes for which it is licensed and publicly available standards and codes, it is considered that this remains the case.</p> <p>It was apparent that, to the extent possible, the infrastructure was maintained in a proper condition. Furthermore, on the basis of the auditor’s experience, it appeared that maintenance had been/was being undertaken having regard to both the purposes for which the infrastructure is licensed and the relevant publicly available standards and/or codes and industry practice.</p>		

Accordingly, SDP was assessed as having demonstrated full compliance with these obligations.

Discussion and notes

Overview:

For the purposes of assessing compliance with WIC Reg Sched 1 cl.3(a), it is noted that Network Operator's Licence 10_010 authorises use of the water infrastructure for the following purposes:

“Drinking water and other purposes for which drinking water could be used safely.”

For the purposes of assessing compliance with WIC Reg Sched 1 cl.3(c), publicly available standards or codes are deemed to include relevant water industry standards, codes and standards published by Standards Australia (or recognised standards organisation) and typical industry practice.

Design and Construction of Infrastructure:

As noted in Table A.1, no new infrastructure was brought into commercial operation during the audit period, nor is any new infrastructure currently proposed. However, extensive repair/rebuilding of the existing infrastructure was undertaken following storm damage to the infrastructure; that work was completed during the audit period.

It is understood that repair/rebuilding work has been undertaken on a “like for like” basis, i.e. there has been no increase in the adopted design standard for (for example) roofing that was damaged during the storm. SDP advised that strengthening the roof structures had been considered, but not adopted.⁵ It is, however, noted that the storm event (a Category F2 (Significant) tornado)⁶ was significantly in excess of normal building design standards.

The infrastructure was proven to have been constructed having regard to the purposes for which it is licensed, i.e. the production and conveyance of potable water, following its original construction. Given that it has been repaired/rebuilt to the same design and standards and underwent performance testing/commissioning, it can be assumed that it has again been properly designed and constructed having regard to the purposes for which it is licensed.

From the perspective of compliance with standards and codes, the following observations are made (by way of example):

- Fibreglass and stainless steel pipework has been used extensively throughout the Plant, which is cognisant of the seawater being treated and the coastal environment in which the infrastructure is located.
- Chemical delivery arrangements are in place, including:
 - The truck delivery bay is drained to a collection pit (i.e. the area is banded). The bands were clear of material that might reduce their capacity. An interlock with the chemical delivery connection closes a valve to isolate the pit from the site drainage system during deliveries, thereby containing any spillage. All delivery points were clearly labelled and locked with dedicated keys.
 - An MSDS Cabinet located adjacent to the chemical storage area contained a folder with relevant data sheets.
 - Eye wash/shower installations were in place. It is understood that any use is alarmed to the control room. The units are tested 3-monthly and prior to each chemical delivery.
 - A spill kit was in place adjacent to the chemical storage area.

⁵ It is understood that insurers had insisted on “like for like” replacement.

⁶ BOM website at: <http://www.bom.gov.au/climate/current/month/nsw/archive/201512.sydney.shtml>.

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- By observation, building structures appeared to be consistent with relevant design standards and a high standard of construction.
 - By observation, visible pipework appeared to be consistent with applicable standards and industry practice.
 - It was apparent that relevant safety considerations have been incorporated into the infrastructure.
 - Some pipework was found to have minor leaks but the pipes were still operational and had been tagged for subsequent repair using pink ribbon.
 - Some instrumentation feed lines were becoming aged in the sun but were still functional and were programmed for replacement.

On this basis, it is assessed that the repaired/rebuilt infrastructure had been properly designed and constructed having regard to the relevant publicly available standards or codes and good industry practice.

Operation and Maintenance of Infrastructure:

Operation and maintenance of the infrastructure is undertaken in accordance with the general principles outlined in the *Infrastructure Operating Plan* and *Water Quality Plan* and more specifically the manuals and procedures referenced therein.^{7,8} The infrastructure was operated to produce drinking water during the audit period and has moved to routine operation and maintenance mode following repair.

SDP's approach to operation and maintenance of the infrastructure is further discussed in Table B.2.

On the basis of observations made during the audit site inspection it was apparent that the infrastructure had been/was being maintained in a proper condition. Furthermore, on the basis of the auditor's experience, it appeared that maintenance had been/was being undertaken having regard to both the purposes for which the infrastructure is licensed and the relevant publicly available standards and/or codes and industry practice.

Currency of Standards and Codes:

Under the provisions of its operation and maintenance service contracts with SDP, Veolia is responsible for the preparation and maintenance of all relevant procedural documentation and for undertaking all operation and maintenance activities. When required, access to current versions of relevant standards and codes is available via Veolia's subscription to the SAI Global "Standards Online" portal.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

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

⁷ *Infrastructure Operating Plan*, appendix 1.

⁸ *Water Quality Plan*, appendix 1.

Appendix B Detailed Audit Findings – Water Supply Infrastructure

Detailed audit findings in respect of the obligations related to *Water Supply Infrastructure* are presented in this Appendix.

Table B.1 Water Supply Infrastructure – WIC Reg Sched 1 cl. 6(1)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 6(1)	<p>Before commencing to operate water infrastructure commercially, the licensed network operator for the infrastructure must prepare, and forward to IPART, an infrastructure operating plan that indicates the arrangements that the licensee has made, or proposes to make, in relation to:</p> <ul style="list-style-type: none"> (a) the design, construction, operation and maintenance of the infrastructure, including particulars as to the life-span of the infrastructure, the system redundancy built into the infrastructure and the arrangements for the renewal of the infrastructure, and (b) the continued safe and reliable performance of the infrastructure, and (c) the continuity of water supply, and (d) alternative water supplies when the infrastructure is inoperable, and (e) the maintenance, monitoring and reporting of standards of service. 	<div style="text-align: center;">  No Requirement </div>
Risk	<p>This requirement reflects a moderate risk. IPART is required to have a copy of the <i>Infrastructure Operating Plan</i> to ensure that appropriate arrangements are in place for the effective (safe and reliable) delivery of agreed levels of service prior to starting commercial operation of the water infrastructure.</p>	Target for Full Compliance
<p>Evidence that an <i>Infrastructure Operating Plan</i>, which meets the requirements of this obligation, has been supplied to IPART prior to starting commercial operation of the water infrastructure.</p>		
Evidence sighted	<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 2), April 2015 [former <i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 3), July 2018 [<i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 4), July 2019 [<i>Updated Infrastructure Operating Plan</i>]. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. 	
Summary of reasons for grade	<p>The adequacy of the <i>Infrastructure Operating Plan</i> in relation to the infrastructure that was commercially operated during the audit period has been assessed as part of previous Licence Plan Audits. As there</p>	

was no significant change to the *Infrastructure Operating Plan* during the audit period, compliance with this obligation is deemed to have been maintained.

Furthermore, as no new water or sewerage infrastructure was brought into commercial operation during the audit period, there was “No Requirement” to assess compliance with this obligation on that basis.

Discussion and notes

The adequacy of the *Infrastructure Operating Plan* in relation to the infrastructure that was commercially operated during the audit period has been previously assessed as part of the 2013 Licence Plan Audit⁹ and the 2015 Follow-up Licence Plan Audit¹⁰ (which assessed Revision 2 of the *Plan*, dated April 2015).

The *Infrastructure Operating Plan* has been updated to Revision 3 (dated July 2018) during the audit period and Revision 4 (dated July 2019) subsequent to the audit period. As reported in respect of WIC Reg Sched 1 cl.6(3)(a) (refer Table C.4), these updates did not result in any significant change to the *Infrastructure Operating Plan*. On this basis, compliance with this obligation is deemed to have been maintained during the audit period.

