

Subcontractor's name **AEC Environmental Pty Ltd**

Subcontract No. **0 - 6037- P- 3365-SC119**

Subcontract Package Name: **ENVIRONMENTAL IMPACT MONITORING PROGRAM**

DOCUMENT TITLE: **WASTE DISCHARGE LICENCE ANNUAL AUDIT AND COMPLIANCE REPORT 2015**

Subcontractor's Doc. No.: **AEC146**

 ICHTHYS ONSHORE LNG FACILITIES JKC AUSTRALIA LNG PTY LTD					
Darwin, Australia					
Subcontractor ISSUE PURPOSE		☐ FA ☐ FR ☐ FI X FC ☐ AB ☐ CA			
CTR RESULT CODE		☐ A ☐ B ☐ N ☐ F			
NEXT STATUS :		☐ FA ☐ FR ☐ FI ☐ FC ☐ AB ☐ NA			
Subcontractor RESUB / NEXTSUB DATE :					
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the Contract.					
CTR ORGANIZATION		DEPT. NAME		SIGNATURE	
PJ DEPT.					
RESPONSIBLE DEPT.					
RELATED DEPT.					
CTR REVIEW DATE :					
JOB. NO.		0-6037-2		REVIEW CLASS 3	
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Waste Discharge Licence Annual Audit and Compliance Report 2015

Ichthys On-Shore LNG Facilities

Bladin Point

Prepared for:
JKC Australia LNG Pty Ltd

Date: 6th July 2015



Prepared by:



AEC ENVIRONMENTAL PTY LTD

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Waste Discharge Licence Annual Audit and Compliance Report 2015

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ANNUAL AUDIT AND COMPLIANCE REPORT WASTE DISCHARGE LICENCE

LICENCE NO.	WDL 192
REPORTING PERIOD	

Please email a copy of your completed AACR to pollution@nt.gov.au.

1. Licence Details

ALL Licensees must check their Licence Details are correct.

If there are changes to any of these details you must advise the NT EPA by submitting a Change of Contact Details Form.

Licence Details

Licence Number: **WDL 192**
 Commencement Date: 1 August 2013
 Expiry Date: 31 July 2015

Licensee Details

Legal Entity Name: JKC Australia LNG Pty Ltd
 ABN: 14 154 383 409
 Registered Business Address: Level 50, BankWest Tower
 108 St Georges Terrace
 PERTH WA 6000
 Postal Address: GPO Box 2079
 DARWIN NT 0801
 Contact Person: Nicolas Morgan
 Position Title: Approvals and Regulatory Compliance Officer
 Contact Details:
 b/h: 08 8980 9815
 mobile: 0411 216 260
 email: morgan.nicolas@jkc-lng.com

Location of Premises

Name: Ichthys LNG, Blaydin Point
 Address: 144 Wickham Point Road
 WICKHAM POINT NT

24 hour emergency response

Contact Person 1: Suzanne Mayne (Project Environment Manager)
 mobile: 0418 413 382
 Contact Person 2: Ross McEwen (Resident Construction Manager)
 mobile: 0422 621 909

Licensed Activity

Discharge of wastewater from Blaydin Point Ichthys LNG Temporary Wastewater Treatment Plant (WwTP) to Darwin Harbour subject to this Licence.

