



Orica Australia Pty Ltd
Audit of Water Quality Plan
Audit Report

December 2012

Table of contents

1.	Executive Summary	i
2.	Introduction	1
	2.1 Purpose of this report	1
	2.2 Scope and limitations	1
3.	Audit Scope and Methodology	2
	3.1 Objectives	2
	3.2 Audit Method	2
	3.3 Regulatory Regime	3
4.	Water Quality Plan Audit Findings	5
	4.1 Summary of Adequacy	5
	4.2 Summary of Findings	6
	4.3 Opportunities for Improvement	7
5.	Conclusions	8

Table index

Table 1	Compliance Grades	3
Table 2	Applicable legal framework	4
Table 3	Audit Grade Summary	5
Table 4	Adequate Audit Findings	6
Table 5	Opportunities for Improvements	7

Appendices

Appendix A – Detailed Audit Findings

1. Executive Summary

GHD Pty Ltd (GHD) was engaged by Orica Australia Pty Ltd (Orica) to conduct an operational audit of the Water Quality Plan (WQP) for Orica's Groundwater Treatment Plant (GTP) to assess the adequacy of the WQP against the twelve elements of the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks Phase 1, 2006 (AGWR)* and a set of guidelines issued by the Independent Pricing and Regulatory Tribunal of New South Wales (IPART). The audit was required by IPART to fulfil Orica's obligations under the *Water Industry Competition Act 2006 (WICA)*.

The auditor was impressed with the effort that Orica had applied in formulating the WQP, the management systems that Orica has in place to manage such a GTP, and the knowledge of the persons managing the Plant. The auditor notes that achieving successful operation of the GTP has been a major and complex undertaking, and there has been a continuing program of documented improvement to address problems that have arisen, and to assure treated water quality.

The audit found:

- Overall, the WQP is compliant with requirements of the 12 elements of the *AGWR*.
- Of the 36 recycled water guideline clauses that are included in the IPART guidelines: 32 were found to be addressed in full compliance with the guideline requirement, four guideline clauses were found to be adequately addressed with only minor shortcomings identified.
- None of the guideline clauses were identified as being inadequately addressed in the WQP such that it would give rise to an unacceptable risk to public health, the environment, customer relations, operations or financial areas of the business.
- Five areas for further improvement were identified in the audit; these generally centred on clarifying the distinctions between preventive measures, controls, critical controls and operational monitoring. In this, Section 2.3 of the Guidelines for Recycling Water should be referred to for definitions and examples.

In carrying out the audit, the auditor notes:

- The auditor has viewed sufficient evidence on which to base conclusions;
- The audit findings accurately reflect the professional opinion of the auditor;
- The auditor and assistant have noted what the guideline and the audit deed requires when conducting the audit, determining audit findings and preparing the report; and
- The audit findings have not been unduly influenced by Orica.

2. Introduction

2.1 Purpose of this report

GHD Pty Ltd (GHD) has been engaged by Orica Australia Pty Ltd (Orica) to conduct an operational audit of the Water Quality Plan (WQP) for Orica's Groundwater Treatment Plant (GTP) to assess the adequacy of the licence plan against the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks Phase 1, 2006 (AGWR)*. The audit is necessary to meet the requirements of the Independent Pricing and Regulatory Tribunal of New South Wales (IPART) and to fulfil Orica's obligations under the *Water Industry Competition Act 2006 (WICA)*.

In accordance with the terms and conditions set out in the *Water Licensing Audit and Technical Services Panel Agreement*, entered into by GHD and IPART, this audit has been undertaken for Orica Australia Pty Ltd in accordance with the Panel Member's (GHD) obligations under the said Panel Agreement.

2.2 Scope and limitations

This report: has been prepared by GHD for Orica Australia Pty Ltd and may only be used and relied on by Orica Australia Pty Ltd and the New South Wales Independent Pricing and Regulatory Tribunal (IPART) for the purpose agreed between GHD and the Orica Australia Pty Ltd and between GHD and IPART as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Orica Australia Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by Orica Australia Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

3. Audit Scope and Methodology

3.1 Objectives

The objective of the audit was to determine the adequacy of Orica's GTP WQP with reference to the twelve elements of the framework for the management of recycled water quality and use, as detailed in the *AGWR*.

3.2 Audit Method

3.2.1 Audit Scope

The scope of the audit was in accordance with the requirements of the *Water Industry Competition Act 2006* and *Water Industry Competition (General) Regulation 2008* with specific reference to the twelve elements within the *AGWR*, including:

- Element 1: Commitment to responsible use and management of recycled water quality;
- Element 2: Assessment of the recycled water system;
- Element 3: Preventative measures for recycled water management;
- Element 4: Operational procedures and process control;
- Element 5: Verification of recycled water quality and environmental performance;
- Element 6: Management of incidents and emergencies;
- Element 7: Operator, contractor and end user awareness and training;
- Element 8: Community involvement and awareness;
- Element 9: Validation, research and development;
- Element 10: Documentation and reporting;
- Element 11: Evaluation and audit; and
- Element 12: Review and continuous improvement.

Note that the audit was focused on the use and management of recycled water quality. The scope of the audit did not include:

- An assessment of the control of risks relating to emissions to air, land or surface water from the operation of the GTP;
- An assessment of the adequacy of the groundwater extraction system in providing control and remediation of contaminated groundwater; or
- An assessment of compliance of the management and performance of the GTP with respect to requirements of regulatory agencies other than IPART.

3.2.2 Audit Standard

The audit was conducted in accordance with *AS/NZS ISO 19011:2003 - Guidelines for quality and/or environmental management systems auditing*.

3.2.3 Audit Steps

The WQP audit was conducted as follows:

1. Opening meeting: attended by Peter Nadebaum and Kate Dortmans of GHD (WQP audit team), Kaye Power and Jessica Hanna of IPART, Greg Leslie and Shane Cox of UNSW

(infrastructure audit team), Michael Selleck and Derek Low of Orica and the leads of the GTP departments.

2. Site tour: the audit teams and IPART representatives undertook a tour of the GTP facility under the supervision of the GTP Lead.
3. Interview: conducted with Michael Selleck (GTP Lead) and Damian Ivers (Operations Lead).
4. Document Review: review of documents, databases, registers, records and procedures created pursuant to the WQP or containing material relating to the content of the WQP.

3.2.4 Audit Team

The audit team consisted of:

- Dr Peter Nadebaum – Lead Auditor and IPART Audit Panel Member
- Kate Dortmans – Auditor's Assistant; and
- Dr Therese Flapper – Quality Assurance Reviewed and IPART Audit Panel Member.

3.2.5 Audit Grades

The auditor assessed Orica's WQP against the requirements contained in the clauses of the *AGWR*. The compliance grades applied are those specified in the IPART Audit Guideline and are presented in Table 1.

In terms of making suggestions to improve the WQP, the auditor has identified opportunities for improvement where the requirement was generally met and the matter was unlikely to present a risk to public health, the environment or level of service, but the WQP could be improved. These matters generally related to completeness or clarification.

Table 1 Compliance Grades

Compliance Grade	Description
Fully adequate	Sufficient evidence to confirm that the requirements have been fully met.
Adequate	Sufficient evidence to confirm that the requirements have generally been met apart from a minor shortcoming which does not compromise the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes. For example: The inadequacy is administrative in nature; or The potential impact of the inadequacy is not likely to present a risk to public health, the environment and/or level of service if not rectified.
Inadequate	Sufficient evidence has not been provided to confirm that all major requirements are being met and the deficiency adversely impacts on the ability of the utility to achieve defined objectives or assure controlled processes, products or outcomes.
No Requirement	The requirement to comply with the licence condition does not occur within the audit period or there is no requirement for the licensee to meet this assessment criterion.

3.3 Regulatory Regime

The Orica GTP operates under the licences and permits issued under the relevant Acts and Regulations as outlined in Table 2.

Table 2 Applicable legal framework

Legislation	Relevant Authority	Licence/permit
<i>Contaminated Land Management Act 1997</i>	Office of Environment and Heritage	Voluntary Management Proposal, 27 April 2010
<i>Fisheries Management Act 1994</i>	Department of Primary Industries (Fisheries)	Permit 05-030
<i>Protection of the Environment Operations Act 1997</i>	Office of Environment and Heritage	Environment Protection Licence No. 2148
<i>Sydney Water Act 1994</i>	Sydney Water Corporation	Trade Waste Service Agreement No. 489
<i>Water Act 1912</i>	Office of Environment and Heritage	Bore licences 10BL16164879; 10BL163917; 10BL164878
<i>Water Industry Competition Act 2006</i>	Independent Pricing and Regulatory Tribunal NSW Health	Network Operator's Licence No. 12-016 Retail Supplier's Licence No. 12-017R
<i>Water Management Act 2000</i>	Office of Environment and Heritage Department of Primary Industries (Office of Water)	Licence for monitoring bores
<i>Work Health and Safety (General) Regulation 2011</i>	WorkCover NSW	Major Hazard Facility Licence

4. Water Quality Plan Audit Findings

4.1 Summary of Adequacy

Table 3 provides an overall summary of the audit grades and corresponding recommendation or opportunity for improvement (OI) per element and clause of the AGWR. A summary of audit findings for each element not awarded full adequacy is provided in section 4.2.