Furthermore, as reported in Table A.1, no new infrastructure was brought into commercial operation during the audit period, so there was “No Requirement” to assess compliance with this obligation on that basis.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

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

⁹ Cardno, *Audit of the Adequacy of the Sydney Desalination Plant Infrastructure Operating Plan and Water Quality Plan* (Reference: 3604-09), Final Report, September 2013.

¹⁰ Risk Edge, *Water Industry Competition Act 2006 (NSW) Licence No. 10_010 Follow-up Licence Plans Audit for Sydney Desalination Plant Pty Ltd*, Final Report, 7 July 2015.

Table B.2 Water Supply Infrastructure – WIC Reg Sched 1 cl. 6(2)(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 6(2)(a)	The network operator must ensure that the infrastructure operating plan is fully implemented and kept under regular review and all of the network operator's activities are carried out in accordance with that plan.	 Compliant

Risk

This requirement reflects a high operational risk. Maintenance and implementation of the *Infrastructure Operating Plan* ensures the effective (safe and reliable) delivery of agreed levels of service.

Target for Full Compliance

Evidence that the *Infrastructure Operating Plan* is fully implemented and the Licensee's activities are carried out in accordance with that *Plan*; evidence that the *Plan* is kept under regular review.

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 2), April 2015 [former *Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 3), July 2018 [*Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 4), July 2019 [*Updated Infrastructure Operating Plan*].
- Site inspection of the Sydney Desalination Plant on 21 August 2019.

Summary of reasons for grade

SDP demonstrated that it is fully implementing, and is carrying out its infrastructure management activities in accordance with principles/arrangements documented in, the *Infrastructure Operating Plan*. Although no new infrastructure was constructed during the audit period, significant repair/rebuilding work undertaken following extensive storm damage that occurred in December 2015 was completed.

SDP also demonstrated that the *Infrastructure Operating Plan* was kept under review during (and subsequent to) the audit period.

Accordingly, SDP was assessed as having demonstrated full compliance with this obligation.

Discussion and notes

The auditor checked for evidence that the *Infrastructure Operating Plan* was being fully implemented and kept under regular review and that all of the Network Operator's activities are carried out in accordance with that Plan.

Design and Construction:

As reported in Table A.1, no new infrastructure was brought into commercial operation during the audit period; however, extensive repair/rebuilding of the existing infrastructure following storm damage to the infrastructure was completed and the Plant began full-scale operation. As the Plant was licensed as a brownfield scheme after construction of the infrastructure had been completed, the *Infrastructure Operating Plan* includes minimal details of the arrangements for the design and construction of new infrastructure.

Although the *Infrastructure Operating Plan*¹¹ does address arrangements for the renewal of infrastructure, with references to relevant supporting documentation and procedures, the repair/rebuilding work required in respect of the storm damage was undertaken in a different context.

As reported in Table A.2, repair/rebuilding was undertaken on a “like for like” basis, although it is understood that consideration was given to (for example) strengthening roof structures and RO membranes were replaced. Notwithstanding, there is evidence that detailed condition assessments, consistent with the requirements of the *Infrastructure Operating Plan*,¹² were undertaken as part of the repair/rebuilding planning process; for example, repairs to concrete structures was based on a detailed condition assessment.¹³

It is noted that, whilst not undertaken as part of the rebuilding process, the RO membranes were replaced in preparation for restart of the Plant. The membranes remained in preservation following the storm and were considered undamaged. Replacement of the membranes was required as part of the restart process as there was no allowance testing during the Water Security operational mode as it had been assumed that membranes would be replaced prior to restart. As the supply lead time for membranes is in excess of the 8 month restart period, SDP chose to procure new membranes early (with appropriate cancellation options) in anticipation of restart being triggered.

On this basis of the observations made, it is assessed that any design and construction of infrastructure (principally repair/rebuilding of storm damaged infrastructure) had been undertaken generally in accordance with the principles/arrangements outlined in the *Infrastructure Operating Plan*.

Operation and Maintenance:

As reported in Table A.2, operation and maintenance of the infrastructure is undertaken in accordance with the general principles outlined in the *Infrastructure Operating Plan* and *Water Quality Plan* and more specifically the manuals and procedures referenced therein.^{14,15}

Veolia, an “Authorised person” contracted to undertake operation and maintenance of the infrastructure for SDP, uses a Computerised Maintenance Management System (CMMS) to manage (and record) its maintenance activities. Veolia has successfully completed migration of all Plant assets into its VAMS (Veolia Asset Management System, which is now being used to manage all maintenance activities).¹⁶

Veolia advised that during the audit period it moved from its “Mothball” maintenance schedule (that is implemented during periods that the Plant is shut down and not operational) to its “Operational” maintenance schedule (that has been implemented now that the system is operating, i.e. producing and delivering drinking water). During the re-commissioning and restart period some additional activity took place as appropriate; the Plant began re-start in late January 2019.

Random samples were selected during the audit to assess the capture of assets and maintenance activities within VAMS and see records of maintenance undertaken during the audit period as follows:

- As an overview, evidence of the Plant in the VAMS was sought and Veolia showed that there was a ‘Kurnell Desalination Plant’ link at the highest level in the hierarchy for the site.
- A request was made to see evidence relating to the critical first pass RO EC analysers as an example of how a critical electrical asset was maintained. The Module 1 analyser (AIT414-15 RO Mod 1 Train 1 Pass 1 Rear Permeate EC transmitter), which measures water quality passing to the

¹¹ *Infrastructure Operating Plan*, appendix 1 (Items 1 and 2).

¹² *Infrastructure Operating Plan*, appendix 1 (Items 1 and 2).

¹³ R Gaudin, *Sydney Desalination Plant; Concrete Structures Cyclone Dilapidation Report for Lamella Thickening Tanks, Filter Building (Module 1), Filter Building (Module 2), Drinking Water Tank, Water Treatment Plant*, 30 March 2017.

¹⁴ *Infrastructure Operating Plan*, appendix 1.

¹⁵ *Water Quality Plan*, appendix 1.

¹⁶ At the time of the 2018 Operational Audit, asset information was being migrated from the previously used Maximo system into VAMS.

intermediate permeate tank, was seen. Evidence of completed instrument maintenance and calibration was sighted for records finalised on 8 November 2018, 7 January 2019, 10 May 2019 and 15 August 2019. The instrument was partly offline during the period, but otherwise the work took place quarterly as per the VAMS schedule. VAMS included parent work orders that trigger rounds of work on like instruments, completed dates, and dates for future work orders. The next scheduled routine maintenance and calibration was sighted as being due 1 October 2019. The records captured who did the work, which can be done in house or by third parties. The 10 May 2019 completed activity record was followed up and the onsite work was shown to have been undertaken on 22 March 2019 by Endress and Hauser who also provided a detailed record of that work which was retained on file in VAMS. The details, such as the Tag ID, matched between the signed off contractor records and the VAMS reference. The auditor noted that the degree of difference between the instrument accuracy before and after the calibration was acceptably low indicating that the quarterly frequency was adequate.

