



Operational Audit of the Network Operator's Licence for the Botany Industrial Park Groundwater Treatment Plant

Legislative context: *Water Industry Competition Act 2006 (NSW)*

Licensing authority: Independent Pricing and Regulatory Tribunal

License holder: Orica Australia Pty Ltd (ACN 004 117 828)

Licence: No. 12_016 for Botany Recycled Water Scheme

Document Version 3

Final Report

16 January 2017

1. Executive Summary

1.1 Background

This report summarises the findings of an Operational Audit conducted on behalf of the NSW Independent Pricing and Regulatory Tribunal (IPART).

The Groundwater Treatment Plant (GWTP) in Botany, NSW, was audited against Network Operator's Licence No. 12_016 (The Licence) made under the *Water Industry Competition Act 2006* (NSW) (WICA).

The audit covers the operation and maintenance of the licenced infrastructure and addresses the scope specified in IPART's letter to Lucy Archer dated 16 August 2016 (IPART reference D16/19247) requesting an Operational Audit for the period 1 July 2015 to 31 October 2016.

The audit methodology followed the IPART *Audit Guideline for Brownfield Schemes, Water Industry Competition Act 2006 (NSW), July 2013* (the Audit Guideline) made under WICA.

1.2 Findings

The auditors were provided with sufficient and appropriate evidence, as described in the Audit Guideline, on which to base the conclusions reached during the audit. The auditors observed the requirements of the Audit Guideline and the audit deed in conducting the audit, determining audit findings and preparing the report.

The audit report findings accurately reflect the professional opinion of the auditors. The findings have not been unduly influenced either by the Licensee or any of its associates and express the auditors' opinions as to whether the Licensee has met the Licence conditions and regulatory requirements as specified in the scope.

A summary of the audit findings is given in the following chapters and a detailed breakdown of the full audit findings against the audited criteria is given in the detailed Audit Tables that are shown in Appendices A to D.

The Licensee, Orica Australia Pty Ltd, (ACN 004 117 828), (Orica) was found to be constructing, repairing, maintaining and operating the infrastructure in full compliance with the assessed audit criteria. No non-compliances or opportunities for improvement were identified.

Table of Contents

1. EXECUTIVE SUMMARY	2
1.1 BACKGROUND.....	2
1.2 FINDINGS.....	2
2. INTRODUCTION	4
2.1 OBJECTIVE.....	4
2.2 LICENSEE’S INFRASTRUCTURE, SYSTEMS AND PROCEDURES.....	4
2.3 AUDIT METHOD.....	4
<i>Audit scope</i>	4
<i>Audit standard</i>	4
<i>Audit steps</i>	4
<i>Audit team</i>	4
<i>Audit grades</i>	5
2.4 REGULATORY REGIME.....	5
2.5 QUALITY ASSURANCE PROCESS	5
2.6 AUDIT FINDINGS.....	5
2.7 SITE AUDIT AGENDA FOR TUESDAY 29 TH NOVEMBER 2016.....	6
3. AUDIT REPORT	7
3.1 SUMMARY OF FINDINGS	7
3.2 REVIEW OF ACTIONS	7
3.3 OPPORTUNITIES FOR IMPROVEMENT.....	7

APPENDICES

2. Introduction

2.1 Objective

This report summarises the findings of an Operational Audit conducted on behalf of the NSW Independent Pricing and Regulatory Tribunal (IPART).

The Licensee is Orica Australia Pty Ltd, (ACN 004 117 828), (Orica).

Orica was audited against Network Operator's Licence No. 12_016 (The Licence) made under the *Water Industry Competition Act 2006* (NSW) (WICA) pertaining to the Botany Recycled Water Scheme.

2.2 Licensee's infrastructure, systems and procedures

The Licensee's infrastructure, systems and procedures audited related to the Groundwater Treatment Plant (GTP) in Botany, NSW.

2.3 Audit method

Audit scope

This audit covers the operation and maintenance of the licenced infrastructure and addresses the scope specified in IPART's letter to Lucy Archer dated 16 August 2016 (IPART reference D16/19247) requesting an Operational Audit for the period 1 July 2015 to 31 October 2016.

Audit standard

The audit broadly followed the generic principles of auditing given in *ISO 19011:2011 - Guidelines for auditing management systems*. The principal document used to guide the audit was the *IPART Audit Guideline for Brownfield Schemes, Water Industry Competition Act 2006 (NSW), July 2013* (the Audit Guideline).

Audits are by necessity limited to sampling processes. It is not practicable, nor necessary, to inspect 100 per cent of items within an audit scope. Auditing forms part of the broader risk management process, providing an independent check on the veracity of the processes and procedures in place to manage risk. Finding a balance between audit effort and practicality requires the exercise of experienced professional judgement. The amount of effort allocated to this audit has been kept to a reasonable minimum level.

The audit was reported in accordance with Appendices of the Audit Guideline. The audit templates given in the Audit Guideline provided the reporting format for the audit as well as providing the detailed audit criteria.

Audit steps

An Audit Proposal was submitted to both IPART and the Licensee prior to the audit occurring. Documentation was supplied by the Licensee to both the auditor and IPART prior to the audit.

Desktop auditing took place both prior to and post the site audit. A site audit took place on 29 November 2016, starting with a plant inspection first thing followed by a desktop and site audit during the remainder of the day. Some evidence was followed up after the audit with the audit report being prepared and submitted to the Licensee as a draft, then a final, and then on to IPART.

The audit process involved seeking objective evidence that the Licensee met the audit criteria set by IPART. The auditors collected evidence through interview, document review and site inspection. The auditors randomly sampled examples sufficient to verify claims made by the Licensee.

Audit team

The audit was conducted by Dr Dan Deere for quality assurance by Mr Tom Carpenter. The audit team notes, and greatly appreciates, the participation of IPART representatives Robert Aposhian and Tom Sewell as observers during the audit.