Of the 36 guideline clauses the WQP was audited against, 32 were found to be in full compliance with the guideline requirement. Four guideline clauses were found to be adequately addressed with only minor shortcomings identified.

No recycled water guideline clauses were identified as being inadequately addressed in the WQP.

Table 3 Audit Grade Summary

Recycled Water Guideline Element and Clause		Audit Grade	Opportunity for Improvement
Element 1			
1.1	Responsible use of recycled water	Fully Adequate	N/A
1.2	Regulatory and formal requirements	Fully Adequate	N/A
1.3	Partnerships and engagement of stakeholders	Fully Adequate	N/A
1.4	Recycled water policy	Fully Adequate	N/A
Element 2			
2.1	Source of recycled water, intended uses, receiving environments and routes of exposure	Fully Adequate	N/A
2.2	Recycled water system analysis	Fully Adequate	N/A
2.3	Assessment of water quality data	Fully Adequate	N/A
2.4	Hazard identification and risk assessment	Adequate	OI 1
Element 3			
3.1	Preventative measures and multiple barriers	Fully Adequate	
3.2	Critical control points	Adequate	OI 2 OI 3
Element 4			
4.1	Operational procedures	Fully Adequate	N/A
4.2	Operational monitoring	Adequate	OI 4
4.3	Operational corrections	Fully Adequate	N/A
4.4	Equipment capability and maintenance	Fully Adequate	N/A
4.5	Materials and chemicals	Fully Adequate	N/A
Element 5			
5.1	Recycled water quality monitoring	Fully Adequate	N/A
5.2	Application site and receiving environment monitoring	Fully Adequate	N/A
5.3	Documentation and reliability	Fully Adequate	N/A
5.4	Satisfaction of users of recycled water	Fully Adequate	N/A
5.5	Short-term evaluation of results	Fully Adequate	OI 5
5.6	Corrective responses	Fully Adequate	N/A
Element 6			
6.1	Communication	Fully Adequate	N/A
6.2	Incident and emergency response protocols	Fully Adequate	N/A
Element 7			
7.1	Operator, contractor and end user awareness and involvement	Fully Adequate	N/A
7.2	Operator, contractor and end user training	Fully Adequate	N/A

Recycled Water Guideline Element and Clause		Audit Grade	Opportunity for Improvement
Element 8			
8.1	Consultation with users of recycled water and the community	Fully Adequate	N/A
8.2	Communication and education	Fully Adequate	N/A
Element 9			
9.1	Validation of processes	Adequate	OI 6
9.2	Design of equipment	Fully Adequate	N/A
9.3	Investigation of studies and research monitoring	Fully Adequate	N/A
Element 10			
10.1	Management of documentation and records	Fully Adequate	N/A
10.2	Reporting	Fully Adequate	N/A
Element 11			
11.1	Long-term evaluation of results	Fully Adequate	N/A
11.2	Audit of recycled water quality management	Fully Adequate	N/A
Element 12			
12.1	Review by senior managers	Fully Adequate	N/A
12.2	Recycled water quality management improvement plan	Fully Adequate	N/A

4.2 Summary of Findings

The audit of Orica's WQP found that four recycled water guideline clauses were not in full compliance with the guideline requirements. These clauses were found to be adequately addressed with only minor shortcomings identified. Opportunities for improvement were identified for one clause that was found to be in full compliance with the guideline requirement. The clauses where opportunities for improvement were identified are listed in Table 4. Full details of the audit findings are included in Appendix A.

Comments on the Opportunities for Improvement are made in Sections 4.3 and 4.4 of this report.

Table 4 Adequate Audit Findings

Recycled Water Guideline Element and Clause		Finding	Corresponding OI
Element 2			
2.4	Hazard identification and risk assessment	While the documentation does identify preventive measures and risks; it mixes operational monitoring with preventive measures and it would be of benefit if there could be a better distinction of these concepts. By way of example, Section 2.3 of the Guidelines for Water Recycling defines and provides examples of what constitute preventive measures. Thus, air stripping is a preventive measure, but monitoring to check that air stripping has reduced the concentration to the desired level constitutes operational monitoring and is not a control in its own right.	OI 1
Element 3			
3.2	Critical control points	The identification of risks and analysis of control requirements tends to be focussed on plant risks rather than risks relating to water quality and the use of recycled groundwater.	OI 2
		Some critical controls are based on the online equipment in place rather than being based on a review of risks and the requirements for control. Properly formulating the critical control points is an important aspect of the WQP. It is unclear at what part of the treatment system the water	OI 3

Recycled Water Guideline Element and Clause		Finding	Corresponding OI
		quality controls are applicable. There is no reference to the water quality critical controls in section 3.3.3 of the WQP and they are not included in the diagram “Critical Control Points on the PFD”.	
Element 4			
4.2	Operational monitoring	It is unclear how the monitoring protocols relate to the requirements for control of risks.	OI 4
Element 5			
5.5	Short-term evaluation of results	The WQP does not contain a process for evaluating customer satisfaction although regular meetings are held with BIP operators that include users of the recycled water providing a forum for issues to be discussed.	OI 5
Element 9			
9.1	Validation of processes	Whilst the validation approach is thought to be adequate it would benefit from evidence of a review of adequacy by an appropriately skilled person.	OI 6

4.3 Opportunities for Improvement

Opportunities for Improvement are listed in Table 5. In suggesting an Opportunity for Improvement, the auditor considers that the matter is of importance to the protection of human health and the environment. The Opportunities for Improvement centre on improving the documentation relating to the identification of critical control points and the formulation of associated control protocols and monitoring. In particular, the documentation should reflect the basis adopted in the *AGWR*

Table 5 Opportunities for Improvements

Recycled Water Guideline Element and Clause		Opportunity for Improvement
Element 2		
2.4	Hazard identification and risk assessment	OI 1: Clarify the concepts of preventive measures, controls and operational monitoring in Section 3 of the WQP.
Element 3		
3.2	Critical control points	OI 2. Review and revise the documentation relating to Critical Control Points so that it is clear that the risks relating to groundwater quality and use of recycled groundwater are controlled via the Critical Control Points.
		OI 3. Review the overall diagram of critical controls and ensure that all Critical Control Points are included in the diagram.
Element 4		
4.2	Operational monitoring	OI 4. Expand the documentation of Critical Control Points and monitoring protocols to show how the protocols relate to control of risks.
Element 5		
5.5	Short-term evaluation of results	OI 5: Identify processes for capturing customer satisfaction in the WQP.
Element 9		
9.1	Validation of processes	OI 6: Undertake and document a review of the validation of processes.

5. Conclusions

The audit of Orica's Groundwater Treatment Plant Water Quality Plan found that overall it is compliant with requirements of the twelve elements of the *AGWR*.

The audit found:

- Of the 36 recycled water guideline clauses that are included in the IPART guidelines, 32 were found to be addressed in full compliance with the guideline requirement. Four guideline clauses were found to be adequately addressed with only minor shortcomings identified.
- None of the guideline clauses were identified as being inadequately addressed in the WQP such that it would give rise to an unacceptable risk to public health, the environment, customer relations, operations or financial areas of the business.

Five areas for further improvement were identified in the audit; these generally centred on clarifying the distinctions between preventive measures, controls, critical controls and operational monitoring. In this, Section 2.3 of the Guidelines for Water Recycling should be referred to for definitions and examples.

Overall, the auditor was impressed with the effort that Orica had applied in formulating the Water Quality Plan, the management systems that Orica has in place to manage such a Groundwater Treatment Plant, and the knowledge of the persons managing the Plant. The auditor notes that achieving successful operation of the Groundwater Treatment Plant has been a major and complex undertaking, and there has been a continuing program of improvement to address problems that have arisen, and to assure treated water quality.