- A request was made to see evidence relating to a critical chlorine analyser as an example of how a critical electrochemical asset was maintained. The CCP 5 chlorine concentration analyser after the 40 ML storage tank was selected which measures chlorine after approximately four hours retention time post dosing. The analyser AIT61114-05 Drinking Water Tank to Lap Smple Pmp Free Res Chlor Trans for CCP5 was seen. VAMS records showed cleaning undertaken in the past, and scheduled to occur in future, at a frequency of twice-monthly, monthly, quarterly, six-monthly and annually, with more detailed and in depth maintenance activities occurring less frequently. Examples were shown of work orders marked as completed 5 April 2019 and 15 August 2019. The latter was completed in-house by an instrument technician against an internal work order. The work order completed 5 April 2019 was followed up in more detail as it was a quarterly activity and occurred during the audit period. The work order completed 5 April 2019 was undertaken by Evoqua who completed a full instrument service on 15 March 2019 and provided a photo of the instrument along with a detailed report when the work was completed. The report covers what work was undertaken, including what was replaced if relevant.
- A request was made to see evidence relating to a critical mechanical asset and a high pressure pump (HP Pump) was selected for assessment. Specifically, asset PMP41211-00 RO M1 1P T1 HP Pmp Unit was reviewed in VAMS. Work activities were scheduled from two-weekly to four-yearly within VAMS. Examples were seen of HP Pumps being serviced, including the selected asset, as part of a group since many activities for similar assets are carried out together. The estimated asset life was noted as 25 years.
- A request was made to see evidence relating to a critical civil asset and a treated water storage was selected for assessment. The 40 ML final water storage was TNK61101-00 Drink Water Tnk was selected and found to have been provided with a new roof sheet during 2017, although the concrete tank itself didn't need replacement. New sealing in the past year had occurred on both the concrete and on the roof to vermin-proof it using foam. The tank has a staircase to assist with its inspection and is designed to be self-cleaning with wide gutters, sealed joints and four large downpipes. The asset is subject to regular 'walk-around' inspections on one of two 'walk-around' routes that Veolia operators follow on a regular basis.

A key finding was that the VAMS system was well understood by Veolia staff, was functioning fast and effectively, and, above all, that all records of work sampled were very clear and sufficiently detailed, both with respect to the notes captured in VAMS and the attached files. This provides evidence of careful and diligent maintenance of the infrastructure, which was consistent with its state during physical observations made on the day. Over time SDP will build up some excellent records and information that can be used to continually improve and optimise its operations. In addition, the

VAMS records provide robust evidence of good practice and compliance under audit or other review processes.

Longer term planning was assessed and the RO membranes were selected as an example. SDP advised that some 37,000 membranes were in place at the Plant and the estimated life cycle is approximately four years for the first pass and seven years for the second pass (nominal life) based on Dow's estimated replacement schedule. However, in practice, some membranes fail earlier than others depending on their position in the process train order. Therefore, now that new membranes are in place, replacements are scheduled as part of an annual business case that decides when to replace which membranes and a separate membrane payment is made for these and similar capital assets.

More routine operational inspections and maintenance were queried for the more frequent routine tasks that don't get into VAMS. Operations staff conduct Plant walk-arounds on route A and route B each day against a daily checklist.

On the basis of the observations made, records sighted and discussions with SDP/Veolia representatives during the audit, it is apparent that operation and maintenance of the infrastructure had been undertaken (to the extent applicable) in accordance with the principles/arrangements outlined in the *Infrastructure Operating Plan*.

Regular Review of Infrastructure Operating Plan:

The *Infrastructure Operating Plan* was updated to Revision 3 (dated July 2018) early in the audit period and remained unchanged throughout the remainder of the audit period. It has subsequently been updated to Revision 4 (dated July 2019).

It is therefore assessed that, for the purposes of this obligation, the *Infrastructure Operating Plan* was kept under review during the audit period, noting that the *Infrastructure Operating Plan* was updated to reflect the move from the mothball to the operational state as well as the completion of re-build works.

Accordingly, SDP is considered to have complied with this obligation during the audit period.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

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

Table B.3 Water Supply Infrastructure – WIC Reg Sched 1 cl. 7(1)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 7(1)	<p>Before commencing to operate water infrastructure commercially, the licensed network operator for the infrastructure must prepare, and forward to IPART, a water quality plan, in relation to the water supplied from the infrastructure, that specifies:</p> <p>(a) if the water so supplied is drinking water, how the 12 elements of the framework for the management of drinking water quality, as detailed in the Australian Drinking Water Guidelines, have been addressed and will be implemented, and</p> <p>(b) if the water so supplied is non-potable water, how the 12 elements of the framework for the management of recycled water quality and use, as detailed in the Australian Guidelines for Water Recycling, have been addressed and will be implemented and, having regard to those guidelines, the purposes for which the water may be used and the purposes for which the water may not be used.</p>	 No Requirement

Risk

This requirement reflects a moderate operational risk. IPART is required to have a copy of the *Water Quality Plan* to ensure that the arrangements for the management of water quality and use are consistent with the relevant guidelines.

Target for Full Compliance

Evidence that a *Water Quality Plan*, which meets the requirements of this obligation, has been supplied to IPART prior to starting commercial operation of the water infrastructure..

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.
- Sydney Desalination Plant, *Water Quality Plan* (Revision 3), May 2015 [former *Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018 [*Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019 [*Updated Water Quality Plan*].

Summary of reasons for grade

The adequacy of the *Water Quality Plan* in relation to the infrastructure that was commercially operated during the audit period has been assessed as part of previous Licence Plan Audits. As there was no significant change to the *Water Quality Plan* during the audit period, compliance with this obligation is deemed to have been maintained.

Furthermore, as no new water or sewerage infrastructure was brought into commercial operation during the audit period, there was “No Requirement” to assess compliance with this obligation on that basis.

Discussion and notes

The adequacy of the *Water Quality Plan* in relation to the infrastructure that was commercially operated during the audit period has been previously assessed as part of the 2013 Licence Plan Audit,¹⁷ the 2015 Follow-up Licence Plan Audit¹⁸ (which assessed Revision 3 of the *Plan*, dated May 2015) and the 2018 Follow-up Licence Plan Audit (which assessed Revision 4, dated July 2018).¹⁹

The *Water Quality Plan* has been updated to Revision 4 (dated July 2018), which as reported above has been previously assessed, during the audit period and Revision 5 (dated July 2019) subsequent to the audit period. As reported in respect of WIC Reg Sched 1 cl.6(3)(a) (refer Table C.4), it has been assessed that the changes were not significant. On this basis, compliance with this obligation is deemed to have been maintained.

Furthermore, as reported in Table A.1, no new infrastructure was brought into commercial operation during the audit period, so there was “No Requirement” for compliance with this obligation on that basis.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

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

¹⁷ Cardno, *Audit of the Adequacy of the Sydney Desalination Plant Infrastructure Operating Plan and Water Quality Plan* (Reference: 3604-09), Final Report, September 2013.

¹⁸ Risk Edge, *Water Industry Competition Act 2006 (NSW) Licence No. 10_010 Follow-up Licence Plans Audit for Sydney Desalination Plant Pty Ltd*, Final Report, 7 July 2015.

¹⁹ Water Futures/Cobbitty Consulting, *Sydney Desalination Plant; Follow-up Licence Plan Audit* (Version 3), 3 September 2018.

Table B.4 Water Supply Infrastructure – WIC Reg Sched 1 cl. 7(2) and 7(4)(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 7(2) and 7(4)(a)	<p>[7(2)] A network operator’s water quality plan in relation to water infrastructure for drinking water must be consistent with the Australian Drinking Water Guidelines.</p> <p>[7(4)(a)] The network operator must ensure that its water quality plan is fully implemented and kept under regular review and the network operator's activities are carried out in accordance with that Plan.</p>	 Compliant

Risk

This requirement reflects a high operational risk. Implementation of the *Water Quality Plan* ensures that the water supplied complies with the specified quality requirement.

Target for Full Compliance

Evidence that the *Water Quality Plan* is fully implemented and the Licensee’s activities are carried out in accordance with that *Plan*; evidence that the *Plan* is kept under regular review.

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.
- Sydney Desalination Plant, *Water Quality Plan* (Revision 3), May 2015 [former *Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018 [*Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019 [*updated Water Quality Plan*].