The audit team notes, and greatly appreciates, the work and effort of representatives of the Licensee, including Amit Vyas from Ixom and Ben Lim from Orica during the site audit as well as Lucy Archer from Orica in organising the audit. In addition, inputs from other Ixom staff were gratefully appreciated, including:

- David Oram – Site Manager;
- Amit Vyas – Technical Lead;
- Mrinmoy Das – Operations Lead;
- Yu Nee Lee – Process Engineer;
- Rohit Gupta – Process Engineer; and
- Geoff Fairey – Responsible Mechanical Engineer.

Audit grades

Audit grades were awarded in accordance with the definitions given in the Audit Guideline. Compliance of operation of the infrastructure with the relevant legal and formal requirements was assessed. More generally, the infrastructure was assessed for its capability to operate safely. Grades were allocated as follows:

- No Requirement (NR)
- Compliant (C)
- Non-compliant Insignificant (NCI)
- Non-compliant Significant (NCS)

2.4 Regulatory regime

The scheme operates under the *Water Industry Competition Act 2006* (WICA) which in turn references the following requirements:

- *Water Industry Competition (General) Regulation (2008)*.
- Conditions of *Network Operator's Licence No. 12_016*.
- *IPART Audit Guideline for Brownfield Schemes, Water Industry Competition Act 2006 (NSW), July 2013* (the Audit Guideline).
- Relevant aspects of the national *Australian Guidelines for Water Recycling; (Phase 1) Managing Health and Environmental Risks (2006)*.
- Relevant water industry and environmental NSW and national codes of practice and regulations, as applicable.

2.5 Quality assurance process

Quality was assured using a professional review process. The auditor's work was reviewed by another auditor from the IPART audit panel.

2.6 Audit findings

Audit findings are summarised in the above Executive Summary, are presented in more detail in Section 3 and in full detail in the following Appendices.

2.7 Site audit agenda for Tuesday 29th November 2016

Time	Item and audit questions
9:00	Assemble at Main Administration Building.
9:05	Introductions, safety briefing, plant history.
9:15	Audit initiation meeting and finalising plan of audit.
9:30	Plant inspection and audit: <ul style="list-style-type: none"> • Which infrastructure is currently in commercial operation [WIC Reg Sched 1 cl. 2(2)(a,b)]? • Is there alignment between the IOP and the WQP (npw) on the one hand and the observed assets on the other [WIC Reg Sched 1 cl. 6(3)(a) and 7(5)(a)]? • Is there alignment between the critical limits and requirements between the WQP (npw), daily operator's recording worksheet and SCADA system [WIC Reg Sched 1 cl. 7(4)(a)]? • Is there alignment between the condition of the infrastructure and the IOP based on labeling, signage and records of asset inspection and replacement [WIC Reg Sched 1 cl. 6(3)(a)]?
10:45	Morning break.
11:00	Has a significant change been made to the IOP or WQP (npw) and, if so, has the Licence Holder provided a copy of the Plans to IPART at the same time it providing a copy to the approved auditor engaged to provide a report as to the adequacy of the changed plan [Network Operator Licence cl. B8 and WIC Reg Sched 1 cl. 6(3)(a) and 7(5)(a)]?
11:30	What work is undertaken to ensure that the IOP is kept fully implemented and the network operator's activities are carried out in accordance with the IOP and in what way is it kept under regular review [WIC Reg Sched 1 cl. 6(2)(a)]?
12:30	Lunch
13:30	What work is undertaken to ensure that the WQP (npw) is kept fully implemented and the network operator's activities are carried out in accordance with that plan and in what way is it kept under regular review [WIC Reg Sched 1 cl.7(4)(a)]?
14:30	Contingency period – additional items that may arise (see detailed audit items in the Appendices).
15:00	Audit close

3. Audit report

3.1 Summary of findings

No non-compliances were identified.

3.2 Review of actions

The Licensee provided additional data and information and made some suggestions for corrections or clarifications following the review of the draft report prior to the final report being issued. In summary, these involved minor typographical and similar corrections to the audit report.

3.3 Opportunities for improvement

No opportunities for improvement were identified.

Appendix A. Operating Licence Audit if Triggered Obligations

WIC Reg Sch 1 cl. 6(3)(a)	Requirement	Compliance Grade
	If the Minister or IPART so demands, or if any significant change is made to its infrastructure operating plan, the licensee: must provide the Minister or IPART with a report, prepared by an approved auditor in such manner and form as the Minister or IPART may direct, as to the adequacy of the plan, and as to the condition of its infrastructure, having regard to the purpose for which it is licensed.	No requirement
Risk	Target for Full Compliance	
This represents a significant operational risk. The currency and adequacy of the <i>Infrastructure Operating Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Infrastructure Operating Plan</i> is current and adequate and has been provided to IPART.	
Evidence sighted		
<ul style="list-style-type: none">Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.Ixom <i>Ground Water Treatment Plant Infrastructure Operating Plan</i> (Version 1.3).Site inspection conducted on 28 November 2016.		
Summary of reasons for grade		
The <i>Infrastructure Operating Plan</i> (IOP) was updated during the audit period. The updated document was submitted to IPART during December 2015 as revision 1.3, dated 30 October 2015. The changes to the <i>Infrastructure Operating Plan</i> during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the <i>Infrastructure Operating Plan</i> . Consequently a 'No requirement' finding has been made.		
Discussion and notes		
The <i>Infrastructure Operating Plan</i> (IOP) was updated during the audit period. The updated document was submitted to IPART during December 2015 as revision 1.3, dated 30 October 2015.		
The changes to the <i>Infrastructure Operating Plan</i> during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the <i>Infrastructure Operating Plan</i> .		
Consequently a 'No requirement' finding has been made.		
Opportunities for improvement		
No opportunities for improvement have been identified in respect of this requirement.		
Recommendations		
There are no recommendations in respect of this requirement.		

WIC Reg Sch 1 cl. 7(5)(a)	Requirement	Compliance Grade
	If the Minister or IPART so demands, or if any significant change is made to its water quality plan, the licensee must provide the Minister or IPART with a report, prepared by an approved auditor in such manner and form as the Minister or IPART may direct, as to the adequacy of the plan.	No requirement

Risk	Target for Full Compliance
This represents a significant operational risk. The currency and adequacy of the <i>Water Quality Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Water Quality Plan</i> is current and adequate and has been provided to IPART.