Appendices

Appendix A – Detailed Audit Findings



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
Element 1						
The WQP shows a commitment to responsible use and management of recycled water quality	1.1: Responsible use of recycled water	Fully adequate	1.1 Orica has a documented process for identifying and involving regulatory agencies with responsibilities and expertise in protection of public health and the environment.	Fully adequate	Appendix 3: Joint Determining Authority Report (JDAR).	Orica has engaged with numerous Government authorities with responsibilities in protection of public health and environment, as documented in the Joint Determining Authority Report (JDAR).
			1.2 Orica has employed suitable expertise in the design, management and regulation of the recycled water system.	Fully adequate	Appendix 16: Organisation chart and summary of expertise.	Orica has identified individual personnel expertise in design, operation and management of groundwater treatment systems. An organisation chart identifies the roles and personnel involved in the operation and management of the GTP.
	1.2: Regulatory and formal requirements	Fully adequate	1.3 Orica has identified and documented its regulatory and formal requirements.	Fully adequate	Appendix 3: Joint Determining Authority Report (JDAR). Appendix 4: GTP Regulation Chart.	Regulatory and formal requirements are documented in the JDAR and Regulation Chart.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			1.4 The responsibilities for managing regulatory requirements are allocated and communicated to the appropriate employees.	Fully adequate	<p>Appendix 5A: BSL/0464: WI-IPART-001 – Register of Regulators and Stakeholders, Rev 0.</p> <p>Appendix 5B – Register of Regulators and Key Stakeholders, Rev 1.</p>	Responsibilities are outlined in Work Instruction BSL/0464: WI-IPART-001. The Register of Regulators and Key Stakeholders assigns responsibilities to relevant personnel.
			1.5 Orica has a documented process for reviewing and updating the regulatory and formal requirements.	Fully adequate	<p>Appendix 5A: BSL/0464: WI-IPART-001 – Register of Regulators and Stakeholders, Rev 0.</p> <p>Register of regulators and key stakeholder review meeting, 2/11/12.</p>	<p>Work Instruction BSL/0464: WI-IPART-001 provides for the review and update of legal requirements, regulators and key stakeholders.</p> <p>Annual reviews of the stakeholder register and Work Instruction are scheduled using the Orica Environmental Performance Management System.</p> <p>A record of a review meeting was sighted. Attendees included representatives from various departments including technical, hydrogeology, operations, engineering, capital projects, community, QA, SHE and finance.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	1.3: Partnerships and engagement of stakeholder (including the public)	Fully adequate	1.6 Orica has a documented process for identifying relevant stakeholders (government and public).	Fully adequate	Appendix 5A: BSL/0464: WI-IPART-001 – Register of Regulators and Stakeholders, Rev 0. Appendix 5B – Register of Regulators and Key Stakeholders, Rev 1.	Work Instruction BSL/0464: WI-IPART-001 provides for the identification of any new regulators/key stakeholders including government, customers and community stakeholders.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			1.7 Orica has appropriate processes and practices in place to ensure stakeholders are engaged and all stakeholder activities and outcomes are documented. The process ensures that stakeholder responsibilities are identified and understood.	Fully adequate	Appendix 11: Terms of Reference for Botany Groundwater Community Liaison Committee, Rev 2. Groundwater CLC Briefing Paper for meeting on 18 September 2012 located at www.oricabotanytr ansformation.com.au .	Stakeholder engagement is primarily achieved by the activities of the Community Liaison Committee (CLC). The CLC was established to involve the local community in the various activities occurring at the Botany site, of which groundwater treatment is one. The terms of reference and members of the CLC are specified in the Terms of Reference for Botany Groundwater Community Liaison Committee. The CLC is made up of members from different areas including technical specialists, local community and industry representatives, environmental groups, local council, and state government agencies. Details of activities and outcomes of the CLC, including feedback and communication, are available on the public website www.oricabotanytransformation.com .
			1.8 There is a process in place to ensure the stakeholder list is regularly updated.	Fully adequate	Appendix 5A: BSL/0464: WI-IPART-001 – Register of Regulators and Stakeholders, Rev 0.	The stakeholder list is updated as part of the review process in the Work Instruction BSL/0464: WI-IPART-001.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	1.4: Recycled water policy	Fully adequate	1.9 Orica has a recycled water quality policy endorsed by the senior executive.	Fully adequate	Appendix 15: Water Quality Policy, 4 October 2012.	The Water Quality Policy is endorsed by the Global Head Manufacturing and includes a commitment to operate in accordance with the Australian Guidelines for Water Recycling.
			1.10 The policy has been communicated in such a way that it is easily understood and implemented by employees.	Fully adequate	Copy of Water Quality Policy on the DMS. Interview with GTP Plant Lead.	The Water Quality Policy is stored on the Botany Legacy Operations Document Management System (DMS). The distribution list covers all employees and regular contractors of the GTP. The GTP Plant lead also advised that the policy is included in inductions and on provided on notice boards.
Element 2						
The WQP includes an analysis of the recycled water system.	2.1: Intended uses and sources of recycled water	Fully Adequate	2.1 The WQP clearly identifies the source(s) of water.	Fully Adequate	Appendix 18: Groundwater Treatment Plant Intake Pipe Network, Rev A.	The main sources of feedwater for the GTP are identified in section 3.2.1 of the WQP as groundwater extracted from the Primary and Secondary Containment Areas and Botany Industrial Park (BIP). The number of extraction wells, their location and flow rates are identified and presented in Figure 3-2. More information is provided in Appendix 18.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.2 The intended end uses, routes of exposure, receiving environments, endpoints and effects are identified in the WQP.	Fully Adequate	<p>Appendix 19: Groundwater Treatment Plant Customer Connections Pipe Network, Rev A.</p> <p>Appendix 8: Use of Treated Groundwater – Assessment of Risks to Human Health and the Environment, URS, 18 March 2008.</p>	<p>Intended end uses are identified in section 3.2.2 of the WQP. Routes of exposure (pipelines), endpoints (location of users) and receiving environment are also identified in section 3.2.2, and illustrated in Figure 3-4 and Appendix 19.</p> <p>The effects of exposure via ingestion, inhalation or contact with skin are identified and summarised in section 3.2.2 with reference to a 2008 assessment of risks to human health and the environment, attached to the WQP as Appendix 8.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.3 Unintended and unauthorised end uses are identified and considered in the WQP.	Fully Adequate	<p>Appendix 12: Agreement for the supply of treated water (ChlorAlkali).</p> <p>Appendix 13: Agreement for the supply of treated water (Qenos).</p> <p>Appendix 14: Agreement for the supply of treated water (Solvay Interox).</p>	<p>Unintended and unauthorised uses are identified in section 3.2.2 of the WQP.</p> <p>Unauthorised or unintended uses as a result of cross connections have not been explicitly identified. However, Orica has included a commitment to review the user agreements to include the requirement for six monthly reviews of customer infrastructure to verify compliance with authorised uses.</p> <p>Whilst the agreements for supply of treated water currently do not specify the intended, unintended or unauthorised uses Orica has included a commitment to review user agreements to stipulate the intended, unintended and unauthorised uses by 23 April 2013.</p>
	2.2: Recycled water system analysis	Fully Adequate	2.4 The WQP documents pertinent information and key characteristics of the recycled water system consistent with the complexity of the system.	Fully Adequate	Appendix 17: Process Flow Description and Diagram.	The key characteristics of the groundwater treatment system are described in section 3.2.1 and Appendix 17. These include groundwater extraction and feed handling, an Off-gas Oxidation Package and a Stripped Water Treatment Plant. A process flow diagram is included in section 3.2.1 illustrating the groundwater handling system, off-gas oxidiser package and stripped water treatment plant.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.5 Orica assembled a team of people with appropriate knowledge and expertise on the recycled water system (from source to end use) to undertake the analysis of the system.	Fully adequate	Appendix 16: Organisation chart and summary of expertise.	Team members involved in systems analysis are identified and their areas of expertise specified in section 3.2.2 of the WQP and Appendix 16.
			2.6 There is a verified flow diagram of the recycled water system from source to the application or receiving environment, including all sources and end uses.	Fully Adequate	Appendix 17: Process Flow Description and Diagram.	The process flow diagram in section 3.2.1 of the WQP and Appendix 17 illustrates the recycled water system starting at the extraction from the Botany aquifer to end uses (internal uses, site users and discharge to environment).