Summary of reasons for grade

Clause 7(2) – Water Quality Plan consistency with the ADWG:

Consistency of the *Water Quality Plan* with the *Australian Drinking Water Guidelines* has been assessed as part of previous Licence Plan Audits and compliance with this obligation is deemed to have been maintained throughout the audit period.

Clause 7(4)(a) – Implementation of the Water Quality Plan:

SDP demonstrated that the principles/arrangements outlined in the *Water Quality Plan* had been implemented (to the extent applicable) during the audit period. SDP also demonstrated that the *Water Quality Plan* and supporting risk assessment was kept under review during (and subsequent to) the audit period.

Accordingly, SDP was assessed to have demonstrated compliance with this obligation.

Discussion and notes

Clause 7(2) – Water Quality Plan consistency with the ADWG:

Licence Plan Audits undertaken to assess the adequacy of the *Water Quality Plan* pursuant to WIC Reg Sched 1 cl.7(1) (refer Table B.3) also considered consistency with the *Australian Drinking Water Guidelines* (ADWG). Accordingly, the *Water Quality Plan* is deemed to have been assessed as being consistent with the ADWG and remained so throughout the audit period.

Clause 7(4)(a) – Implementation of the Water Quality Plan:

The auditors checked for evidence that the *Water Quality Plan* was being fully implemented and kept under regular review and that all of the Network Operator's activities are carried out in accordance with that Plan.

Monitoring Systems:

Instrumentation required for operational monitoring was in place. Provisions had been made to ensure the accuracy of readings where required; for example, although mounted externally, turbidity meters on the outlet from the dual media filters were mounted on concrete walls and protected with shades to avoid overheating.

Critical Control Point Monitoring:

Critical process/Critical Control Points (CCPs) and the parameters used to monitor and control operation of the Plant in each case are identified in the *Water Quality Plan*.²⁰ The majority, but not all of these parameters are monitored online via the SCADA system.

The SCADA system was viewed during the audit. The system was functioning fast and effectively and provided good evidence of monitoring of online analysers. The SCADA system clearly shows the operator limits as well as the CCP process limits which is an excellent means of providing visibility of the critical limits whilst still permitting operators to set and operate to locally-derived operational and contractual limits. Hence operators can see the CCPs and critical limits as agreed with NSW Health and Sydney Water. In addition, a tab was shown that provides a CCP summary for all CCPs as well as a tab showing the critical alarms to help highlight those for operator attention. Both supply security and water quality is covered under the critical alarms page.

Examples of records of specific critical limit monitoring were assessed during the audit for alignment with the Veolia HACCP Register²¹ as follows:

- The total chlorine analyser critical limit values for CCP6 were set in SCADA at < 0.8 and > 3 mg/L with a 30 min delay timer which was aligned with the current Veolia HACCP Register.
- The electrical conductivity (EC) analyser for CCP1a Train 1 critical limit value was set in SCADA at > 500 µS/cm after 10 min delay timer which was aligned with the current Veolia HACCP Register.
- The EC analyser for CCP2 critical limit value was set in SCADA at > 50 µS/cm after 10 min delay timer which was aligned with the current Veolia HACCP Register.
- The pH analyser for CCP6 critical limit values were set in SCADA at < 7 to > 8.5 pH units after 30 min delay timer which was aligned with the current Veolia HACCP Register.
- The total chlorine analyser for CCP6 critical limit value was set in SCADA at 1.7 ± 0.25 mg/L which was aligned with the current Veolia HACCP Register.

It was noted that the SCADA system was functioning fast and effectively and was used to display examples of trends for the past 13 weeks for a range of parameters, such as pH and chlorine. Unusual results seen in those trends were able to be explained by Veolia and SDP staff.

Water Quality Verification Monitoring:

Verification monitoring was undertaken during the audit period, including both as part of the Plant commissioning and restart process, and routine monitoring following restart. The restart monitoring plan including some additional monitoring, beyond the usual routine program, as reviewed and agreed with NSW Health.

System Risk Analysis:

²⁰ *Water Quality Plan*, appendix 2.

²¹ Veolia, *Appendix B_SDP HACCP Register (v - tracked rev2)*, undated.

The *Water Quality Plan*²² indicates that the site-specific risk assessment is to be reviewed annually. It further indicates that risk assessments are undertaken after major changes to the Plant's process or equipment; after changes to regulatory/legislative requirements impacting the Plant; after major incidents; and/or upon a restart of the Plant after Mothball.

Review of the Risk Register²³ and minutes of the risk assessment review workshop reveals that the most recent review was undertaken on 9 November 2018.²⁴ In addition, Veolia also updated its Risk Register, most recently on 13 November 2018.²⁵ In both cases, suitable risk assessment teams, including NSW Health and Sydney Water for the SDP Risk Register, and SDP staff for the Veolia Risk Register, were shown to have been present and involved in the updates.

Regular Review of Water Quality Plan:

The *Water Quality Plan* was updated to Revision 4 (dated July 2018) early in the audit period and then remained unchanged throughout the remainder of the audit period. It has subsequently been updated to Revision 5 (dated July 2019) to reflect restart of the Plant. One change captured in the update of the *Water Quality Plan* was the completion of handover of pump station control from Sydney Water to SDP and the creation of automated control based on water quality at the transfer point at Shaft 11 (CCP7).

It is therefore assessed that, for the purposes of this obligation, the *Water Quality Plan* was kept under review during the audit period, noting that the *Water Quality Plan* was updated to reflect the move from the mothball to the operational state as well as the completion of re-build works.

In addition, ongoing review takes place through a number of mechanisms. For instance, SDP can attend Joint Operating Group (JOG) meetings with NSW Health and Sydney Water (including having attended the recent event on Monday 19th August at NSW Health). SDP intends to have quarterly meetings with NSW Health to discuss water quality, with the first of these meetings scheduled for 11 September 2019. In addition, SDP is subject to the Fluoride Code of Conduct audits. SDP provided regular reports to NSW Health and Sydney Water on water quality performance during early Restart, and continues to provide monthly reports to Sydney Water on an ongoing basis. Ongoing NSW Health notifications are only made under criteria agreed in the protocol between SDP and NSW Health.

In summary, on the basis of the observations made and discussions with SDP/Veolia representatives during the audit, it is apparent that the principles/arrangements outlined in the *Water Quality Plan* had been implemented (to the extent applicable) during the audit period.

One opportunity for improvement noted was that, as Veolia and SDP gain more experience with the Plant, there will be the opportunity to refine and streamline the choice of CCPs, critical limits and their alert criteria as part of continuous improvement. This would have the benefit of better-focusing operators and management staff on the most important and critical processes and monitoring systems.

Recommendations

There are no recommendations in respect of this obligation.

Opportunities for improvement

One opportunity for improvement was identified, as follows:

- **2019-SDP-OFI1:** As Veolia and SDP gain more experience with the Plant, there will be the opportunity to refine and streamline the choice of CCPs, critical limits and their alert criteria as part of continuous improvement. This would have the benefit of better-focusing operators and management staff on the most important and critical processes and monitoring systems.

²² *Water Quality Plan*, section 3.5.

²³ Sydney Desalination Plant, *SDP WQ risk assessment- restart and operation 091118*, 9 November 2019.

²⁴ Sydney Water and Sydney Desalination Plant, *Restart Water Quality Risk Assessment, Minutes*, 9 November 2019.

²⁵ Veolia, *TEM-8928 Kurnell Risk Register - Water Quality - 1*, 13 November 2019.