Evidence sighted
<ul style="list-style-type: none"> ▪ Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff. ▪ Ixom <i>Ground Water Treatment Plant Water Quality Plan</i> (Version 1.4). ▪ Site inspection conducted on 28 November 2016.

Summary of reasons for grade
The <i>Water Quality Plan</i> (WQP) was updated during the audit period. The updated document was submitted to IPART during December 2015 as revision 1.4, dated 30 October 2015. The changes to the <i>Water Quality Plan</i> during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the <i>Water Quality Plan</i> . Consequently a 'No requirement' finding has been made.

Discussion and notes
The <i>Water Quality Plan</i> (WQP) was updated during the audit period. The updated document was submitted to IPART during December 2015 as revision 1.4, dated 30 October 2015.
The changes to the <i>Water Quality Plan</i> during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the <i>Water Quality Plan</i> .
Consequently a 'No requirement' finding has been made.

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

Recommendations
There are no recommendations in respect of this requirement.

Network Operator Licence cl. B8.1	Requirement	Compliance Grade
	Whenever the Licence Holder makes any change to its Plans, the Licence Holder must provide a copy of the amended Plan to IPART.	No requirement

Risk	Target for Full Compliance
This represents a significant operational risk. The currency and adequacy of the <i>Water Quality Plan</i> and <i>Infrastructure Operating Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Water Quality Plan</i> and <i>Infrastructure Operating Plan</i> is current and adequate and has been provided to IPART.

Evidence sighted
<ul style="list-style-type: none"> ▪ Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff. ▪ Ixom <i>Ground Water Treatment Plant Water Quality Plan</i> (Version 1.4). ▪ Ixom <i>Ground Water Treatment Plant Infrastructure Operating Plan</i> (Version 1.3). ▪ Site inspection conducted on 28 November 2016.

Summary of reasons for grade
The <i>Water Quality Plan</i> and <i>Infrastructure Operating Plan</i> were updated during the audit period. The updated documents were submitted to IPART during December 2015 as revision 1.4 and 1.3, respectively, and dated 30 October 2015. Consequently a 'No requirement' finding has been made.

Discussion and notes
<p>The <i>Water Quality Plan</i> and <i>Infrastructure Operating Plan</i> were updated during the audit period.</p> <p>The updated documents were submitted to IPART during December 2015 as revision 1.4 and 1.3, respectively, and dated 30 October 2015.</p> <p>Consequently a 'No requirement' finding has been made.</p>

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

Recommendations
There are no recommendations in respect of this requirement.

Network Operator Licence cl. B8.2	Requirement	Compliance Grade
	Whenever the Licence Holder makes a significant change to its Plans, the Licence Holder must provide a copy of the amended Plan to IPART at the same time it provides a copy to the approved auditor engaged to provide a report as to the adequacy of the changed Plan, as required under the Regulation.	No requirement

Risk	Target for Full Compliance
This represents a significant operational risk. The currency and adequacy of the <i>Water Quality Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Evidence that the <i>Water Quality Plan</i> is current and adequate and has been provided to IPART.

Evidence sighted

- Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.
- Ixom *Ground Water Treatment Plant Water Quality Plan* (Version 1.4).
- Ixom *Ground Water Treatment Plant Infrastructure Operating Plan* (Version 1.3).
- Site inspection conducted on 28 November 2016.

Summary of reasons for grade

The *Water Quality Plan* and *Infrastructure Operating Plan* were updated during the audit period. The updated documents were submitted to IPART during December 2015 as revision 1.4 and 1.3, respectively, and dated 30 October 2015. The changes to the *Water Quality Plan* and *Infrastructure Operating Plan* during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the *Water Quality Plan* and *Infrastructure Operating Plan*. Consequently a 'No requirement' finding has been made.

Discussion and notes

The *Water Quality Plan* and *Infrastructure Operating Plan* were updated during the audit period.

The updated documents were submitted to IPART during December 2015 as revision 1.4 and 1.3, respectively, and dated 30 October 2015. The changes to the *Water Quality Plan* and *Infrastructure Operating Plan* during the audit period were of a continuous improvement nature and were not significant enough to trigger the need for a full audit of the adequacy of the *Water Quality Plan* and *Infrastructure Operating Plan*.

Consequently a 'No requirement' finding has been made.

Opportunities for improvement

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

Recommendations

There are no recommendations in respect of this requirement.

Appendix B. Low risk obligations

WIC Reg Sch 1 cl. 5	Requirement	Compliance Grade
	A network operator must comply with any water industry code of conduct, marketing code of conduct and transfer code of conduct.	No requirement
Risk	This represents a significant compliance risk. The licence holder needs to comply with any relevant water industry code of conduct, marketing code of conduct and transfer code of conduct.	Target for Full Compliance
		Evidence that the licence holder complies with any relevant water industry code of conduct, marketing code of conduct and transfer code of conduct.
Evidence sighted		
	<ul style="list-style-type: none">Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.Site inspection conducted on 28 November 2016.	
Summary of reasons for grade		
	The licence holder had not failed to comply with any relevant water industry code of conduct, marketing code of conduct and transfer code of conduct and none were considered relevant to the infrastructure and operation audited. Consequently a 'No requirement' finding has been made.	
Discussion and notes		
	The licence holder had not failed to comply with any relevant water industry code of conduct, marketing code of conduct and transfer code of conduct and none were considered relevant to the infrastructure and operation audited. Consequently a 'No requirement' finding has been made.	
	It was noted that the customer contracts that were developed from 2007 onwards are still in place following construction of the GTP during 2005 and its operation from 2006. Those contracts are still in place and have no stated expiry date.	
Opportunities for improvement		
	No opportunities for improvement have been identified in respect of this requirement.	
Recommendations		
	There are no recommendations in respect of this requirement.	