Condition	ADMINISTRATIVE	
1.	Action	<i>The Licensee must notify the NT EPA within 24 hours if there are changes to the details of the 24-hour emergency contact as provided on page one of this Licence.</i>
	How	Desktop review.
	Evidence	Verification from Suzanne Mayne (Project Environment Manager) and Ross McEwen (Resident Construction Manager) that the 24-hour emergency response contacts provided to the NT EPA are current.
	When (Date)	Desktop review completed on 27/05/2015
	Status	Compliant
2.	Action	<i>The Licensee must notify the NT EPA within 14 days if there are changes to the Licensee details shown on page one of this Licence.</i>
	How	Desktop review.
	Evidence	Licensee details shown on Page One of WDL 192 were changed in September 2014. The change affected the Licensee Contact Person and Contact Details. In accordance with Condition 2, JKC Australia LNG Pty Ltd (JKC) notified the NT EPA on 1st September 2014 that the nominated Contact Person for the Licensee should be updated to Emma Gilliver, JKC Approvals and Regulatory Compliance Officer, with contact details as follows: Email: gilliver.emma@jkc-lng.com Telephone: (08) 8931 8721 Mobile: 0427 038 089 The notification letter (Subject: Notification regarding Waste Discharge Licence 192 – Bladin Point Ichthys LNG Temporary Waste Water Treatment Plant. Document Reference Number: JKC-NTG-00028 [1/09/2014]) is attached to this Annual Audit and Compliance Report as Appendix A.
	When (Date)	Desktop review confirmed compliance with condition 2 on 27/05/2015. Notification to NT EPA of change to Licensee details was provided on 1/09/2014.

	Status	Compliant
3.	Action	<i>The Licensee must notify the NT EPA within 14 days after ceasing to conduct the activity to which this Licence relates.</i>
	How	Desktop review.
	Evidence	The Licenced activity: <i>Discharge of wastewater from the Bladin Point Ichthys LNG Temporary Wastewater Treatment Plant (WwTP) to Darwin Harbour subject to this Licence</i>, commenced in March 2015 and remains active and notification is not applicable. The current WDL 192 is due to expire on 31 July 2015. An application to renew WDL 192 was submitted to NT EPA on 27 April 2015. The application and cover letter (Subject: Application to Renew Waste Discharge Licence 192. Document Reference Number: JKC-NTG-00051 [27/04/2015]) is attached to this Annual Audit and Compliance Report as Appendix B.
	When (Date)	Desktop review confirmed the Licenced Activity is active on 27/05/2015. Application to NT EPA to renew WDL 192 was submitted on 27/04/2015.
	Status	Compliant
4.	Action	<i>The Licensee must notify the NT EPA prior to making any operational change that will cause, or is likely to cause, an increase in the potential for environmental harm, environmental nuisance, material environmental harm or serious environmental harm.</i>
	How	Desktop review.

	Evidence	No operational changes to the WwTP have occurred that will cause, or are likely to cause, an increase in the potential for environmental harm, environmental nuisance, material environmental harm or serious environmental harm. JKC notified NT EPA, for information purposes, that design modifications to the WwTP have been implemented and were necessary to ensure that the wastewater discharge from the WwTP meets the conditions specified within WDL 192. The notification advised that the treated effluent discharged to the environment from the modified WwTP still meets the specifications included within original supporting documentation to the WDL application. The notification included a statement that design modifications have not resulted in an increased potential for environmental harm, or affected the ability of JKC to meet the water quality objectives specified in WDL 192. This information was provided to the NT EPA within the following documents: Notification regarding Waste Discharge Licence 192 – Bladin Point Ichthys LNG Temporary Waste Water Treatment Plant. Document Reference Number: JKC-NTG-00028 [1/09/2014]. Refer to Appendix A. Application to Renew Waste Discharge Licence 192. Document Reference Number: JKC-NTG-00051 [27/04/2015]. Refer to Appendix B.
	When (Date)	Desktop review was completed on 27/05/2015 and confirmed that no operational changes to the WwTP have occurred that will cause, or is likely to cause, an increase in the potential for environmental harm, environmental nuisance, material environmental harm or serious environmental harm.
	Status	Compliant
5.	Action	<i>The Licensee must cause a copy of this Licence to be available at all times:</i> <i>5.1 At the Darwin Site Office, Blaydin Point</i>
	How	Site Inspection
	Evidence	A hard copy of the licence is maintained in the Project Environment Manager's office at the Ichthys LNG, Bladin Point 144 Wickham Point Road, Wickham Point NT. A site inspection has been conducted to verify, with a hard copy sighted.
	When (Date)	A site inspection conducted and a hard copy of WDL 192 sighted on 10/06/2015.
	Status	Compliant