Table B.5 Water Supply Infrastructure – WIC Reg Sched 1 cl. 8(2)(a) and 8(2)(b)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 8(2)(a) and 8(2)(b)	<p>[8(2)(a)] While water is being supplied to premises in respect of which a water meter has been installed, the licensee must ensure that the water meter is properly maintained and periodically tested.</p> <p>[8(2)(b)] While water is being supplied to premises in respect of which a water meter has been installed, a network operator must ensure that the water meter is read at intervals of no more than 4 months.</p>	 Compliant
Risk	<p>This requirement reflects a 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 reading accurately, that performance monitoring and maintenance (when required) is undertaken, and that meter readings are passed on to the customer.</p>
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. 		
Summary of reasons for grade		
<p>SDP and Veolia demonstrated that the two relevant water meters that are operated in parallel were adequately subjected to monitoring, maintenance, testing and reporting. The meters are read electronically, checked for accuracy annually, and reported both online and monthly to the customer. Accordingly, SDP was assessed to have demonstrated compliance with this obligation.</p>		
Discussion and notes		
<p>SDP and Veolia own, operate and maintain two meters that are used to determine the quantity of treated drinking water supplied to Sydney Water. Both meters are read continually (feeding to Sydney Water’s IICATS and SDP’s SCADA) and in parallel under a dual validation regime with discrepancies of more than 1% triggering follow up. The meters are subjected to ongoing routine online monitoring and reporting as well as specialist maintenance and testing annually by Krohn. Krohn check the meters for accuracy annually using their specialist methodology. Billing occurs monthly based on the meter readings as part of monthly reporting. Records Krohn conducting an annual electronic validation of the flow meters was provided. The work involves the use of a Krohn model flow meter ‘OptiCheck’ test with the most recent record being shown for 6 December 2018 for the meters identified in VAMS as FIT61115-1 Delivery Water to Town FT. The certificates of validation are shared with Sydney Water. Accordingly, SDP was assessed to have demonstrated compliance with this obligation.</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 these obligations.</p>		

Table B.6 Water Supply Infrastructure – WIC Reg Sched 1 cl. 9(a)

Clause	Requirement	Compliance Grade
WIC Reg Sched 1 cl. 9(a)	A network operator of water infrastructure to supply drinking water must ensure the water supplied is fit for human consumption.	 Compliant

Risk

This requirement reflects a high operational risk. It is essential from a safety viewpoint that water supplied as drinking water is fit for human consumption.

Target for Full Compliance

Evidence that the water supplied is fit for human consumption, i.e. is compliant with the Australian Drinking Water Guidelines (ADWG).

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.
- Sydney Desalination Plant, *Water Quality Plan* (Revision 3), May 2015 [former *Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018 [*Water Quality Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019 [*Updated Water Quality Plan*].

Summary of reasons for grade

The process for ensuring compliance with the *Australian Drinking Water Guidelines*, and results of monitoring, were assessed during the audit. No reports of non-compliant drinking water having been delivered into supply were issued by SDP and no evidence of non-compliant drinking water having been supplied was noted during the audit.

Accordingly, SDP was assessed to have demonstrated compliance with this obligation.

Discussion and notes

Evidence that drinking water was compliant with the *Australian Drinking Water Guidelines* (ADWG) was sought from two perspectives. Firstly, operational monitoring SCADA data was reviewed to see if non-compliant water had been supplied due to critical limits being breached and diversion to the ocean having failed to operate. Secondly, verification monitoring data was reviewed to see if non-compliant drinking water had been detected, either from laboratory or field testing, or from customer complaints.

No reports of non-compliant drinking water having been delivered into supply were issued by SDP. Evidence was sought of drinking water compliance by checking monitoring records.

Critical Limit Operational Monitoring:

Critical limit operational monitoring data was reviewed by checking the records on the SCADA system. The records in SCADA are very easy to audit since they show the historical alarm setpoints and limits as well as the monitoring results. Trends were viewed for the past 13 weeks for a range of parameters with a focus on pH and chlorine concentrations for CCP6. A number of unusual results were seen in those trends but all were able to be explained by Veolia and SDP staff.

An example of response to adverse monitoring results was sought for the audit period. A result from 26 June 2019 was illustrated on Google Drive, which provided a copy of a completed *NSW Kurnell*

Early Warning and Incident Report. The report showed completed records as well as the contact numbers for SDP and Sydney Water staff. The example sighted, with reference EW201900108, related to air causing a false reading on a pH unit. Although not a trigger, SDP demonstrated awareness of the need to use Form A and Form B for notification of IPART and the process for notifying NSW Health, Sydney Water and IPART.

Water Quality Verification Monitoring:

Verification monitoring was undertaken during the audit period, including both as part of the Plant commissioning and restart process, and routine monitoring following restart. The restart monitoring plan included some additional monitoring, beyond the usual routine program, as reviewed and agreed with NSW Health.

A spreadsheet of results was shown and interrogated for parameters such as B, Br and *E. coli*. to check whether results were being provided at the required frequency, and if performance met the ADWG.

The monitoring was found to be occurring at a frequency higher than the minimum required, e.g. daily *E. coli* testing was occurring rather than weekly as required; similarly B testing was occurring more frequently than the monthly required.

The worksheet clearly shows the contractual and ADWG limits for all parameters and highlights exceedances visually. In addition, the laboratory (Sydney Water) is required to notify if agreed exceedances, e.g. of the ADWG, are identified during monitoring. Internally, Veolia reports against contractual limits which in most cases are more stringent than the ADWG. But importantly, Veolia operators and analysts can see both on their results worksheet to help them keep sight of the two.

It was noted that the same worksheet compared SCADA readings with field tests conducted by Sydney Water (e.g. for chlorine) with on-site lab readings and discrepancies are highlighted and followed up. This is an excellent tool to highlight exceedances and discrepancies and in the long-term the same data can help to inform optimisation of monitoring, tolerances and calibration and maintenance strategies.

The onsite laboratory was audited to assess the veracity of water quality testing conducted on site since the onsite laboratory is not NATA accredited. The onsite laboratory is only used for operational cross-checking and contractual monitoring so doesn't need to be NATA accredited. All items inspected were found to be in good order. The laboratory was well set up and in good condition. Reagents were appropriately stored and within their shelf life. Examples included:

- The 10, 58.67 and 1,000 $\mu\text{S}/\text{cm}$ EC working solutions were dated and the stock solutions, provided by Rowe Scientific, were within their use-by dates (30 November 2019, 4 February 2021 and 4 September 2019, respectively). The reagents were stored at room temperature.
- The chlorine is analysed on site using the titration method. The chlorine standards were stored in the fridge in the dark, as required, and were to expire April 2020. The phosphate buffer was to expire March 2024. The 5% KI solution had no expiry date but was produced April 2019 so was recent. The phenylarsine oxide was set to expire February 2020.

Onsite laboratory monitoring:

Onsite laboratory instruments were checked for evidence of calibration. In general instruments are checked regularly by in-house staff and given a detailed inspection and service annually. For instance, Premier Calibrations had been on site in February 2019 and was due to return in February 2020; this was evidenced by stickers on the benchtop instruments.

Innovation is occurring onsite with a new B testing analyser having been sourced and currently being used on a trial basis to provide more frequent B determinations.

Customer feedback:

There was no evidence from customer feedback or complaints that the introduction of the water from the Plant had resulted in water quality that failed to comply with the aesthetic aspects of the ADWG.

Some three complaints reported once the Plant was turned on; in each case the member of the public that complained thought the issue to be related to the water from the Plant. However, none were in areas provided with water from the Plant.

Summary:

Based on the evidence reviewed, SDP was conducting sufficient operational monitoring (online, field and benchtop) and verification monitoring (field and laboratory) that it should be able to detect if water was being supplied that didn't meet the ADWG. In addition, SCADA, spreadsheet and laboratory records sighted didn't reveal any evidence of water failing to meet the ADWG being supplied. Accordingly, SDP was assessed to have demonstrated compliance 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 these obligations.