Appendix C. General obligations for a network operator

WIC Reg Sch 1 cl. 2(1)	Requirement	Compliance Grade
	A network operator must not bring any new water or sewerage infrastructure into commercial operation without the written approval of the Minister.	No requirement

Risk

This presents a high operational risk. The Minister's written approval is only provided when the Licensee has demonstrated that the infrastructure complies and can be operated in accordance with the relevant requirements. Accordingly, the absence of the Minister's written approval may mean that the infrastructure has not been so assessed.

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 Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.
- Ixom *Ground Water Treatment Plant Water Quality Plan* (Version 1.4).
- Ixom *Ground Water Treatment Plant Infrastructure Operating Plan* (Version 1.3).
- Ixom *Botany Change Modifications* record.
- Ixom *WI-IPART-008 Modification review – potential effects on IPART plans and licences* (Version 1.1).
- Site inspection conducted on 28 November 2016.

Summary of reasons for grade

None of the changes that took place during the audit period were considered to constitute 'new infrastructure' as defined in WIC Reg Sch 1 cl. 2(3) that would have triggered the need to seek the written approval of the Minister prior to being brought into commercial operation. Consequently, a 'No requirement' grade was awarded to this clause.

Discussion and notes

A number of ongoing continuous improvements were made to the infrastructure during the audit period. These included improving pipelines, valves or chemical cleaning chemicals and those changes were captured in the modification register (*Botany Change Modifications*).

Should anything be changed for any reason a record is kept on the record by Ixom. Any change that is not like-for-like triggers a change modification check against the IPART system. The Work Instruction (WI) *WI-IPART-008 Modification review – potential effects on IPART plans and licences (1.1)* provides a checklist of items that may need to be notified to IPART or that may trigger a compliance requirement, e.g. the plumbing code. A formal review process is in place and the results of that review are attached to the modification record. The review and sign-off required considers the change against the Licence and the IOP and WQP obligations.

As an example, the document *GTP Tag and PLO I/O Allocation Master (1.12)* was updated on 19 September 2016 and described a replacement that installed a new valve that was seen in the field during the audit (i.e. valve LY9110A was replaced by valve LV9110A). The relevant checklist had been completed.

None of the changes that took place during the audit period were considered to constitute 'new infrastructure'

as defined in WIC Reg Sch 1 cl. 2(3) that would have triggered the need to seek the written approval of the Minister prior to being brought into commercial operation. An MBBR bioreactor was previously explored as a possible upgrade, but was not progressed. It is worth noting that an upgrade such as that might constitute 'new infrastructure' as defined under WIC Reg Sch 1 cl. 2(3).

Since no changes to the infrastructure occurred during the audit period that warranted approval by the Minister for the commencement of commercial operation, no further audits were necessary and a NR grade was awarded to this clause.

Opportunities for improvement

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

Recommendations

There are no recommendations in respect of this requirement.

WIC Reg Sch 1 cl. 2(2)(a)	Requirement	Compliance Grade
	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.	No requirement

Risk	Target for Full Compliance
This presents a high operational risk. The Minister's written approval is only provided when the Licensee has demonstrated that the infrastructure complies and can be operated in accordance with the relevant requirements. Accordingly, the absence of the Minister's written approval may mean that the infrastructure has not been so assessed.	Evidence that the written approval of the Minister was obtained prior to bringing new water or sewerage infrastructure into service.

Evidence sighted
<ul style="list-style-type: none"> Refer to the notes relating to WIC Reg Sched 1 cl. 2(1), above.

Summary of reasons for grade
Since WIC Reg Sched 1 cl. 2(1) was not triggered, no further audits were necessary. Consequently, a 'No requirement' grade was awarded to this clause.

Discussion and notes
Since WIC Reg Sched 1 cl. 2(1) was not triggered, no further audits were necessary. Consequently, a 'No requirement' grade was awarded to this clause.

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

Recommendations
There are no recommendations in respect of this requirement.

WIC Reg Sch 1 Requirement cl. 2(2)(b)	Compliance Grade
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.	No requirement

Risk	Target for Full Compliance
This presents a high operational risk. The Minister's written approval is only provided when the Licensee has demonstrated that the infrastructure complies and can be operated in accordance with the relevant requirements. Accordingly, the absence of the Minister's written approval may mean that the infrastructure has not been so assessed.	Evidence that the written approval of the Minister was obtained prior to bringing new water or sewerage infrastructure into service.

Evidence sighted
<ul style="list-style-type: none"> ▪ Refer to the notes relating to WIC Reg Sched 1 cl. 2(1), above.

Summary of reasons for grade
Since WIC Reg Sched 1 cl. 2(1) was not triggered, no further audits were necessary. Consequently, a 'No requirement' grade was awarded to this clause.

Discussion and notes
Since WIC Reg Sched 1 cl. 2(1) was not triggered, no further audits were necessary. Consequently, a 'No requirement' grade was awarded to this clause.

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

Recommendations
There are no recommendations in respect of this requirement.