6.	Action	<i>Where this Licence requires the provision of any notice, document or other correspondence to the NT EPA, the relevant contact is:</i> <i>Pollution Control</i> <i>Physical Address: Level 2 Darwin Plaza, 41 Smith Street Mall, Darwin NT 0801</i> <i>Postal Address: GPO Box 3675, Darwin NT 0801</i> <i>Email: pollution@nt.gov.au</i>
	How	Desktop review.
	Evidence	All notices, documents or other correspondence to the NT EPA to date have been addressed to: <i>Northern Territory Environment Protection Authority</i> <i>Pollution Control</i> <i>GPO Box 3675</i> <i>Darwin NT 0801</i> Refer to: Notification regarding Waste Discharge Licence 192 – Bladin Point Ichthys LNG Temporary Waste Water Treatment Plant. Document Reference Number: JKC-NTG-00028 [1/09/2014]. Refer to Appendix A. Application to Renew Waste Discharge Licence 192. Document Reference Number: JKC-NTG-00051 [27/04/2015]. Refer to Appendix B.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant
7.	Action	<i>All notices, documents or other correspondence required to be provided pursuant to this Licence must be provided in electronic form unless otherwise specified as a condition of this Licence.</i>
	How	Desktop Review

	Evidence	All notices, documents or other correspondence to the NT EPA to date have been provided in electronic form. The Licenced activity: <i>Discharge of wastewater from the Bladin Point Ichthys LNG Temporary Wastewater Treatment Plant (WwTP) to Darwin Harbour subject to this Licence</i>, commenced in March 2015 and to date there has been no requirement to provide to the NT EPA Periodic Reports per Condition 22 of WDL 192. The notifications and documents have been provided to NT EPA in electronic form: • Notification regarding Waste Discharge Licence 192 – Bladin Point Ichthys LNG Temporary Waste Water Treatment Plant. Document Reference Number: JKC-NTG-00028 [1/09/2014]. Refer to Appendix A. • Letter regarding Waste Discharge Licence 192 – Periodic Report on Surface Water Monitoring. Document Reference Number: JKC-NTG-0048 [13/03/2015]. Refer to Appendix A. • Letter regarding Waste Discharge Licence 192- Periodic Report on Surface Water Monitoring. Document Reference Number: JKC-NTG-00030 [15/09/2014]. Refer to Appendix A. • Letter regarding WDL 192 – Periodic Report on Surface Water Monitoring Program. Document Reference Number: JCK-NTG-00400 [4/02/2014]. Refer to Appendix A. • Application to Renew Waste Discharge Licence 192. Document Reference Number: JKC-NTG-00051 [27/04/2015]. Refer to Appendix B.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant
Condition	OPERATIONAL	
8.	Action	<i>The Licensee must, without limiting any other condition of this Licence in conducting the Activity do all things reasonable and practicable to ensure the Activity does not adversely affect the Declared Beneficial Uses and Objectives as declared from time to time, including those applying to:</i> <i>Darwin Harbour Region</i>
	How	Compliance Monitoring Program per Appendix 1 of WDL 192.
	Evidence	The outfall pipeline and diffuser were designed and positioned at a deep water location along an eastward alignment to the north-east of the WwTP near the mouth of the Elizabeth River. Regional oceanographic modelling was undertaken to determine the location of the outfall pipeline and diffuser ports to best