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.7 There is a documented process to periodically review the recycled water system analysis.	Fully Adequate	Appendix 83: Work Instruction WI-IPART-003 Periodic Review of Recycled Water Scheme Analysis, V1.	<p>Orica has developed a work instruction WI-IPART-003 to facilitate periodic reviews of the recycled water system analysis. The work instruction identifies the team with appropriate knowledge and expertise to undertake the review; specifies the characteristics of the GTP water system to be reviewed from source to end user and receiving environment end points and includes the requirement for actions arising from the review to be recorded in the SHERMIS action management system. This work instruction satisfies the periodic review requirement.</p> <p>The auditor notes that Section 3.2.4 of the WQP also includes processes for the analysis of results and operational data; however, these processes relate to reviewing performance rather than the system itself.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	2.3: Assessment of water quality data	Fully adequate	2.8 Orica has defined and documented the processes for the collection and retention of historical data about groundwater as well as data from treatment plants and/or recycled water supplied to users (over time and following specific events).	Fully adequate	<p>Appendix 23: Routine SWTP Results from Jan 2010.</p> <p>Appendix 24: Water reuse performance monitoring.</p> <p>Copy of 'Groundwater from May 2008.xls'.</p>	<p>Water quality data for source groundwater, water at various stages of treatment and recycled water supplied to users for planned and ad hoc sampling is identified in section 3.2.3 of the WQP.</p> <p>Historical data for routine stripped water treatment process was sighted as per Appendix 23.</p> <p>Historical data for the quality of source groundwater was sighted in the excel spreadsheet 'Groundwater from May 2008.xls'.</p> <p>Water quality data for treated water used by offsite users was sighted as per Appendix 24.</p>
			2.9 Orica has documented the process for identifying, listing and examining exceedances.	Fully adequate	<p>Appendix 25: SOP-216 GTP Testing Specifications.</p> <p>Appendix 28: Daily Report</p> <p>Appendix 30: Shift Handover and Daily Operations Meeting Minutes.</p>	The GTP has documented processes to identify, list and examine exceedances pertaining to Water Quality and Statutory licences in section 3.2.5 of the WQP.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.10 Orica has processes in place for assessing data to identify trends and potential problems in the recycled water system.	Fully adequate	Appendix 25: SOP-216 GTP Testing Specifications. Appendix 28: Daily Report. Appendix 65: Treated Water Quality Metrics.	Section 3.2.6 of the WQP identifies the GTP Testing Specification, the daily report and feedback received from operators during daily meetings as processes by which data is assessed and potential problems identified. Water quality reports including graphically represented water quality data are analysed by the GTP technical lead for trends prior to submission to treated water users. This process is captured in section 3.2.6.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	2.4: Hazard identification and risk assessment	Adequate	2.11 Orica has developed and documented the approach and methodology to be used for hazard identification and risk assessment, considering both public and ecological health.	Adequate	Appendix 46: MP-SG-030B – SH&E Risk Management. Appendix 77: Critical Control Points for Water Quality at the GTP.	<p>The process for hazard identification and risk assessment is identified in section 3.2.7 of the WQP with reference to the Orica Model Procedure for SH&E Risk Management which includes the requirements for hazard studies, periodic hazard studies and environmental impact assessments.</p> <p>A series of risk assessments has been undertaken by Orica including an assessment of the risks associated with treated water quality for environmental discharge and treated water uses as outlined in Table 3-1 and Table 3-2 of the WQP and Appendix 77.</p> <p>While the documentation does identify preventive measures and risks; it mixes operational monitoring with preventive measures and it would be of benefit if there could be a better distinction of these concepts. By way of example, Section 2.3 of the Guidelines for Water Recycling defines and provides examples of what constitute preventive measures. Thus, air stripping is a preventive measure, but monitoring to check that air stripping has reduced the concentration to the desired level constitutes operational monitoring and is not a control in its own right.</p> <p><i>OI 1: Clarify the concepts of</i></p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
						<i>preventive measures, controls and operational monitoring in Section 3 of the WQP.</i>
			2.12 Orica has a documented process to periodically review and update the hazard identification and risk assessment to incorporate any changes.	Fully Adequate	Appendix 46: MP-SG-030B – SH&E Risk Management.	<p>Section 3.2.7 of the WQP states that the GTP system is subject to a comprehensive hazard assessment every five years, as required by Orica's SH&E Risk Management procedure to review the cumulative effects of modification and changes to hazards and legal requirements.</p> <p>Section 4.9 of the Risk Management Procedure outlines the requirement for periodic hazard studies including review of policies, procedures and objectives to ensure they adequately reflect any new potential hazardous event and environmental aspects or new information regarding hazards and environmental aspects.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.13 Orica has identified and documented hazards, sources and hazardous events for each component of the recycled water system.	Fully adequate	<p>Appendix 47A: Balance of plant HAZOP report.</p> <p>Appendix 47B: Off-gas oxidiser HAZOP report.</p> <p>Appendix 47C: Stripped water treatment package HAZOP report.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p> <p>SH&E Risk Register database.</p>	<p>The hazards and risks identified in the series of HAZOP studies document the hazards, sources and hazardous events for each component of the GTP.</p> <p>Environmental risk assessments have also been conducted.</p> <p>These hazards and risks are maintained in the SH&E Risk Register.</p>
			2.14 Orica has estimated the level of risk for each identified hazard or hazardous event.	Fully adequate	<p>SH&E Risk Register.</p> <p>Appendix 44: Environmental Impact GTP 2012, Rev F.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>Orica has assessed the level of risk through the various HAZOP studies and environmental risk assessments. These have been recorded in the SH&E Risk Register. Risks to water quality have been identified in the process of determining the water quality critical controls.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.15 The major sources of uncertainty associated with each hazard and hazardous event have been evaluated and actions have been considered to reduce uncertainty.	Fully Adequate	<p>Appendix 6: Consolidated Human Health Risk Assessment 2005</p> <p>Appendix 7: Consolidated Human Health Risk Assessment 2010</p> <p>Appendix 8: Use of Treated Groundwater Assessment of Risks to Human Health and the Environment</p> <p>Appendix 44: Environmental Impact GTP 2012, Rev F.</p> <p>Appendix 45A/B/C: Environmental Risk Assessments</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>Orica has identified the sources of uncertainty of hazards identified in the qualitative and quantitative risk assessments completed for the GTP.</p> <p>Table 3-4 identifies actions to reduce uncertainty in the qualitative risk assessments involving treated water.</p> <p>The major hazard facility and human health and Environment Risk Assessments for the GTP project were conducted by external consultants. The uncertainties associated with these studies are documented.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			2.16 Orica has determined the significant risks and established documented priorities for risk management.	Adequate	<p>Appendix 44: Environmental Impact GTP 2012, Rev F.</p> <p>Appendix 45A: Environmental Risk Assessments for medium impacts.</p> <p>Appendix 45B: Environmental Risk Summary ERA GTP 2012 – 1.</p> <p>Appendix 48: MHF Scenarios for the GTP</p> <p>Appendix 49: MHF critical Controls for MHF Scenarios.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>Scenarios from hazard assessments and environmental risk assessments rated as medium were regarded as having priority for risk management. The documented priorities for risk management of these scenarios are reflected in the list of Critical Controls for the MHF and the Environmental Risk Assessments stored in the SH&E Risk Register.</p> <p>The risk assessments for environmental discharge and treated water use in Table 3-1 and Table 3-2 identify the risks to treated water quality and assigns preventative management actions accordingly.</p> <p>The comments under IPART Guideline item 2.11 are relevant. Some of the activities listed as critical controls are not the critical control itself, but form part of the critical control process, such as operational monitoring. The Opportunity for Improvement listed under item 2.11 is relevant here.</p>
			2.17 Orica has developed a process for periodically reviewing and updating the hazard identification and risk assessment to incorporate any changes to the system.	Fully Adequate	Appendix 46: MP-SG-030B – SH&E Risk Management.	The finding for Item 2.12 of the IPART Guidance Note (above) is relevant here.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
Element 3						
The WQP outlines the preventative measures for water quality management.	3.1: Preventative measures and multiple barriers	Fully Adequate	3.1 Orica has identified existing preventative measures from source to customer for each significant hazard or hazardous event and estimated the residual risk.	Fully Adequate	<p>Section 3.3.1 of the WQP.</p> <p>Appendix 20: SWTP Sampling Schedule.</p> <p>Appendix 25: SOP-216 GTP Testing Specifications.</p> <p>Appendix 35: Critical Control Points on the PFD.</p> <p>Appendix 36: Critical Control Points Oct 2012.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>Numerous measures have been included in the design, construction and operation of the GTP to prevent the occurrence of foreseeable hazardous events. Such measures include automated alarms for detecting rising groundwater levels in extraction bores; implementation of the Safety Instrumented System (SIS) consisting of interlocks that shutdown specific units of the air strippers and off-gas oxidiser package; use of the Distributed Control System to control the unit operations of the stripped water treatment package; the sampling schedule and QA analysis of monitoring results against the GTP specifications; and preventive measures for the control of treated water quality.</p> <p>For hazards associated with treated water quality, the residual risk has been assessed as provided in Table 3-1 and Table 3-2.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			3.2 Orica has completed an evaluation of alternative or additional preventative measures where improvement is required.	Fully adequate		Registered incidents and exceedances noted in annual returns provide Orica with an indication that existing preventative measures could be improved. Other evaluation measures include the 5 yearly review of the major hazard facility and outcomes of external audits.
			3.3 Orica has documented the preventative measures and strategies for addressing each significant risk in a plan. This is to include identifying the log removal values expected for each preventative measure.	Fully adequate	Appendix 52: SIS Register, Rev G 2011. Appendix 35: Critical Control Points on the PFD. Appendix 36: Critical Control Points Oct 2012. Appendix 77: Critical Control Points for Water Quality at the GTP.	Refer to finding for clause 3.1.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	3.2: Critical control points	Adequate	3.4 Orica has assessed the preventative measures throughout the recycled water system to identify the critical control points.	Adequate	Appendix 36: Critical Control Points Oct 2012. Appendix 77: Critical Control Points for Water Quality at the GTP.	<p>Orica has assessed the GTP system and identified the critical control points for the plant and for treated water quality.</p> <p>The processes used to identify critical control points in the plant was procedure MP-ET-012 Identification & Management of Critical Systems.</p> <p>The auditor notes, however, the identification of risks and analysis of control requirements tends to be focussed on plant risks rather than risks relating to water quality and the use of recycled groundwater. This is an important aspect of the WQP, and the documentation relating to critical control points should be reviewed and revised to ensure that controlling risks relating to groundwater quality and the use of groundwater are a central focus.</p> <p><i>OI 2: Review and revise the documentation relating to Critical Control Points so that it is clear that the risks relating to groundwater quality and use of recycled groundwater are controlled via the Critical Control Points.</i></p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			3.5 Orica has established mechanisms for operational control at critical control points.	Fully adequate	<p>Appendix 36: Critical Control Points Oct 2012.</p> <p>Appendix 52: SIS Register, Rev G 2011.</p> <p>Appendix 54: Register of Approval SOPs.</p> <p>Appendix 55: NATA accredited procedures for sampling and testing.</p>	<p>The mechanisms for operational control at critical control points involve robust systems (SIS and DCS) complete with closed loop control, alarms and interlocks. A range of standard operating procedures (SOP) have been developed to implement the various control measures.</p> <p>Mechanisms for operational control of water quality critical controls are embedded in the monitoring and sampling regime managed by the QA team.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			<p>3.6 Orica has documented the critical control points, critical limits and target criteria. This is to include identifying the log removal values expected for each critical control point.</p>	Adequate	<p>Appendix 52: SIS Register, Rev G 2011.</p> <p>Appendix 35: Critical Control Points on the PFD.</p> <p>Appendix 36: Critical Control Points Oct 2012.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p> <p>Appendix 25: SOP-216 GTP Testing Specifications.</p>	<p>The Critical Control Points for the GTP are identified in the SIS Register and illustrated in the “Critical Control Points on the PFD”. The critical controls are documented in “Critical Control Points Oct 2012” and “Critical Control Points for Water Quality at the GTP”. The SIS Register and “Critical Control Points for Water Quality at the GTP” state the critical limits for each critical control. The GTP specifications identify the target criteria for all critical controls. Information on the degree of reduction achieved by controls is included (e.g. reduction in concentration of chlorinated hydrocarbons achieved by air stripping is specified). The auditor notes that some control provisions would appear to be based on the online equipment that is in place, rather than being based on a review of risks and the requirements for control. For example, monitoring Total CHCs and EDC are not a control loop, as it would appear that they are only monitored as required by external authorities (Appendix 25). Properly formulating the CCPs is an important aspect of the WQP,</p> <p>There is no reference to the water quality critical controls in section 3.3.3 of the WQP and they are not included in the diagram “Critical Control Points</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
						on the PFD". OI 3: Review the overall diagram of critical controls and ensure that all Critical Control Points are included in the diagram.
Element 4						
The WQP outlines the operational procedures and process controls for the scheme.	4.1: Operational procedures	Fully adequate	4.1 Orica has developed a process for identifying operational procedures required for processes and activities from source to end use.	Fully adequate	Appendix 54: Register of Approval SOPs. Appendix 55: NATA accredited procedures for sampling and testing.	During commissioning and early operations, identification and development of procedures occurred based on risk management. Operational procedures have been identified for the operation of the plant and also for the control of water quality and air emissions.
			4.2 All the identified procedures have been documented and compiled into an operations manual.		Fully adequate	