Appendix D. Water supply infrastructure

WIC Reg Sched 1 cl. 6(2)(a)	Requirement	Compliance Grade
	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 represents a high operational risk. Implementation of the <i>Infrastructure Operating Plan</i> ensures the effective (safe and reliable) delivery of agreed levels of service.	Target for Full Compliance
		Evidence that the <i>Infrastructure Operating Plan</i> is fully implemented and the Licensee's activities are carried out in accordance with that Plan; evidence that the Plan is kept under regular review.
Evidence sighted		
<ul style="list-style-type: none">▪ Interviews with Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.▪ Ixom <i>Ground Water Treatment Plant Water Quality Plan</i> (Version 1.4).▪ Ixom <i>Ground Water Treatment Plant Infrastructure Operating Plan</i> (Version 1.3).▪ Ixom <i>Botany Change Modifications</i> record.▪ Ixom <i>WI-IPART-008 Modification review – potential effects on IPART plans and licences</i> (Version 1.1).▪ Site inspection conducted on 28 November 2016.		
Summary of reasons for grade		
The network operator has ensured that its <i>Infrastructure Operating Plan</i> is fully implemented and kept under regular review and the network operator's activities are carried out in accordance with that plan. Consequently a Compliant finding has been made.		
Discussion and notes		
The <i>Infrastructure Operating Plan</i> (IOP) was kept up to date and slightly updated during the audit period. The updated document was submitted to IPART during December 2015 as revision 1.3, dated 30 October 2015. The document is retained as a controlled document in IBM Lotus Notes but it is likely that Ixom will be moving to the use of an Outlook system in future. Orica conduct a quarterly review against each licence clause to help ensure compliance is maintained.		
The Maintenance Management System was audited for currency and utility during the audit. A Maintenance Metrics system creates work orders. Work orders were checked for key equipment such as work orders for instrument checks and calibration by staff and contractors. The system is delivered using a web/cloud-based T32 Trident Crystal Reports software tool. The tool produces a display that is similar to MS Excel. The reporting shows for each job the individual's name, relevant contractor, work order, equipment number, details and notes. For instance T32 generated routine preventive maintenance tasks weekly for CSR Electrical to calibrates all pH meters with an example being seen for such a task being completed from within the audit period on 24 October 2016.		
The Asset register <i>BSL-00396 GTP Equipment Register (7.10)</i> is an MS Excel workbook that was last updated 31 October 2016. The register is updated each year and provides a summary of asset condition, criticality and assessment in three sequential columns and highlights those three variables using red/yellow/green traffic lights to help prioritise asset preventive maintenance and replacement activities. New assets including the new pumps that are gradually being introduced to the reverse osmosis units and an upgraded treated water supply		

valve (LV9110A) are yet to be added to the register due to the timing of those works.

During the previous audit¹ it was noted that as part of Orica's description in the IOP of systems for management of asset condition (IOP section 4.2 and IOP Appendix 5), GTP detailed that it conducted six-monthly reviews of asset condition for all items of plant detailed in Appendix 5. It was noted that these reviews took place every six months at which time the plans for update and replacement were updated as part of the Equipment Register. GTP noted an intent to drop these reviews to annually in October so that plans can be made for when the system is shut down every March at which point all assets could be inspected in detail. As stated at IOP Section 1.2 and Appendix 5, 12-monthly was the desired frequency, agreed by all in GTP's Engineering Team including the Responsible Mechanical Engineer. GTP conducts a 12-monthly turnaround/shutdown cycle in March each year, which was similar in nature and complemented the review of IOP Appendix 5 in August-September each year. The proposed 12-monthly frequency of review for Appendix 5 was considered to provide adequate review of asset condition. Therefore, a reduction to an annual frequency of review was considered acceptable and represented an opportunity for improvement during the previous audit². GTP has followed up on this and extended the asset condition reviews to a frequency of 12 monthly intervals.

During the site inspection pipes were found to be labelled clearly and adequately which would help reduce the risk of cross-contamination. Pipes were labelled "SCA", "PCA" and "Contaminated Water". Key nodes and assets were clearly labelled, e.g. valve LV9110A, which was inspected and found to be a new asset with interlocked controls, as discussed under Clause WIC Reg Sched 1 cl.7(4)(a), below. The EPA monitoring points are shown on the internet and labelling at those sites is checked regularly and reported to EPA. A document and checklist has been created to confirm labelling on an annual basis (*Audit Records of EPA Label Procedure*). An example was shown of the *Audit Records of EPA Label Report* from the audit undertaken 20 August 2016 which included photographs of each sample point and comments on adequacy of labelling.

The consumables budget and inventory of stock was reviewed to ensure sufficient redundancy. The asset was found to have one full skid of redundancy with respect to the reverse osmosis system. That is, there were both duty and standby skids so that there was a full standby skid. The budget planning process was reviewed and is covered under the *Services Agreement GTP Components* worksheet that was part of the SAP system. The system covers four cost centres: Maintenance, E/I, Operations and Admin. The Operations component was selected for more in depth audit. For the 2015-16 Ixom had a budget of: \$2.97 million planned vs. \$3.1 million actual expenditure for operations. The budget for 2016-17 for operations was \$3.15 million. Therefore, adequate budget appears to have been allocated to operating and maintaining the GTP. In addition there is a longer-term planning process in place that utilises the *Quasi Capital Expenditure Forecast Rev 2* Excel Workbook that looks at new initiatives such as expanding the capacity of the GTP to produce more water. Furthermore, Ixom has a five-year CAPEX 'sustenance' plan that has been approved by Orica. The *GTP Sustenance Capital Projects Plan – FY17* was illustrated. Overall, there was good evidence from the planning and site inspections of Ixom operating and maintaining the plant in a manner that is consistent with good practice and a preventive approach to asset management.

Staffing levels were questioned and checked at audit. Ixom utilises a human resources management software tool, Ixsite, to systematically manage human resourcing and training for the GTP. The *GTP Org Chart 1.6* was provided and that revealed that there were five permanent and six contractor 'GTP Water Treaters', as well as multiple engineers and technicians and various contractors supporting operations and maintenance of the GTP. Care is taken that any material generated on behalf of Ixom, e.g. diagrams and reports, is fully supplied to Ixom and is seen to be owned by Ixom to reduce the risk to Ixom of being reliant on third parties.

Critical valves or filling points were locked open or closed using padlocks. Locked valves and filling points included those on chemical delivery points, safety showers, and valves that controlled water supplied to monitoring points. This process helped to control the risk of possible accidental valve operation. A system of signing for keys to operate locks and recording the reason for unlocking such locks was witnessed and records from the audit period demonstrated that the process for signing out keys had been followed. Examples of

¹ Water Futures. *Network Operator's Licence Operational Audit of the Groundwater Treatment Plant at Botany Industrial Park*, Final Report, dated 30 October 2015.

² Water Futures. *Network Operator's Licence Operational Audit of the Groundwater Treatment Plant at Botany Industrial Park*, Final Report, dated 30 October 2015.

relevance to the GTP were the records witnessed of valve AT9101 being operated in order to calibrate the treated water pH meter. The process was covered under SOP-211 that explicitly sets out which points are locked, where they sit on the technical drawings of the infrastructure and what the relevant code number is for each. In some cases it was observed when checking these records that there was no signature or evidence that keys had been returned although these were isolated examples of records not being fully completed rather than evidence of system breakdown.