	achieve flushing by ocean currents and dilution through deep water installation and effluent jet velocity. The outfall has been erected 1m above the seabed to avoid siltation interference. The diffuser has been designed with positively buoyant jets to increase the jet path and further disperse treated effluent. The design of the WwTP segregates wastewater streams from the sanitary sewage system, reducing the influent of sewage (and effluent) and minimising potential pollutants. The Beneficial Uses currently declared under the Water Act for the Darwin Harbour Region include Aquaculture, Environment and Cultural. The compliance monitoring program undertaken in accordance with Appendix 1 of WDL 192 enables the measurement and reporting of the health and condition of the receiving environment against the benchmark that has been developed per the Water Quality Objectives relating to their beneficial uses and environmental values. An environmental risk assessment was undertaken for the proposed discharge from the WwTP and presented within the document L290-AH-FRM-10004 (JKC Australia LNG Pty Ltd, 2013) as part of the WDL application process. The risk assessment process was developed in line with Australian Standard AS/NZS ISO 31000:2009, Risk management principles and guidelines, for the purpose of evaluating the potential risk to the beneficial uses identified for Darwin Harbour/Elizabeth River associated with the proposed discharge of treated effluent. Environmental risks (potential impacts) were identified, the likelihood and consequences of those risks were assessed and mitigation measures and controls were developed to reduce those risks identified such that 'Residual Risks' were reduced to as low as reasonably practicable. Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. The monitoring data collected to date, which comprises three monthly monitoring events (March 2015 to May 2015), confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity. Field and analytical results obtained during the monitoring period were considered generally representative of an estuarine environment. The distribution of all field-measured physico-chemical parameters during the monitoring period was consistent across all monitoring locations, including the reference sites and was therefore considered consistent with natural background conditions. Wastewater discharged from the authorised discharge point (outfall diffuser) and waters in the receiving environment in the vicinity of the outfall diffuser did not: • contain any visible matter, petroleum hydrocarbon sheen or scum, or litter or other objectionable matter; • cause or generate odours which would adversely affect the use of surrounding waters; • cause algal blooms; • cause visible change in the behaviour of fish or other aquatic organisms; • cause mortality of fish or other aquatic organisms; or • cause adverse impacts on plants. Results from the compliance monitoring program supported the conclusion that WwTP discharges were not impacting on the
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		marine environment during the Licence period.
	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015.
	Status	Compliant
9.	Action	<i>The Licensee must maintain and implement a communication plan which includes a strategy for communicating with members of the public who are likely to have a real interest in or be affected by the Activity.</i>
	How	Desktop Review
	Evidence	A Community Relations Plan has been developed by JKC and has been provided to NT EPA as part of the WDL 192 renewal application. This is an Ichthys Gas Field Development Project wide plan and refers to the range of community engagement procedures which are in effect across Project. The implementation of the Community Relations Plan is via a range of measures including (but is not limited to): • Website and feedback numbers including a 24 hour / 7 days a week (24/7) 1300 community general enquiry number and a 24/7 1300 community feedback number; • Community briefing and consult sessions; • Media releases and television advertising; • Fact sheets; • Community newsletters and bulletins. It is noted that advice regarding the dye study conducted as part of the temporary WwTP was included in one of these bulletins; • Specific letter box drops and mail outs when potential construction related impacts may occur; and • Phone surveys. The Ichthys Onshore LNG Facilities Community Relations Plan (Document L290-AB-PLN-0150 (JKC Australia LNG Pty Ltd, 2013) can be provided upon request.
	When (Date)	Desktop review completed on 27/05/2015.

	Status	Compliant
10.	Action	<i>The Licensee must maintain a log of each complaint, made in relation to the Activity, to any persons involved in the Activity. The log must include details of the following.</i> <i>the date and time of the complaint;</i> <i>the contact details of the complainant if known, or where no details are provided a note to that effect;</i> <i>the nature of the complaint;</i> <i>the nature of events giving rise to the complaint;</i> <i>prevailing weather conditions at the time of the complaint;</i> <i>the action taken in relation to the complaint, including any follow-up contact with the complainant; and</i> <i>if no action was taken, why no action was taken.</i>
	How	Desktop review
	Evidence	The JKC Community Relations department operate a system for complaint monitoring. The complaint monitoring system is an Ichthys Gas Field Development Project wide system called Database Consultation Manager as part of the implementation of the Community Relations Plan. All community complaints associated with the Ichthys Gas Field Development Project received on the 24/7 1300 community general enquiry number and the 24/7 1300 community feedback number are logged. It has been confirmed that no community complaints have been received specific to the WwTP and its operations.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant

Condition	DISCHARGES AND EMISSIONS			
11.	Action	This Licence authorises wastewater to be discharged from the discharge point identified in Table 1, and in Appendix 1.		
		Table 1: Authorised Discharge Point		
			Description	Location
				Zone MGA52; GDA94
		Outfall Diffuser	Deepwater location within East Arm (Elizabeth River) along an eastward alignment from the STP	Easting: 710158 Northing: 8614623 Longitude: 130.93404 Latitude: -12.5249
	How	Desktop Review		
Evidence	Survey documentation provided as an attachment in Appendix C details the location of the waste discharge outfall diffuser and reflects the coordinates identified in the WDL 192.			
When (Date)	Survey supplied 26/3/014 Desktop review completed 13/6/2015			
Status	Compliant			
12.	Action	Wastewater discharged from the authorised discharge point in Table 1 must not - contain any visible matter, petroleum hydrocarbon sheen or scum, or litter or other objectionable matter; - cause or generate odours which would adversely affect the use of surrounding waters; - cause algal blooms; - cause visible change in the behaviour of fish or other aquatic organisms; - cause mortality of fish or other aquatic organisms; or - cause adverse impacts on plants.		

	How	Compliance Monitoring Program per Appendix 1 of WDL 192. Desktop review.
	Evidence	Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. The monitoring data collected to date, which comprises three monthly monitoring events (March 2015 to May 2015), confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity. There was no visible matter, petroleum hydrocarbon sheen or scum, litter or other objectionable matter observed during monitoring events conducted in the receiving environment. There was no evidence of wastewater discharge causing or generating odours which would adversely affect the use of surrounding waters. There was no evidence of algal blooms, abnormal fish behaviour or mortality and no evidence of adverse impacts on marine and intertidal plant species. The monitoring results have demonstrated that the effluent discharged to Darwin Harbour to date have achieved the treated effluent design specifications under the majority of conditions. In addition, the analytical data collected to date indicates that the WwTP contributions of point source nutrient loads to Darwin Harbour and East Arm is less than that predicted during the WwTP design stages. This result is due to less influent volumes being treated during this period than originally predicted during design stages and lower total phosphorous and total nitrogen concentrations in the effluent than the target effluent design specifications. In addition, it has been confirmed that no community complaints have been received specific to the WwTP and its operations. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. The field records have recorded environmental observations at the time of conducting the compliance monitoring program at the outfall diffuser and at selected reference sites in Darwin Harbour.
	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.
	Status	Compliant