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	4.2: Operational monitoring	Adequate	4.3 Orica has developed monitoring protocols for operational performance of the system, including the selection of operational parameters and criteria, and the routine analysis of results.	Fully adequate	<p>Appendix 56: Routine Plant Checks</p> <p>Appendix 26: Weekly Operations Program.</p> <p>Appendix 55: NATA accredited procedures for sampling and testing.</p> <p>Appendix 20: SWTP Sampling Schedule.</p> <p>Appendix 25: SOP-216 GTP Testing Specifications.</p> <p>Appendix 31: Limits specified by EPL 2148.</p> <p>Appendix 28: Daily Report</p> <p>Appendix 30: Daily meeting worksheet.</p>	Monitoring protocols for operational performance have been identified. These include: real time monitoring using electronic systems such as SCADA, routine plant checks and weekly operations program monitoring; QA performance monitoring of the plant and water quality and analysis of operations and laboratory data by Technical and Operations staff using daily reporting systems and daily meetings.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			4.4 The monitoring protocols have been documented and compiled into an operational monitoring plan.	Adequate	Appendix 26: Weekly Operations Program. Appendix 55: NATA accredited procedures for sampling and testing.	<p>Monitoring of water quality is conducted by the QA team in accordance with a specific set of SOPs.</p> <p>Monitoring of the system performance is documented in the weekly operations program.</p> <p>It would be helpful if there were a clearer link between the monitoring protocols and the requirements for control of risks.</p> <p><i>OI 4: Expand the documentation of critical control points and monitoring protocols to show how the protocols relate to control of risks.</i></p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	4.3: Operational corrections	Fully adequate	4.5 Orica has established and documented procedures for corrective action where operational parameters are not met.	Fully adequate	<p>Appendix 25: SOP-216 GTP Testing Specifications.</p> <p>Appendix 32: SOP-110 Exceedance Response at EPL Point 14.</p> <p>Appendix 33: SOP-111 Exceedance Response at EPL Point 9. 10 and 13.</p> <p>Appendix 34: SOP-602 GTP Operator Response to FTIR Alarms.</p> <p>Appendix 68A: BG-06B: Incident Management & Corrective Action.</p> <p>Appendix 68B: BG-06/MG5: Guideline for Incident Investigation.</p> <p>Appendix 68C: BG-06/MG7: Guideline for Corrective Action.</p>	<p>Procedures and systems used for corrective actions include:</p> <ul style="list-style-type: none"> - the GTP Testing Specifications; - SOPs for corrective action required for exceedances at discharge points; - policies for incident management and corrective action and - actions identified from daily meetings