Chemical dosing controls include locked and clearly labelled delivery and fill points as well as on line EC analysers to help ensure that the correct chemicals are delivered to the appropriate locations. The Chemical Delivery Checklist helps to remind personnel of the required process to ensure that the correct chemical is delivered to the appropriate storage tank. The power supply to the fill point would shut off if the EC analyser detected an EC inconsistent with the chemical being delivered. In addition, to turn on power to the chemical fill points a specific code (UN number) must be entered that must match the relevant chemical. Potentially mutually reactive chemicals are physically well-separated whereas more compatible chemicals, such as sodium hypochlorite and sodium chloride, are closer together. Chemicals dosed at the GTP include sodium hypochlorite, sodium chloride, ammonia, caustic soda, hydrochloric acid and sodium bisulphite. The latter chemical is dosed to neutralise chlorine if there is a requirement to release chlorinated water to the environment via EPA Point 13.

The bunds around the chemical delivery points appear adequate with respect to depth and each has a sump pump to enable extraction and safe disposal which is an excellent initiative. The bunds were estimated by Ixom at 120% the capacity of the chemical stored within the bund. The bunds have been checked as part of a dangerous goods storage audit completed recently for Ixom. Such checks are required because the Qenos, Hunstman and Ixom chloralkali plants on site are major Hazard Facilities. In addition, bunds are checked on a weekly basis with records from within the audit period demonstrated that those checks had been occurring (e.g. on 25 September 2016 and 2 October 2016). One issue is that it wasn't clear how much tolerance there was for losing bund capacity with containers that were stored within bunds. For instance, two 20 L drums were stored within the ammonia bund and a bin of approximately 30 L was stored in the sodium hypochlorite bund. As an observation some tolerance or agreed limit could be set on what can be stored in bunds and checks can be made that bunds are sufficiently uncluttered as part of the routine bund checking process.

Safety showers are supplied with 'Process Water' (tap water) and their operation is checked weekly. Records of these checks were witnessed from within the audit period to verify that this activity occurred. Records were sighted of checks occurring throughout October 2016 and back prior to that during the audit period. The water supplies to the safety showers are protected from failure though having padlocked open valves.

Opportunities for improvement

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

Recommendations

There are no recommendations in respect of this requirement.

WIC Reg Sched 1 cl.7(4)(a)	Requirement	Compliance Grade
	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.	Compliant

Risk	Target for Full Compliance
This represents high operational risk. Implementation of the <i>Water Quality Plan</i> ensures the water supplied complies with the specified quality requirement.	Evidence that the <i>Water Quality Plan</i> 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 Amit Vyas of Ixom and Ben Lim of Orica as well as a number of other Ixom staff.
- Ixom *Ground Water Treatment Plant Water Quality Plan* (Version 1.4).
- Ixom *Ground Water Treatment Plant Infrastructure Operating Plan* (Version 1.3).
- Ixom *Botany Change Modifications* record.
- Ixom *WI-IPART-008 Modification review – potential effects on IPART plans and licences* (Version 1.1).
- Ixom *SOP 216 GTP Testing Specifications* (Version 1.9).
- Ixom *TR32-GW Trident Maintenance Metrics (Ground PRODUCTION)*.
- Ixom *GTP Annual Water Quality Report CAP 2015-2016*.
- Ixom *Velocity EHS* incident logging system.
- Site inspection conducted on 28 November 2016.

Summary of reasons for grade

The network operator has ensured 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. Consequently a Compliant finding has been made.

Discussion and notes

The *Water Quality Plan* (WQP) was only slightly modified during the audit period to produce revision 1.4 that was dated 30 October 2015 and supplied to IPART during December 2015. The document is retained as a controlled document in IBM Lotus Notes although Ixom is moving to a different document management system.

The terms 'Treated Water' or 'Treated Ground Water' are used at the site to describe the water that is sourced from 109 extraction wells and treated at the Groundwater Treatment Plant (GTP) through reverse osmosis (RO) for delivery via the reticulation and storage system to customers on site. The site can produce approximately 5.2 ML/d of Treated Water. Individual wells are managed so as to capture and treat the ground water at the site in order to reduce legacy pollution on the one hand whilst maintaining a water table at approximately 4 to 7 m depth to avoid subsidence or sea water ingress. The extraction of water is managed based on hydrogeological analysis and plume modelling supported by evidence from production and monitoring wells. Any discharges of Treated Water to Botany Bay are conducted in accordance with EPL2148 and volumes are reported to the EPA in each Annual Return.

The term 'Process Water' is used to describe water that is essentially tap water delivered to the site via a process water reticulation and storage system via the Qenos site through an air gap from the Sydney Water

supply system.

Preventive measures, critical control points and operational monitoring

The process control limit summary that forms the hub of the WQP is provided as Ixom *SOP 216 GTP Testing Specifications* (Version 1.9) and is retained as an appendix to the WQP to allow for ease of circulation and sharing with plant operators, analysts, managers and customers. The document is for instance displayed as an A3 laminated sheet in both the Control Room and the on site laboratory. The critical limits identified in the Ixom *SOP 216 GTP Testing Specifications* (Version 1.9) for the so-called Treated Water were consistent with those given in the SCADA system and customer contracts, albeit the SCADA systems sometimes having slightly more or slightly less conservative process control limits for operational reasons that would lead to interlocked cessation of Treated Water supply.

It is understood that Treated Water is diverted to the raw groundwater tank via an interlocked valving arrangement in response to high-high alarms set within the SCADA system. Potentially the water produced could be diverted to the environment via the EPA licensed discharge point if it were unable to be diverted to the raw water tank.