Appendix C Detailed Audit Findings **– Schedule B to the Network Operator’s Licence**

Detailed audit findings in respect of the obligations under *Schedule B to the Network Operator’s Licence* are presented in this Appendix.

Table C.1 Schedule B to the Network Operator's Licence – Clause B1

Clause	Requirement	Compliance Grade
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 requirement reflects 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. If the Licensee has ceased to have this capacity, evidence that it has reported this to IPART immediately in accordance with the Reporting Manual.

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 3), July 2018 [*Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018 [*Water Quality Plan*].
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 4), July 2019 [*Updated Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019 [*updated Water Quality Plan*].
- Curriculum vitae for Matt Blaikie, undated.
- SDP “Who we are/operator” webpage at: <http://www.sydneydesal.com.au/who-we-are/operator/>.
- Veolia website at: <https://www.veolia.com/anz/>.
- SDP, *Compliance Manual* (Doc ID 557126073/v1), undated.
- Veolia, Training Schedule & Tracker, undated.

Summary of reasons for grade

SDP demonstrated that, with the support of Veolia under long-term contractual arrangements, it maintained the technical capacity to carry out the activities authorised by the Licence during the audit period (and subsequently), and that there was no requirement to report the contrary to IPART. Furthermore, new staff had been successfully appointed, mentored and training begun to enable the Plant to be operated as required representing an impressive achievement in recruitment and training. Accordingly, it was assessed that SDP was fully compliant with this obligation.

Discussion and notes

[It is noted that, consistent with the audit scope defined by IPART, the auditor has not assessed the financial and organisational capacity of the Licensee as part of this audit but only the technical capacity.]

Technical Capacity:

Both the *Infrastructure Operating Plan*²⁶ and the *Water Quality Plan*²⁷ indicate that SDP has entered into three long-term contracts with Veolia for the operation and maintenance of the Plant, drinking water pumping station and the Kurnell to Erskineville pipeline, i.e. the three principal components of the licenced infrastructure. Under the contractual arrangements, Veolia, which is nominated as an “Authorised person” under the Licence, is primarily responsible for operation and maintenance of the infrastructure, i.e. carrying out the activities authorised by this Licence.

The principal asset management related staffing roles at the SDP are the Chief Operating Officer (Philip Narezzi) and the Operation and Maintenance Manager (Matt Blaikie). These roles provide contractual oversight to the services provided by Veolia.

Review of the curriculum vitae for the Operation and Maintenance Manager, Matt Blaikie²⁸ (for example) revealed that he has bachelor’s degree qualifications in Civil and Environmental Engineering as well as Science. He has more than 10-years’ engineering experience including extensive involvement with both desalination and contract management, and the Adelaide Desalination Project in particular. Although a position description was not sighted, on the basis of his experience, he is considered well qualified for the role as understood by the auditor.

Veolia maintains an extensive staff complement at the Plant. There are now approximately 35 operations, maintenance and technician staff working at the Plant. The shift arrangements included at least two operators on staff during the night shift and four during the day shift along with three day technicians and eight maintenance technicians (four electrical and four mechanical). In addition, there are a number of Veolia engineers (process, electrical and mechanical) both on site and attending site as required.

Review of the training program of the Veolia staff identified experienced engineering oversight as well as specific training of key operators. Specifically, the Training Schedule & Tracker was shown on Veolia’s intranet, being a Google Sheets summary that lists all of the operators along with their competencies and training. The worksheet covers course name, frequency of renewal, method of delivery and responsibility for delivery. Veolia has Unit Process Guides (UPGs) for specific tasks linked to a buddy system for mentoring new staff for the first month or so and staff familiarity with those UPGs is captured in the worksheet. The same buddy system was used to train staff to complete their ‘route inspections’ as part of routine operations. In addition, courses completed by some or all staff included: HACCP, chlorination, chloramination, lime and CO₂ dosing, early warning and incident notification and reverse osmosis, energy recovery and dual media filtration training. The goal is to move towards Certificate III operators over the longer-term. In addition, specific training was illustrated for laboratory analytical techniques with a sign off on competency being provided for staff. Veolia is moving to more advanced training over time to reduce reliance on instrument specialists that currently attend for monthly to three-monthly work that onsite staff could be trained to do. Veolia intends to conduct cross-training and learning over time to improve staff capability.

In summary, it was apparent that SDP, principally through the resources of Veolia (nominated as an “Authorised person” under the Licence), currently has the technical capacity to undertake the activities authorised by the Licence and has arrangements (procedures and training resources) in place to maintain and increase its technical capacity over time.

Notification to IPART:

This obligation requires that, in the event that the Licensee ceases to have the technical, financial and organisational capacity to carry out the activities authorised by the Licence, it must report this to

²⁶ *Infrastructure Operating Plan*, section 2.2.2.

²⁷ *Water Quality Plan*, section 2.2.2.

²⁸ Curriculum vitae for Matt Blaikie, undated.

IPART immediately in accordance with the *Reporting Manual*. The *Reporting Manual*²⁹ reiterates the requirement for immediate notification and further indicates that such reporting must be verified (signed) by the Licensee's Chief Executive Officer.

It is noted that SDP's *Compliance Manual*³⁰ identifies the Licence requirement to notify IPART immediately if it ceases to have the capacity to undertake the activities authorised by the Licence.

On the basis of observations made during the audit, SDP has maintained the capacity to carry out the activities authorised by the Licence and there has been no requirement to report the contrary to IPART.

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.

²⁹ *Reporting Manual*, appendix E, page 36.

³⁰ SDP, *Compliance Manual* (Doc ID 557126073/v1), undated, Item 48.

Table C.2 Schedule B to the Network Operator's Licence – Clause B5

Clause	Requirement	Compliance Grade
Network Operator's Licence cl.B5	The Licensee must comply with any Audit Guidelines issued by IPART.	 Compliant
Risk This requirement reflects a compliance risk in the event that the Licensee does not comply with the Audit Guidelines issued by IPART.		Target for Full Compliance Evidence that the Licensee complies with the Audit Guidelines issued by IPART.
Evidence sighted		
<ul style="list-style-type: none"> ▪ IPART, <i>Audit Guideline; Water Industry Competition Act 2006</i>, September 2018. ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. 		
Summary of reasons for grade		
SDP demonstrated that it was aware of the requirements of the <i>WIC Act Audit Guidelines</i> and fully complied with the <i>Guidelines</i> as applicable to this audit.		
Accordingly, it was assessed that SDP was fully compliant with this obligation.		
Discussion and notes		
During the preparation for and conduct of this audit, SDP demonstrated that it was aware of the requirements of the <i>WIC Act Audit Guidelines</i> ³¹ and fully complied with the requirements thereof. Particular requirements of the <i>Guidelines</i> include (for example):		
<ul style="list-style-type: none"> ▪ engaging an approved auditor from IPART's panel to undertake the audit; ▪ providing information to the auditor and to IPART; ▪ providing access and cooperation necessary for the conduct of the audit; and ▪ permitting the auditor and IPART to carry out inspections and investigations relevant to the audit. 		
SDP provided copies of or access to all documentation and other records requested by the auditor for the purposes of conducting the audit. It also provided unencumbered access throughout the Plant to enable inspection of the infrastructure and control systems.		
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.		

³¹ IPART, *Audit Guideline; Water Industry Competition Act 2006*, September 2018.