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			4.6 Orica has established rapid communication systems to deal with unexpected events.	Fully adequate	<p>Appendix 29: SOP-206 Communications Protocol for BIP Customers, Rev 1.3.</p> <p>Appendix 69B: BSL/0451 GTP Pollution Incident Response Management Plan, Rev 1.1.</p> <p>Appendix 70B: GTP Emergency Response Plan, Rev 5.</p> <p>Appendix 71: Botany Legacy Operations Crisis Management Plan, Rev 4.</p>	<p>A communications protocol is in place to notify Treated Water customers in the event of water quality or supply issues.</p> <p>The Emergency Response Plan (ERP), Crisis Management Plan (CMP) and Pollution Incident Response Management Plan (PIRMP) also contain protocols for the rapid communication of information in the case of an incident that threatens public health or the environment.</p>
	4.4: Equipment capability and maintenance	Fully adequate	4.7 There are processes in place to ensure that equipment performs adequately and provides sufficient flexibility and process control.	Fully adequate	Appendix 57: Engineering Maintenance Audit, Rev 3.	<p>Equipment performance is managed through reactive and preventative maintenance programs. The first 5 yearly engineering maintenance audit was completed in 2012 and concluded that the GTP is effectively maintained.</p> <p>Control systems and equipment redundancies are deployed at the GTP.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			4.8 Orica has developed a program for regular inspection and maintenance of all equipment, including monitoring equipment.	Fully adequate	Appendix 57: Engineering Maintenance Audit, Rev 3. Appendix 58: GTP Laboratory equipment Calibration/Service Schedule (Jan – Dec 2012).	Regular inspection and maintenance of equipment is identified. Maintenance activities occur under normal operations and during annual shutdown. The Engineering Maintenance Audit provides an overview of the GTP maintenance system. The scheduling of maintenance activities is managed using the Trident T3 management system software. The QA team are responsible for the calibration and maintenance of monitoring equipment as per the “GTP Laboratory equipment Calibration/Service Schedule”.
	4.5: Materials and chemicals	Fully adequate	4.9 There are processes in place to ensure that only approved materials and chemicals are used.	Fully adequate	Appendix 51: Modification Assessments.	The supply of materials and chemicals is managed using preferred suppliers and is controlled by the requirement to complete a modification assessment if alternative materials or chemicals are to be used or sourced from different suppliers.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			4.10 Orica has documented procedures for evaluating chemicals, materials and suppliers.	Fully adequate	Appendix 51: Modification Assessments. Appendix 59: Supplier Evaluation Guidelines.	The modification process is the system by which any new chemical, material or supplier is assessed. The process requires signatures from relevant parties following a comprehensive assessment checklist. New suppliers are evaluated using guidelines developed and published by Orica Global Procedure. The introduction of a new material or sourcing from a different supplier is addressed by Prompt -1 of Safety Assessment C in Appendix 51.
Element 5						
The WQP outlines the process for verification of the water quality.	5.1: Recycled water quality monitoring 5.2: Application site and receiving environment monitoring	Fully Adequate	5.1 Orica has determined the characteristics to be monitored in the recycled water system, the application site and the receiving environment (as appropriate). The monitoring of the characteristics should demonstrate the log removal values claimed in the preventative measures identified.	Fully Adequate	Appendix 25: SOP-216 GTP Testing Specifications. Appendix 20: SWTP Sampling Schedule. Appendix 77: Critical Control Points for Water Quality at the GTP.	The components and characteristics of the recycled water system to be monitored have been identified with limits specified in the GTP Testing Specifications, SWTP Sampling Schedule and "Critical Control Points for water quality at the GTP". The comments and recommendation under IPART Guidance Note item 4.4 are relevant.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	5.3 Documentation and reliability	Fully adequate	5.2 A sampling plan for each characteristic has been established and documented, including the location and frequency of sampling. The monitoring data is representative and reliable.	Fully adequate	Appendix 20: SWTP Sampling Schedule. Appendix 25: SOP-216 GTP Testing Specifications.	Sampling plans for each characteristic are documented in the GTP Testing Specifications and SWTP Sampling Schedule. The sampling schedule is used to schedule sampling at the required intervals (daily, weekly, monthly etc) and testing of performance monitoring, customer performance monitoring and water discharge to the environment.
			5.3 The procedures for sampling and testing are fully documented and staff are appropriately trained (where relevant).	Fully adequate	Appendix 55: NATA Accredited Procedures for Sampling and Testing. Orica Training Management Database.	Orica has developed a series of NATA accredited procedures for sampling and testing. The test methods for each parameter tested for in the laboratory are documented in individual test method procedures. QA team members are trained in each test method. A training record for a QA team member was sighted with evidence of test method learning modules being completed.



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	5.4: Satisfaction of users of recycled water	Fully adequate	5.4 Orica has established an inquiry and response program for users of the recycled water. The program includes the appropriate training of employees.	Fully adequate	Appendix 29: SOP-206 Communication Protocol for BIP Customers, Rev 1.3.	<p>SOP-206 Communication Protocol for BIP Customers has been developed that outlines the responsibilities for communication between GTP and users of treated water. The SOP includes a training register where employees are required to acknowledge their understanding of the procedure.</p> <p>Whilst the SOP does not contain a formal response process for incoming customer enquiries, section 3.5.3 of the WQP outlines the process by which customer enquiries are managed.</p>
	5.5: Short-term evaluation of results	Fully adequate	5.5 Orica has developed procedures for the short term review of monitoring data and satisfaction of users of recycled water.	Fully adequate	<p>Appendix 28: Daily Report.</p> <p>Appendix 30: Daily Meeting Worksheet.</p> <p>Appendix 64: Treated Water Supply Interruptions Report.</p>	<p>Analysis of operational and laboratory data is undertaken daily by Technical and Operations staff using daily reporting and meetings and regular reporting on data trends (as per item 2.2.3).</p> <p>The WQP does not contain a process for evaluating customer satisfaction although regular meetings are held with BIP operators that include users of the recycled water providing a forum for issues to be discussed.</p> <p>A register of service interruptions is maintained.</p> <p>OI 5: Identify processes for capturing customer satisfaction in the WQP.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			5.6 Internal and external reporting mechanisms have been developed and documented by Orica.	Fully adequate	<p>Appendix 28: Daily Report.</p> <p>Appendix 30: Daily Meeting Worksheet.</p> <p>Appendix 65: Treated Water Quality Metrics</p> <p>Appendix 66: SOP-215 Publishing of GTP Pollution Monitoring Data.</p> <p>Appendix 67A: Site Environmental Licence Annual Return Due Diligence and Verification Procedure.</p>	<p>Internal and external reporting mechanisms have been documented. Internal mechanisms include daily reporting and meetings. External mechanisms include, water quality reports to treated water users, publishing pollution data on the Orica website and the EPA annual return report including a verification process.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
	5.6: Corrective responses	Fully adequate	5.7 Orica has established and documented procedures for corrective action in response to non-conformances or feedback from users of recycled water.	Fully adequate	<p>Appendix 68A: BG-06B: Incident Management & Corrective Action.</p> <p>Appendix 68B: BG-06/MG5: Guideline for Incident Investigation.</p> <p>Appendix 68C: BG-06/MG7: Guideline for Corrective Action.</p> <p>Appendix 68D: IPART Notification Guidelines</p> <p>Appendix 30: Daily Meeting Worksheet.</p> <p>Appendix 64: Treated Water Supply Interruptions Report.</p>	<p>Incidents and non-conformances with licence limits or treated water specifications are managed through Orica's Incident Management database SHERMIS and investigated as required in accordance with the Orica Model Procedure for Incident Management and Corrective Action.</p> <p>Where supply interruptions occur, these are recorded on the interruptions register and recorded on the daily meeting worksheet.</p> <p>Incident reporting to IPART is in accordance with the IPART Notification Guidelines.</p>



Guideline Element	Recycled Water Guideline Clause	Clause Audit Grade	IPART Guidance Note	Component Audit Grade	Evidence sighted	Reasons for grade
			5.8 Orica has in place rapid communication systems to deal with unexpected events.	Fully adequate	<p>Appendix 29: SOP-206 Communications Protocol for BIP Customers, Rev 1.3.</p> <p>Appendix 69B: BSL/0451 GTP Pollution Incident Response Management Plan, Rev 1.1.</p> <p>Appendix 70B: GTP Emergency Response Plan, Rev 5.</p> <p>Appendix 71: Botany Legacy Operations Crisis Management Plan, Rev 4.</p>	<p>A communications protocol is in place to notify Treated Water customers in the event of water quality or supply issues.</p> <p>The Emergency Response Plan (ERP), Crisis Management Plan (CMP) and Pollution Incident Response Management Plan (PIRMP) also contain protocols for the rapid communication of information in the case of an incident that threatens public health or the environment.</p>



Element 6

<p>Management of incidents and emergencies.</p>	<p>6.1: Communication</p>	<p>Fully adequate</p>	<p>6.1 Communication protocols have been developed with the relevant (regulatory) agencies defined and a contact list of key people, agencies and businesses (both internal and external). This must include NSW Health.</p>	<p>Fully adequate</p>	<p>Appendix 70B: GTP Emergency Response Plan, Rev 5. Appendix 70C: ERP Contact List. Appendix 71: Legacy Projects Crisis Management Plan, Rev 3.4. Appendix 29: SOP-206 Communications Protocol for BIP Customers, Rev 1.3.</p>	<p>The Crisis Management Plan defines communication protocols for regulatory agencies and businesses including the EPA and NSW Health, BIP Site Contacts and internal Orica contacts. The Emergency Response Plan specifies responsibilities for notification of external authorities. The external authorities required to be notified in an emergency are listed in the ERP Contact List. In the event that an emergency situation at the GTP resulted in the supply of treated water being suspended users would be notified in accordance with the "Communications Protocol for BIP Customers".</p>
			<p>6.2 Orica has developed a public and media communications strategy.</p>	<p>Fully adequate</p>	<p>Appendix 71: Legacy Projects Crisis Management Plan, Rev 3.4.</p>	<p>In the event of an emergency or serious incident the public and media communications strategy is driven by the Crisis Management Plan.</p>



6.2: Incident and emergency response protocols	Fully adequate	6.3 Potential incidents and emergencies have been identified and procedures and response plans documented, with the involvement of relevant agencies. The plans reflect the events identified in the risk assessment.	Fully adequate	<p>Appendix 25: GTP Testing Specification</p> <p>Appendix 69B: BSL/0451 GTP Pollution Incident Response Management Plan, Rev 1.1.</p> <p>Appendix 70B: GTP Emergency Response Plan, Rev 5.</p> <p>Appendix 71: Botany Legacy Operations Crisis Management Plan, Rev 4.</p>	Incident scenarios and response plans have been identified and documented in the GTP Testing Specification, Pollution Incident Management Response Plan, Emergency Response Plan and Crisis Management Plan.
		6.4 Employees are trained in emergency response procedures and the plans are tested as appropriate.	Fully adequate	Appendix 73: Emergency Drill Log.	<p>Emergency drills are conducted on a regular basis and times so that each operating shift gets to practice.</p> <p>The Plant Dossier for Emergency Drill training was sighted for the period May 2009 through September 2012.</p>



6.5 Orica has developed procedures for the investigation of incidents or emergencies. The procedures outline the process for reviewing incidents or emergencies and making any necessary amendments to protocols.