The most important of the process control limits were audited to check their validity. The audit found consistent and appropriate control limits when comparing process monitoring instruments and SCADA (Table 1) as well as when comparing SCADA with WQP limiting values (Table 2). In some cases the SCADA control limits were set just outside the WQP limits in order to provide operational practicability. However, these differences were small and did not constitute risks to final water quality or process performance.

The main critical limit relating to water quality is measured after the single-pass RO system. The critical limit is an electrical conductivity (EC) of 125 $\mu\text{S}/\text{cm}$ critical based on assays performed on line for each skid as well as a combined filter effluent product water analyser. The EC analysers post the skids are not essential for compliance with the customer contracts but by providing early warning to enable production to be stopped if specific RO skids run into difficulties it becomes possible to prevent the treated water tank filling up with off-spec water. During the audit the EC analyser (AT9339) on array 1 (PI-9339) of RO skid B was checked and found to be operational and reading 38.8 $\mu\text{S}/\text{cm}$ at 09:57. In addition, some customers have their own on line water quality analysers for some parameters. In practice the diversion interlock for EC is set at 115 $\mu\text{S}/\text{cm}$ which leads to a conservative response to avoid breaching the agreed customer contract limits. Upper and lower limiting pH values of below 6 and above 9 pH units trigger the diversion interlock as do unusual chlorine residuals of below 0.25 or above 1.5 mg/L.

During the audit SCADA trends were checked for the combined total chlorine and combined conductivity from instruments AI9108 and AIT9119, respectively, from 1 January 2016 to 29 November 2016.

Two EC spikes were noted above the 125 $\mu\text{S}/\text{cm}$ process limit (in fact these results rose above the 150 $\mu\text{S}/\text{cm}$ upper reporting limit for the instrument). These EC spikes occurred on 15 October 2016 and 29 May 2016. However, upon checking these events against flow rate records it was noted that the GTP was not delivering Treated Water during those periods and it was understood that Process Water was being fed into the Treated Water distribution system instead.

For total chlorine two extremely brief spikes were noted that rose just above 1.5 mg/L. One of these spikes occurred on 17 May 2016 and was followed up. Once again, the analysis of flow rate revealed that the GTP was not delivering Treated Water during that period and it was understood that Process Water was being fed into the Treated Water distribution system instead.

The SCADA system showed the position of critical valves. For instance the interlocked LV9110A Treated Water Distribution valve was shown as being 'open' in SCADA during the audit as the system was in operation.

Analysing the SCADA trends, as well as sourcing some other documents and records, revealed that the intranet system on the site was somewhat slower than ideal.

Critical valves or filling points were locked open or closed using padlocks. Locked valves and filling points included those on chemical delivery points and valves controlled water supplied to monitoring points. This process helped to control the risk of possible accidental valve operation.

Chemical dosing controls include locked delivery points, clearly labelled delivery points and on line EC analysers for chemicals delivered to help ensure that the correct chemicals are delivered to the correct places to avoid product water chemical contamination.

The fill point at the interface with a sample customer (Qenos) was checked during the audit. Two tanks were filled from two pipelines that were clearly labelled as 'Treated Ground Water' with the direction of flow indicated. The 'demin tanks' number 1 and number 2 were filled from above with what is effectively an air gap being present to protect the Treated Water reticulation system from backflow due to the tank fill level being lower than the incoming water lines.

Calibration and maintenance

Regular checks were being made of the veracity of key monitoring instruments. Many of these checks are carried out on site by the NATA accredited laboratory. The Ixom *SOP 216 GTP Testing Specifications* (Version 1.9) was found displayed correctly in the laboratory. The laboratory site was climate controlled so that chemicals and instruments were stored and utilised within a suitable temperature range.

Monitoring of pH was audited. The on site lab conducts daily checks on pH of the Treated Water five days per week. The pH is checked using a Myron Ultrameter II multimeter. The same analyser is used to check EC and ORP. The standards used for the pH meters were within specification (with expiry dates of January 2018, February 2017 and January 2018 for the buffers 4, 7 and 10 pH units, respectively) and are used to confirm that the pH meter is reading within range on a daily basis. Records were provided to show such testing taking place during the audit period.

Monitoring of EC was audited. The standard used to check EC was 0.01 N potassium chloride which was used to provide a standard of 1412 $\mu\text{S}/\text{cm}$ to confirm that the meter was reading within 2% of the required range on a daily basis. Additional standards are used on a monthly basis to check EC at other ranges. Records were provided to show such testing taking place during the audit period.

Monitoring of chlorine was audited. Chlorine is checked using a Hach DR2800 colourimeter and the DPD reagent pillows were found to be not due to expire until 2021. Records were provided to show such testing taking place during the audit period.

Contaminant monitoring was discussed. A Shimadzu QP202 GCMS on site is used to conduct analyses on samples that are collected daily for organic contaminants to provide a very high resolution dataset on the plume in the groundwater. Week day sampling takes place for analysis using a Sievers 900 TOC analyser and Metrohm 881 Compact IC Pro analyser. In addition, microbial quality is assessed off site by a third party laboratory. This contaminant monitoring is largely covered under the scope of the EPA licence and associated audits and inspections. These assays are somewhat out of scope of the IPART GTP audit that focuses on product water quality but they are mentioned in this audit as the work helps to illustrate the rigour and quality of work conducted by the on site laboratory.

Evidence was found of frequent checks and calibration being made the on pH meter. For instance, for the Treated Water Tank Inlet sampling point, records from the audit period were witnessed for checks on pH at 07:00, 13:00, 19:00 and 01:00; and checks on chlorine at 09:00, 15:00, 21:00 and 03:00 (twice-per-shift) using the calibrated laboratory analysers. A paper log and SCADA records of these checks and calibration activities were found to be maintained by Ixom.

Calibration was being managed as part of the Ixom maintenance management system via the Ixom *TR32-GW Trident Maintenance Metrics (Ground PRODUCTION)* software. As part of the audit the auditor was shown a calibration job involving a pH meter. The witnessed job was shown to match Work Order 45919 for the task of "Calibrating the pH meter at Perry Street Discharge and all other plant pH analysers and record results".