13.	Action	<i>In accordance with the Declaration of Beneficial Uses for Darwin Harbour, surface water monitoring for sampling locations STPM- 1, STPM-02, STPM-03 and STPM-04 and detailed in Appendix 1 must:</i> <i>meet the water quality objectives for "upper estuary" specified in Tables 8 and 9 of the document titled Water Quality Objectives for the Darwin Harbour Region - Background Document; and</i> <i>if particular water quality objectives relevant to a beneficial use are not specified in Tables 8 and 9, the relevant guideline values for 95% species protection specified in Chapters 3, 4 and 5 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) apply.</i>
	How	Compliance Monitoring Program per Appendix 1 of WDL 192. Desktop review.
	Evidence	Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. The monitoring data collected to date, which comprises three monthly monitoring events (March 2015 to May 2015), confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity. In accordance with WDL 192, the relevant trigger values from the Water Quality Objectives for the Darwin Harbour Region – Background Document (Darwin Harbour Water Quality Objectives [WQOs]) (NRETAS, 2010a) and Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC Guidelines) have been adopted for the assessment of discharge impacts on the ambient water quality of the receiving environment. Marine field and analytical results obtained during the monitoring period were considered generally representative of an estuarine environment. The distribution of all field-measured physico-chemical parameters during the monitoring period was consistent across all monitoring locations, including the reference sites and was therefore considered consistent with natural background conditions. Upward or downward trends observed in water quality characteristics were associated with the cessation of the wet season, where increases in EC and pH; and decreases in temperature, DO and turbidity are expected within the surface waters of Darwin Harbour. Overall there did not appear to be any impact on physico-chemical properties from WwTP discharge. Most of the analytes sampled in the monitoring period were below the selected trigger values. There were no exceedances of ammonia, total nitrogen, filterable reactive phosphorous (FRP), chlorophyll-a or enterococci. There was one exceedance of the nitrate/nitrite trigger value recorded in April 2015 at STPM-03. The median oxides of nitrogen value recorded in the receiving environment at the regulatory mixing zone boundary in April 2015 was 3.8 µg/L, which is well below the trigger value of 20 µg/L and achieves the dilution per the diffuser design and as such, this detection does not represent a non-compliance with the conditions of WDL 192. Data collected during background monitoring prior to the commencement of effluent discharge has demonstrated that nitrate/nitrite concentrations are regularly recorded above the Darwin Harbour Water

		Quality Objectives. Furthermore, there was no evidence of resultant impacts on the receiving environment or its beneficial uses. Exceedances for total phosphorous were recorded at all monitoring locations at the boundary of the regulatory mixing zone (STPM-01, STPM-02, STPM-03 and STPM-04) in April 2015. However, the distribution of total phosphorous was consistent across all monitoring locations, including the reference sites and was therefore considered indicative of natural background conditions and not related to WwTP discharge. Results from the compliance monitoring program support the conclusion that WwTP discharges were not impacting on the marine environment or its beneficial uses during the Licence period. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. Monitoring results summary tables are provided as an attachment in Appendix E. Copies of the chain of custodies and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F.
	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.
	Status	Compliant
Condition	MONITORING	
14.	Action	<i>The Licensee must, for all terrestrial sampling points required by this Licence:</i> • <i>install, maintain and provide appropriate identification signage so that they are easily identifiable at all times; and</i> • <i>maintain safe access and egress, as is reasonably practicable.</i>
	How	Site Inspection. Desktop Review.

	Evidence	The only terrestrial sampling location applicable to WDL 192 is STPM-T1 at the WwTP tank outlet. The sampling location is a dedicated sample tap installed on the tank outlet pipe within the restricted access WwTP boundary. The sample location is identified on plant layout and design plans, is known by plant operators and its location has been communicated and shown to the personnel tasked with conducting the compliance monitoring per Appendix 1 of WDL 192. As such, specific signage is considered as not required. In addition, due to the nature of the surrounding operational plant infrastructure it is considered inappropriate to display signage at this sampling location. The requirement of compliance with this condition will be subject to discussion with NT EPA as part of the WDL 192 renewal process. Safe access and egress to the terrestrial sampling location STPM-T1 at the WwTP tank will be maintained as part of standard plant operational procedures. Safe access and egress has been confirmed via the successful completion of compliance monitoring at this sampling location in March 2015, April 2015 and May 2015.
	When (Date)	Compliance monitoring was conducted at the terrestrial sampling location at the WwTP tank outlet (STPM-T1) per conditions of WDL 192 on: • 26/03/2015; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.
	Status	Pending
15.	Action	<i>For each sample required to be collected by this Licence the following information must be recorded and retained</i> • <i>the date(s) on which the sample was taken;</i> • <i>the time(s) at which the sample was collected;</i> • <i>the point(s) at which the sample was taken;</i> • <i>the name of the person who collected the sample;</i> • <i>the chain of custody forms relating to the sample(s);</i> • <i>the field measurements and/or analytical results for the sample; and</i> • <i>laboratory QA/QC documentation.</i>
	How	Desktop review.