Fully adequate

Appendix 68A: BG-06B: Incident Management & Corrective Action.

Appendix 68B: BG-06/MG5: Guideline for Incident Investigation.

Appendix 68C: BG-06/MG7: Guideline for Corrective Action.

Section 7.3 of the ERP states that investigation and incident reporting shall be conducted in accordance with the Orica Model Procedure for Incident Management and Corrective Action.



Element 7

<p>The WQP outlines operator, contractor and end user awareness and training requirements.</p>	<p>7.1: Operator, contractor and end user awareness and involvement</p>	<p>Fully adequate</p>	<p>7.1 Orica has developed mechanisms and communication procedures to increase operator contractor and end user awareness of and participation in managing recycled water quality and environmental protection.</p>	<p>Fully adequate</p>	<p>Appendix 28: Daily Report Appendix 30: Shift Handover and Daily Operations Meeting Minutes. Appendix 25: SOP-216 GTP Testing Specifications. Appendix 32: SOP-110 Exceedance Response at EPL Point 14. Appendix 33: SOP-111 Exceedance Response at EPL Point 9, 10 and 13. Appendix 34: SOP-602 GTP Operator Response to FTIR Alarms. Appendix 74: Training Matrix 12-9-12.</p>	<p>Mechanisms to increase awareness among employees, contractors and treated water users are identified and adequate. Mechanisms are varied and include daily reporting and meetings, training for employees and contractors and procedures for managing the water system and responding to, investigating and communicating exceedances.</p>
--	---	-----------------------	---	-----------------------	--	---



7.2: Operator, contractor and end user training	Fully adequate	7.2 Orica has a process in place for ensuring that employees, including contractors, and end users maintain the appropriate experience and qualifications.	Fully adequate	<p>Appendix 74: Training Matrix 12-9-12.</p> <p>Appendix 75: GTP Induction Checklist Permanent.</p> <p>Appendix 76: GTP Induction register, v1.</p>	<p>Processes for training, inductions and evidence of qualifications are identified.</p> <p>A training matrix identifies the required training programs required to be completed for various roles at the GTP including emergency training, incident management,</p> <p>It is a requirement of entry to the site that all employees and contractors are inducted with refresher course every 3 years. As identified in the training matrix, the induction includes environmental awareness and emergency and pollution response modules.</p> <p>The induction checklist for permanent staff requires the training matrix to be consulted and evidence of pre-existing qualifications to be provided and identified on the form.</p> <p>The induction register was sighted including dates for the 3 yearly refresher training.</p>
		7.3 Orica has developed a process for identifying employee training needs and there are appropriate resources available to support any training programs.	Fully adequate	<p>Appendix 74: Training Matrix 12-9-12.</p> <p>Training Management Database.</p>	<p>The training matrix was reviewed and includes extensive training requirements specific to GTP roles.</p> <p>The Training Management Database was viewed and a record for an employee was sighted including a list of training modules completed relevant to their role on the QA team.</p>



			7.4 There are processes and procedures for documenting training and maintaining records of all employees training.	Fully adequate	Appendix 76: GTP Induction register, v1. Training Management Database.	The training register is maintained for GTP inductions. The register is updated by the Operations Manager and stored electronically on the Orica shared drive, including inductee qualifications and authorisations. The Training Management Database records training requirements in addition to the GTP induction.
Element 8						
The WQP outlines the process for community awareness and involvement	8.1: Consultation with users of recycled water and the community	Fully adequate	8.1 Orica has assessed the requirements for effective involvement of users of recycled water and the community.	Fully adequate	Appendix 11: Terms of Reference for Botany Groundwater Community Liaison Committee, Rev 2. Appendix 12: Agreement for the supply of treated water (ChlorAlkali). Appendix 13: Agreement for the supply of treated water (Qenos). Appendix 14: Agreement for the supply of treated water (Solvay Interlox).	Orica has assessed the requirements for involvement of end users through the negotiation process for each Agreement for the Supply of Treated Water (Appendix 12, 13, 14). The Agreements specify the obligations of both the Customer and Orica. Community involvement is facilitated through the Community Liaison Committee (CLC). Regular meetings are held with BIP operators that include users of the recycled water providing a forum for issues to be discussed (refer commentary for IPART Guidance Note 5.5). The Opportunity for Improvement noted under Guidance Note 5.5 is relevant to this requirement.



		8.2 Orica has developed a comprehensive strategy for community consultation.	Fully adequate	Appendix 11: Terms of Reference for Botany Groundwater Community Liaison Committee, Rev 2.	A strategy for community consultation has been documented in the CLC Terms of Reference.
8.2: Communication and education	Fully Adequate	8.3 Orica's communication strategy includes an active 2-way communication program to inform users of recycled water and promote awareness of recycled water quality issues.	Fully adequate	Appendix 29: SOP-206 Communications Protocol for BIP Customers, Rev 1.3. Appendix 65: Treated Water Quality Metrics.	Processes for communicating with treated water users are identified as the Communications Protocol for BIP Customers and quarterly reporting, on site information sessions and regular contact with customers through good working relationships.
		8.4 Orica has developed a process for providing information on unauthorised use as well as the benefits of recycled water to users and the community.	Fully Adequate	Appendix 12: Agreement for the supply of treated water (ChlorAlkali). Appendix 13: Agreement for the supply of treated water (Qenos). Appendix 14: Agreement for the supply of treated water (Solvay Interox).	Orica advised that users were advised of what constituted unauthorised uses as part of developing the scope for the Agreements for Supply of Treated Water; however, a review of the agreements by the auditor found that the agreements do not specify the authorised or unauthorised uses. Orica has included a commitment to review user agreements to stipulate the intended, unintended and unauthorised uses by 23 April 2013 and conduct biannual assessments of authorised use compliance.



Element 9

<p>The WQP outlines the validation, research and development processes for the scheme.</p>	<p>9.1: Validation of processes</p>	<p>Adequate</p>	<p>9.1 Orica has developed validation processes and procedures to ensure that the system is effective at controlling hazards. The processes and procedures should include evaluation of scientific and technical information to demonstrate, as a minimum, that the log removal value claimed for each critical point is valid. The demonstration may be theoretical or empirical (from a pilot plant or another scheme).</p>	<p>Adequate</p>	<p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>The validation of water quality critical control points is outlined in the “Critical Control Points for Water Quality at the GTP”. The use of historical data as a means of validation is consistent with the suggested approaches in the Recycled Water Guideline.</p> <p>The auditor has considered whether the validation approach is adequate and concludes that it probably is, but it would benefit from evidence of a review of adequacy by an appropriately skilled person.</p> <p><i>OI 6: Undertake and document a review of the validation of processes.</i></p>
--	-------------------------------------	-----------------	---	-----------------	---	---



9.2 Orica has established processes and practices for periodical revalidation of processes when changes in conditions occur.

Fully Adequate

Appendix 83: Work Instruction WI-IPART-003 Periodic Review of Recycled Water Scheme Analysis, V1.

Orica's online modification assessment process was reviewed during the site audit. The online modification checklist does not include prompts for the assessment of potential impacts on achieving water quality objectives or provide for the revalidation of water quality control limits following a change in process.

Section 3.9.2 of the WQP outlines proposed changes to be made to the modification assessment system to include prompts to assess the impact of system or process changes on achieving the required water quality objectives.

The Work Instruction WI-IPART-003 Periodic Review of Recycled Water Scheme Analysis also includes a requirement to review water quality critical controls to assess the effect of cumulative system or process changes on water quality and enable revalidation of those controls when changes occur.