During the site inspection pipes were found to be labelled clearly and adequately which would help reduce the risk of cross-contamination. Water distribution system pipes and tanks inspected were labelled "Treated Water", "Treated Ground Water" or "Process Water". Chemical fill points, storage tanks and distribution pipes were clearly labelled. Key nodes and assets were clearly labelled, e.g. specific valves, pumps and monitoring instruments.

Verification

Sampling taps were checked during the site inspection and found to be in suitable locations and of suitable design. The EPA sampling points were clearly labelled and other sample points inspected during the audit were provided with unique descriptions as labels. This clear labelling should help to reduce the risk of sample point confusion arising. A further control on sample point labels comes from the water quality samples being largely collected in-house by Ixom staff. Sample points noted included those labelled "Sample Point Treated Water to OBL", "CIP Water Sample" and "Sample Point Total Chlorine". Labels on assets included pipes and

tanks labelled as “Treated Water”, “Treated Ground Water” and “Treated Water Tank”.

GTP has conducted weekly testing of treated water for total chlorine, heterotrophic plate count, conductivity and total organic carbon since January 2013 at each of the three customer connection points for Solvay, Site Utilities and the Chloralkali Plant and at several points within customer sites (as detailed in Appendix 24 of the WQP). GTP also conducts the same testing of treated water for total chlorine, heterotrophic plate count, conductivity and total organic carbon at its treated water sample location (the common header point to all customers) (as detailed in Appendix 23 of the WQP). This level of testing is extensive.

Incident response

During foreseeable incidents the GTP has been engineered to operate in ‘safe mode’ through the interlocked cessation of Treated Water supply whilst the water produced is diverted to the raw water tank. Potentially the water produced could be diverted to the environment via the EPA licensed discharge point.

There were no water quality incidents during the audit period. Three incidents were noted in the Ixom *Veolicty EHS* incident records management system. These included a broken windscreen on a forklift, a process control server failure and a head strike incident. The process control server failure incident is the most relevant to the WQP and occurred on 7 June 2016. The evidence in the Ixom *Veolicty EHS* incident records management system shows that the incident was followed up. Impressively the GTP managed to continue operating during this incident as the GTP could be run using a development server even though the main servers were both inoperable. The incident is still open whilst the follow up continues.

Customer satisfaction

Customer reports are issued quarterly based on the Ixom ‘BSL-00681’ procedure. These reports are provided to each customer and report water quality and quantity results against each customer tap sample site and meter interface. The quarterly report reviewed in detail during the audit was that for end June 2016 which was also the annual report for the 2015 to 2016 period. The report covers items such as volumes, quality interruptions and incidents. An example was seen of the Ixom *Treated Water Annual Report* to Qenos (with the filename *GTP Annual Water Quality Report CAP 2015-2016 Revision 1*) that was sent to the Qenos customer. Volumes of water supplied are shown to the four supply points (Figures 1 to 4). In addition plots were shown that included measured performance plotted against agreed limits for pH, EC, TCH, EDC, TOC, Ammonia, total chlorine and water temperature (Figures 5 to 12, respectively). The report also summarises interruptions and shut downs.

The *Ixom Customer Complaints and Comments Register* (Version 1.4) summarises customer complaints and comments. Two such items of customer feedback were recorded during audit period. The customer Solvay questioned the treated water volume records on 20 July 2016; and subsequently expressed concern about the number of interruptions to supply that had occurred leading to the need for Solvay to use Process Water (tap water) on 8 September 2016. This comments were recorded along with the way in which the feedback was addressed. With respect to water quality, impressively, Ixom has not supplied water that breached its water quality requirements against reportable incident criteria since 2013 (an incident involving discharge through a leaky valve). It is noted that demand currently exceeds supply capacity for the GTP.

To improve billing and monitoring reliability and reporting Ixom is moving towards the use of magnetic flow meters and is looking at reviewing/reducing inspection times for inspection and replacement of those more sophisticated meters.

Auditing

Ixom has a very thorough internal audit system against all the IPART licence clauses and is auditing its systems against the IPART requirements. At present Orica reviews all of the IPART licence clauses quarterly to keep track of progress and compliance.

Continual improvement

Orica is undertaking a number of ongoing improvements. For instance, an interlocked control valve (LV9110A) has been put in place to prevent Treated Water being supplied to customers if on line analysers detect off-specification results. Similarly, the manual control valves in place after each RO skid are being replaced with automatic control valves with the first such replacement having taken place (UY9393 on RO skid D). These new valves are less noisy and help to replace partially corroded insulation shielding that is beginning to show making the replacement timely and appropriate.

Table 1. Observations from field audit comparing process monitoring instruments and SCADA.

Parameter	Instrument	Field result	SCADA result	Observation
Treated water pH (pH units)	AI9109	7.78 (09:36)	7.6 (11:31)	Consistent
Treated water conductivity ($\mu\text{S}/\text{cm}$)	AIT9119	91.4 (09:36)	90.0 (11:31)	Consistent
Total chlorine (mg/L)	AI9108	0.76 (09:43)	0.80 (11:22)	Consistent
Pressure (kPa)	PIT9118	832 (09:38)	826 (11:23)	Consistent

Table 2. Observations from field audit comparing SCADA settings with WQP limiting values.

Parameter, (units) and instrument	WQP critical limit values	SCADA shut down values	Observation
Treated water pH (pH units) AI9109	6 to 9	6 to 9	Values are consistent since the SCADA limits are equal to those given in Table 3-2 of the WQP
Treated water conductivity ($\mu\text{S}/\text{cm}$) AIT9119	125	115 (conservative)	Values is consistent since the SCADA limit is equal to that given in Table 3-2 of the WQP
Treated water total chlorine (mg/L) AI9108	0.3 to 1.5	0.25 to 1.5	Upper bound value is consistent since the SCADA limit is equal to that given in Table 3-2 of the WQP. The lower bound SCADA limit value is just below the long-term WQP value for operational reasons that were explained and accepted.

Opportunities for improvement

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

Recommendations

There are no recommendations in respect of this requirement.