Table C.3 Schedule B to the Network Operator's Licence – Clause B8.3

Clause	Requirement	Compliance Grade
Network Operator's Licence cl. B8.3	The Licensee must ensure that analyses of all samples taken for the purposes of Verification Monitoring are carried out by a laboratory accredited for the specified tests by an independent body acceptable to NSW Health, such as the National Association of Testing Authorities or equivalent body.	 Compliant
Risk	This requirement reflects a high operational risk. It is essential that testing is undertaken by an accredited laboratory to ensure credibility of results.	Target for Full Compliance
		Evidence that sample analysis has been undertaken by NATA accredited laboratory (or equivalent).
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 2), April 2015 [former <i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 3), May 2015 [former <i>Water Quality Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 3), July 2018 [<i>Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 4), July 2018 [<i>Water Quality Plan</i>]. ▪ Sydney Desalination Plant, <i>Infrastructure Operating Plan</i> (Revision 4), July 2019 [<i>Updated Infrastructure Operating Plan</i>]. ▪ Sydney Desalination Plant, <i>Water Quality Plan</i> (Revision 5), July 2019 [<i>updated Water Quality Plan</i>]. 		
Summary of reasons for grade		
SDP demonstrated that extensive monitoring took place during the audit period, that the laboratory undertaking the testing was NATA (National Association of Testing Authorities) accredited, and that samples reported were covered under the scope of the NATA accreditation. Accordingly, SDP was assessed as being compliant with these obligations.		
Discussion and notes		
During the audit period, the laboratory services provider, Sydney Water, was engaged via Veolia. The laboratory is NATA accredited for the key tests required by SDP. Audit evidence confirmed that the Sydney Water laboratory had been used, and that the results reported were covered within the scope of the NATA accreditation.		
A date was randomly selected (29 March 2019) and test results inspected for samples collected from CCP 3 (before mineralisation, sample reference L19025134), SP3 (final drinking water, sample reference L19023011) and SP5 (Shaft 11 handover point to Sydney Water, sample reference L19023012). Testing of a very wide range of determinands were sought, including B and Br at CCP3 and a broad suite of physical, chemical and microbial determinands at SP3 and SP5. The results reported for all relevant		

samples were stated to be covered under the NATA accreditation in the result report supplied by Sydney Water.

Accordingly, SDP was assessed as being compliant with these obligations.

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 C.4 Schedule B to the Network Operator’s Licence – Clause B9

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B9	Whenever the Licensee makes a significant amendment to a Plan, the Licensee must provide a copy of the amended Plan to IPART at the same time that it provides a copy to the approved auditor engaged to prepare a report as to the adequacy of the amended Plan, as required under the Regulation.	 No Requirement

Risk

This requirement reflects a moderate operational risk. Whilst it is essential that the adequacy of the amended Plans is assessed, failure to provide a copy of the Plans to IPART presents a lesser risk.

Target for Full Compliance

Evidence that, in the event of a significant amendment to a Plan, the Licensee has provided a copy of the amended Plan to IPART at the same time as it provides a copy to an approved auditor engaged to prepare a report as to the adequacy of the amended Plan.

Evidence sighted

- Interviews with Matt Blaikie, Reece Karamihas and Veolia operators.
- Site inspection of the Sydney Desalination Plant on 21 August 2019.
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 2), April 2015 [former *Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 3), May 2015 [former *Water Quality Plan*].
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 3), July 2018 [*Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 4), July 2018 [*Water Quality Plan*].
- Sydney Desalination Plant, *Infrastructure Operating Plan* (Revision 4), July 2019 [*Updated Infrastructure Operating Plan*].
- Sydney Desalination Plant, *Water Quality Plan* (Revision 5), July 2019 [*updated Water Quality Plan*].
- Water Futures, WICA Technology Assessment Report – Sydney Desalination Plant, 12 May 2019.

Summary of reasons for grade

Copies of both the *Infrastructure Operating Plan* and *Water Quality Plan* as revised during the audit period were provided to both IPART and the auditor engaged to undertake the audit. The changes made during the audit period were predominantly of a minor nature as part of routine update and revision of the plans and as part of ramping up to full production from care and maintenance mode. No changes were made to the process train or to major infrastructure or water quality monitoring and management processes. The changes to the plans were not considered ‘significant’ in the context of the Regulation but rather as evolutionary, routine, continuous improvements and refinements. Accordingly, there was “No Requirement” for compliance with this clause during the audit period.

Discussion and notes

SDP advised that there had been no significant changes to either the *Infrastructure Operating Plan* or the *Water Quality Plan* during the audit period. The versions current at the end of the nominated audit

period (2 June 2018 – 30 June 2019) had been in place since shortly after the commencement of the audit period.

The changes made were formally reviewed and audited through a Technology Assessment³² that was completed and submitted to IPART. The updates were made to the flow diagram, the critical control point (CCP) summary and the pathogen reduction values assigned to each CCP linked to the critical limits. Specifically:

- The detailed flow diagram from source (ocean intake) to end user (Sydney Water) was updated (Sydney Desalination Plant, Generalised Flow Diagram).³³ The process flow diagram was considered to be clear, well laid out and fully compliant with any reasonable interpretation of these IPART requirements. All key processes were clearly illustrated including water flow pathways and the addition points for most of the chemicals added; all CCPs were clearly shown.
- The CCPs were derived using a conservative interpretation of the ADWG CCP decision tree in the HACCP analysis worksheet.³⁴ That derivation process was clearly and transparently set out and explained. There were no process steps that ought to be CCPs that have been defined otherwise. In some cases it would even be possible to combine some processes steps, or rely on downstream process steps, and reduce the total number of CCPs, if so desired. The CCPs identified were the two RO systems (first and second pass as CCPs 1 and 2, respectively), combined RO point where the two passes are combined (CCP 3), chemical dosing post RO where chlorine, fluoride and lime/CO₂ are dosed (CCP4), treated water storage reservoir (CCP5), delivery point pump station (CCP6) and ‘Shaft 11c’ interface point with Sydney Water (CCP7). These CCPs are sufficient to control the relevant microbial, chemical and physical contaminants/properties of the water as supplied.
- The critical limits were clearly stated for each CCP in the HACCP Register worksheet³⁵ including both warning and critical limits, along with actions to be undertaken if limits are breached and the delays before those actions are triggered. In addition, a more detailed response protocol was given, should the critical limits not be achieved, in the Critical Control Point Response Procedures.³⁶ With respect to validation, the critical limits are listed alongside any relevant ADWG health or aesthetic guideline values. These include guideline values for chlorine, pH, turbidity, fluoride, boron and total dissolved solids. In addition, warning triggers have been set for the full range of routinely monitored parameters from laboratory testing. The process limits and warning triggers are sufficient to protect against delivery of water that was not fit-for-purpose as safe drinking water. In most cases more stringent limits have been set in agreement with the Sydney Water or the SDP client that are to be met by the Veolia operator. This stringency provides an additional safety barrier between operating and ADWG limits. The revision to Chapter 5.7 of the ADWG is not yet completed nor yet applicable. However, in due course, when the ADWG is updated, explicit pathogen log-reduction values will need to be stated for the reverse osmosis (RO) and chlorination processes. This should be a routine matter and no shortfalls are foreseen. The Water Services Association of Australia ‘HBT Manual’³⁷ notes that RO membranes can achieve almost complete removal of viruses, bacteria and protozoan cysts. The manual implies that provided there is continuous monitoring of integrity via conductivity (as there is in this case)

³² Water Futures, *WICA Technology Assessment Report – Sydney Desalination Plant*, 12 May 2019.

³³ Sydney Desalination Plant, *Generalised Flow Diagram Version: 1*, 10 October 2018.

³⁴ Sydney Desalination Plant, *HACCP analysis*, 1 May 2019.

³⁵ Sydney Desalination Plant, *HACCP Register*, 7 May 2019.

³⁶ Sydney Desalination Plant, *Critical Control Point Response Procedures*, 27 March 2015.