9.2: Design of equipment	Fully Adequate	9.3 Orica has a process for validating the selection and design of new equipment and infrastructure to ensure continuing reliability.	Fully Adequate	Appendix 51: Modification Assessment	<p>Orica's online modification assessment process was reviewed during the site audit.</p> <p>The selection and design of new equipment and infrastructure at the GTP is subject to a modification assessment however, the assessment does not take into consideration assessment of the possible impacts on the water quality.</p> <p>Section 3.9.2 of the WQP outlines proposed changes to be made to the modification assessment system to include prompts to assess the impact of system or process changes on achieving the required water quality objectives.</p>
9.3: Investigation of studies and research monitoring	Fully adequate	9.4 Orica is able to demonstrate a commitment to increasing their understanding of the recycled water system and to improving their management of the system.	Fully adequate	<p>Interview and general audit observations.</p> <p>Appendix 77: Critical Control Points for Water Quality at the GTP.</p>	<p>There has been a continuing program of addressing problems associated with the operation of the GTP and improving its performance, demonstrating that Orica has a commitment to increasing understanding and improving the management of the GTP. This includes the involvement of suitably qualified people in all aspects of the operation of the GTP, a capital works improvement program incorporating research and development opportunities and continued implementation of modifications and changes to programmable electronic systems (PES).</p>



Element 10

<p>The WQP outlines the process management of documentation and records as well as the reporting requirements.</p>	<p>10.1: Management of documentation and records</p>	<p>Fully adequate</p>	<p>10.1 Orica has a process for documenting information pertinent to all aspects of recycled water quality management.</p>	<p>Fully adequate</p>	<p>Document Management System Appendix 55: NATA accredited procedures for sampling and testing. Appendix 28: Daily Report Appendix 26: Weekly Operations Program.</p>	<p>Systems for documenting pertinent information were adequately demonstrated and identified in the WQP. Systems include the Programmable Electronic System (PES) and Document Management System, NATA accredited procedures for recording monitoring data and information, records for daily reporting and weekly operational checks.</p>
--	--	-----------------------	--	-----------------------	--	--



10.2 Orica has an appropriate document control system to ensure current version of key documents are in use.

Fully adequate

Lotus Notes Database.

Botany Legacy Operations Document Management System.

Botany Legacy Operations Document Management System.

L: shared network drive.

Systems for storing information and ensuring document control were observed including the Botany Legacy Operations Document management System containing published SOPs and work instructions, the Operations Document Management System containing reference documentation such as licences and legal information, the Lotus Notes database used for electronic work flow approvals such as modification assessments and the shared network drive (L drive) containing records that require regular updates such as laboratory excel spreadsheets with password control.

Evidence of document control includes the presence of revision numbers, approval dates, and document identification numbers on SOPs, work instructions and spreadsheets.



10.3 Orica has established a records management system and ensure that employees are trained to fill out records.

Fully adequate

Training Management Database
Section 3.10.2 of the WQP.

Orica has a records management system; this varies depending on the type of record being produced (e.g. operational check or QA process).

The use of QA records and data is integral to the operation and analysis of the system. Thus training for QA personnel in correct record management is important to the effectiveness of the GTP management system. QA personnel are trained in data and record control procedures as identified in section 3.10.2 of the WQP.

A training record for a QA team member was accessed from the Training Management Database, identifying a range of GTP lab techniques, calibration and QA process training completed.

10.4 Orica has developed a procedure or process to periodically review documentation and revise as necessary.

Fully adequate

Botany Legacy Operations Document Management System.

Orica has processes for the periodic review of documentation; these vary depending on the type of documentation. The Operations Document Management System is set up so that the review frequency for each document is identified.



10.2: Reporting	Fully Adequate	10.5 Orica has established procedures for effective internal and external reporting.	Fully adequate	<p>Appendix 28: Daily Report.</p> <p>Appendix 30: Shift Handover and Daily Operations Meeting Minutes.</p> <p>Appendix 82: Operations Meeting Minutes.</p> <p>Appendix 25: GTP Testing Specifications</p> <p>Appendix 29: SOP-206 Communications Protocol for BIP Customers, Rev 1.3.</p> <p>Appendix 65: Treated Water Quality Metrics.</p> <p>Appendix 66: SOP-215 Publishing of GTP Pollution Monitoring Data.</p> <p>Appendix 67A: Site Environmental Licence Annual Return Due Diligence and Verification Procedure.</p>	<p>Orica has procedures for internal and external reporting. Internal processes include daily reporting and meetings, weekly operations meetings, monthly reports and incident reporting.</p> <p>External reporting includes communications with treated water users, water quality quarterly reports, publishing pollution data and EPA annual return report.</p>
-----------------	----------------	--	----------------	---	--



10.6 Orica has established processes and procedures for the production of an annual report aimed at the users of the recycled water, regulatory authorities and stakeholders.

Fully Adequate

Appendix 67A: Site Environmental Licence Annual Return Due Diligence and Verification Procedure.

Orica has a procedure for the production of an annual report to the EPA via the annual return.

Section 3.10.5 of the WQP outlines the content and process for developing annual reports for treated water users and IPART in accordance with the requirements of clause 10.2 of the AGWR.

Element 11

The WQP outlines the process for long term evaluation of results and the audit of the documentation.

11.1: Long-term evaluation of results

Fully adequate

11.1 Orica has established processes and practices for the collection and evaluation of long-term data to assess performance and identify problems.

Fully adequate

Appendix 64: Treated Water Supply Interruptions Reports.

Appendix 65: Treated Water Quality Metrics.

The system for the collection and evaluation of long term data is identified in section 3.11.1 of the WQP and includes reviews of non-conformances for trends, SH&E performance indicator trends, assessments of the frequency, duration and cause of water supply interruptions and reviews of treated water quality data.

11.2 Orica has established processes and practices for documenting and reporting results.

Fully adequate

Section 3.11.1 of the WQP.

Long term evaluations are conducted by the Technical Lead and reported at monthly management meetings.



11.2: Audit of recycled water quality management	Fully Adequate	11.3 Orica has established protocols for internal and external auditing to be conducted.	Fully Adequate	Appendix 79: Incident Management Audit 2012.	<p>The WQP provides for annual internal audits and three yearly external audits. The scope of the internal audits is based on the requirements of clause 11.2 of the AGWR and includes a review of performance against environmental and operational objectives; management systems and operational activities; water quality performance; audits of treated water users; emergency response and environmental indicators and performance.</p> <p>In addition to the audits of the system performance Orica advised that an annual assurance audit is conducted to assess the Botany site's progress towards SH&E goals in compliance with the Orica Model Procedures and the findings of this audit are reported to Orica's Board. Whilst this audit is important in reviewing the overarching management systems for the Botany site, it may not involve sufficient detail to assess the effectiveness of the recycled water management system. Orica also undertakes regular checks of the GTP system.</p>
		11.4 Orica has a process for documenting and communicating audit results to relevant stakeholders.	Fully Adequate	Section 3.11.2 of the WQP	<p>The documenting of audit results in Orica's audit management database in SHERMIS and communication of audit findings to relevant personnel and management is detailed in section 3.11.2 of the WQP.</p> <p>The outcomes of external audits will be made available to the public via the Orica Botany Transformations website.</p>



Element 12

<p>The WQP outlines a process for review and continual improvement.</p>	<p>12.1: Review by senior managers</p>	<p>Fully Adequate</p>	<p>12.1 Orica has developed a process for senior executive to review the effectiveness of the management system and evaluate the need for change.</p>	<p>Fully Adequate</p>	<p>Appendix 79: Incident Management Audit 2012.</p>	<p>The annual letter of assurance reporting on performance of Orica's management systems including the findings of the annual internal audits is submitted to the Orica Board of Directors. Deficiencies reported in the letter of assurance prompt a review of the overall management system.</p> <p>Section 3.11.2 of the WQP states that the outcomes of internal and external audits will be communicated to Orica corporate personnel and the Executive for Continuous Manufacturing. This communication will inform senior management of the effectiveness of the management system and prompt changes as required.</p>
	<p>12.2: Recycled water quality management improvement plan</p>	<p>Fully adequate</p>	<p>12.2 Orica has developed processes and procedures for the continual improvement of the plans and processes.</p>	<p>Fully Adequate</p>	<p>Section 3.12.2 of the WQP.</p> <p>Appendix 51: Modification Assessments.</p> <p>Appendix 68A: BG-06B: Incident Management & Corrective Action.</p>	<p>The triggers and processes for review of plans and processes to facilitate continual improvement are identified in section 3.12.2 of the WQP. Triggers for review of plans and procedures are: review frequencies specified by the document management system, actions following an audit, actions resulting from a modification assessment or actions resulting from incident investigation.</p>



12.3 There is a process for communicating and implementing the continual improvement actions. The improvement process is monitored for effectiveness.

Fully adequate

Section 3.12.2 of the WQP.

The WQP includes a process for communication and implementing continual improvement actions is adequately identified.

GHD

180 Lonsdale Street
Melbourne, Victoria 3000
T: (03) 8687 8000 F: (03) 8687 8111 E: melmail@ghd.com.au

© GHD 2012

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

G:\31\29523\WP\215730.docx

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	K Dortmans P Nadebaum	T. Flapper		W Bajwa		07/12/12

www.ghd.com