³⁷ Water Services Association of Australia, *Drinking Water Source Assessment and Treatment Requirements. Manual for the Application of Health-Based Treatment Targets*, September 2015.

then up to 3 to 4 log-reduction of pathogens can be assumed. The same document identified chlorine doses, or ‘CT’ values, (based on Concentration multiplied by contact Time), with defined temperature and pH ranges, that yield stated pathogen reduction values. The Plant would be expected to yield somewhere upwards of 3 log-reduction for all pathogens for the RO processes and comfortably achieve 4 log-reduction for viruses and bacteria for the chlorination processes under the operating conditions constrained by its critical limits; values likely to be sufficient for the source selected.

NSW Health was kept informed of the changes made and a chain of correspondence between SDP and the NSW Health Water Unit was sighted confirming that NSW Health had been consulted in detail on CCPs and was in agreement with the changes made.³⁸

The updates undertaken were considered to have refined and updated the documentation ready for the move from care and maintenance mode to production mode and to take into recognise new evidence, guidelines and information. It was considered that these changes made during the audit period did not constitute a significant change for the purposes of this obligation. More specifically, the identified changes did not warrant the conduct of a new Licence Plan Audit. Accordingly, there was “No Requirement” for compliance with this clause during the audit period.

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.

³⁸ NSW Health and Sydney Desalination Plant, SDP CCP Operational Review, email correspondence chain from 25 June 2019 to 7 August 2019 sharing and agreeing the fine details of the CCP details for the SDP.

Table C.5 Schedule B to the Network Operator’s Licence – Clause B13

Clause	Requirement	Compliance Grade
Network Operator’s Licence cl.B13	<p>This clause B13 applies each time if the Licensee has brought any of the Specified Water Industry Infrastructure into commercial operation. The Licensee must:</p> <p>a) notify IPART in accordance with the Reporting Manual that it has brought the relevant Specified Water Industry Infrastructure into commercial operation; and</p> <p>b) provide such notification within 10 days after it has brought the relevant Specified Water Industry Infrastructure into commercial operation.</p>	 No Requirement
Risk	Target for Full Compliance	
<p>Non-compliance with this requirement presents a moderate risk. Notification to IPART is required so that it can be aware when new infrastructure is brought into operation.</p>	<p>In the event that the Licensee proposes to bring new Specified Water Industry Infrastructure into operation, it must notify IPART as required.</p>	
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Site inspection of the Sydney Desalination Plant on 21 August 2019. 		
Summary of reasons for grade		
<p>SDP did not, during the audit period or subsequently, bring any new Specified Water Industry Infrastructure into commercial operation. The Plant was restarted and brought into physical operation, but it was already in commercial operation as defined in the Regulation, and hence this change was related to operational mode and not commercial operation. Accordingly, there was “No Requirement” for compliance with this obligation during the audit period.</p>		
Discussion and notes		
<p>SDP advised that it had not, during the audit period or subsequently, brought any new Specified Water Industry Infrastructure into commercial operation. Observations made during inspection of the Plant revealed no evidence to the contrary. Although extensive repair/rebuilding work had been undertaken following storm damage to the infrastructure, this does not constitute new infrastructure for the purposes of this obligation.</p>		
<p>The Plant was restarted and brought into physical operation, but it was already in commercial operation as defined in the Regulation, and hence this change was related to operational mode and not commercial operation.</p>		
<p>It is understood that the infrastructure that constitutes the Sydney Desalination Plant was in place and already operating (available for operation) at the time the Licence was granted. Accordingly, the scheme was considered to be a “brownfield” scheme for which Ministerial approval to commence commercial operation was not required.</p>		
<p>It is noted that SDP did notify IPART when it was asked to restart operation of the Plant and so, whilst not ‘new Specified Water Industry Infrastructure’, the important change in operational mode of the Plant was notified to IPART, which is considered good practice. The requirement to restart was issued</p>		

by WaterNSW and SDP's acknowledgement of that was notified to two parties within IPART.³⁹ Nonetheless, no new Specified Water Industry Infrastructure was brought into commercial operation as defined in the Regulation.

Accordingly, it was evident that SDP had not brought any new Specified Water Industry Infrastructure into commercial operation during the audit period, and on that basis there was "No Requirement" for compliance with this obligation during the audit period.

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.

³⁹ Sydney Desalination Plant, letters to Jessica Hanna and Hugo Harmstorf advising that the SDP restart trigger had been activated, 29 January 2019.

Appendix D Detailed Audit Findings – *Water Industry Competition Act 2006*

Detailed audit findings in respect of the obligations under *Water Industry Competition Act 2006* (*WIC Act*) are presented in this Appendix.

Table D.1 WIC Act Section 52

Clause	Requirement	Compliance Grade
WIC Act Section 52	It is a condition of any licence held by a monopoly supplier that the supplier must comply with IPART's determination in relation to a matter so referred.	 Compliant
Risk This requirement reflects a moderate business risk. Failure to comply with a determination could impact commercial viability and/or customer fairness.		Target for Full Compliance Evidence that the Licensee has complied with IPART's determination.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. 		
Summary of reasons for grade		
SDP demonstrated that it was aware of its requirements under its determination and had been operating in compliance with them. SDP reports and bills monthly against that determination. Accordingly, it was assessed that SDP was fully compliant with this obligation.		
Discussion and notes		
SDP bills Sydney Water monthly in line with its pricing Determination dating to 2017. The same Determination has allowed for costs associated with Restart of the Plant and replacement of the membranes. SDP demonstrated that it was aware of its requirements under its determination and had been operating in compliance with them. It is noted that there was a 'Nil' return from last year due to the Plant not operating. Accordingly, SDP was found to be 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.		

Table D.2 WIC Act Section 53

Clause	Requirement	Compliance Grade
WIC Act Section 53	It is a condition of a licence held by a monopoly supplier for any water supply or sewerage service that the supplier must, in accordance with the declaration for that service, supply that service to any eligible premises to which the owner of the premises requests the supplier to provide that service.	 Compliant
Risk	This requirement reflects a significant risk. Failure to comply with its obligations to supply water could impact drinking water supply security for Sydney.	Target for Full Compliance Evidence that the Licensee has complied with its water supply obligations.
Evidence sighted		
<ul style="list-style-type: none"> ▪ Interviews with Matt Blaikie, Reece Karamihas and Veolia operators. ▪ Sydney Desalination Plant, letters to Jessica Hanna and Hugo Harmstorf advising that the SDP restart trigger had been activated, 29 January 2019. 		
Summary of reasons for grade		
SDP demonstrated that it was aware of its obligations to provide a service and that it has responded in good time to a request to provide that service. Accordingly, it was assessed that SDP was fully compliant with this obligation.		
Discussion and notes		
<p>During the audit period, SDP was required to restart operation of the Plant and reach full capacity within eight months of the restart trigger as required in accordance with its drought trigger under the terms of its Licence and consistent with the requirements of the 2017 Metropolitan Water Plan. Notification of the requirement to restart was issued by WaterNSW on 27 January 2019 once the 60% dam volume restart trigger was reached and SDP had until 27 September 2019 to reach full capacity (250 MLD). SDP's acknowledgement of that trigger was notified to two parties within IPART on 29 January 2019.⁴⁰ In practice the Plant was running at full capacity within less than the required eight months with water being delivered by March 2019 and reaching full capacity in late July 2019. Therefore, SDP did successfully respond to the restart trigger and even achieved a significant buffer of approximately two months in responding. Accordingly, SDP was found to be compliant with this obligation.</p>		
Recommendations		
There are no recommendations in respect of this obligation.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this obligation.		

⁴⁰ Sydney Desalination Plant, letters to Jessica Hanna and Hugo Harmstorf advising that the SDP restart trigger had been activated, 29 January 2019.