	Evidence	Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. For each sample collected, the following information is recorded on field records: • the date(s) on which the sample was taken; • the time(s) at which the sample was collected; • the point(s) at which the sample was taken; • the name of the person who collected the sample; • Sampling devices and monitoring equipment; • Field measured physico-chemical parameter measurements; • Weather observations; • Field observations during sampling including evidence of pollution (sheens, scum, fish kills, olfactory observations, turbidity, presence of litter; • No. and type of sample bottles collected; • No. and type of QA/QC samples collected; • Notification of equipment calibration and decontamination procedures; and • Notification of equipment failures. All samples are submitted to the analytical laboratory with an accompanying and signed chain of custody. All analyses undertaken per the WDL 192 compliance monitoring program are analysed under the laboratory's National Association of Testing Authority (NATA) accreditation. All documentation, including field records, NATA accredited laboratory reports, laboratory QA/QC documentation are saved and stored in electronic file on the AEC-Greencap Darwin server. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. Copies of the chain of custodies and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F.
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	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.
	Status	Compliant
16.	Action	<i>Surface water monitoring must be conducted in accordance with Appendix 1.</i>
	How	Desktop review
	Evidence	Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. A review of the field records, COCs and NATA laboratory reports from the monitoring events conducted following the commencement of discharge in March 2015, confirms surface water sampling was conducted in accordance with Appendix 1 of WDL 192. Appendix 1 of WDL 192 requires seasonal monitoring for endocrine disrupting chemicals within the treated effluent at terrestrial sampling location STPM-T1 at the WwTP tank outlet. Seasonal monitoring as defined in WDL 192 is <i>one sampling event in the dry season and one sampling event in the wet season</i>. At the time of preparing this report there had been no seasonal monitoring undertaken. The first seasonal sampling event for endocrine disrupting chemicals is scheduled for June 2015 (dry season). Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. Monitoring results summary tables are provided as an attachment in Appendix E; and Copies of the chain of custodies (COC) and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F.

	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.
	Status	Compliant
Condition	RECORDING AND REPORTING	
17.	Action	<i>All records required to be kept by this Licence must be in a legible format.</i>
	How	Desktop review
	Evidence	A desktop review has confirmed that all monitoring records and reports required to be kept by the WDL 192 are in a legible format. Notification regarding Waste Discharge Licence 192 – Bladin Point Ichthys LNG Temporary Waste Water Treatment Plant. Document Reference Number: JKC-NTG-00028 [1/09/2014]. Refer to Appendix A. Application to Renew Waste Discharge Licence 192. Document Reference Number: JKC-NTG-00051 [27/04/2015]. Refer to Appendix B. The Ichthys Onshore LNG Facilities Community Relations Plan (Document L290-AB-PLN-0150 (JKC Australia LNG Pty Ltd, 2013) can be provided upon request. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. Copies of the chain of custodies and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant

18.	Action	<i>The Licensee must keep records of all non-compliances with this Licence</i>
	How	Desktop review.
	Evidence	There are no records applicable to non-compliances of WDL 192. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D . Copies of the chain of custodies and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F .
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant
19.	Action	<i>The Licensee must as soon as practicable and in any case within 24 hours of becoming aware, notify the NT EPA of non-compliances with this Licence.</i>
	How	Desktop review.
	Evidence	There are no records applicable to non-compliances of WDL 192 and therefore notifications to NT EPA is not applicable.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant
20.	Action	<i>The Licensee must immediately and in any case within 24 hours of becoming aware, notify the NT EPA of any potential or actual environmental harm or pollution by contacting the Pollution Hotline on telephone number 1800 064 567 and by emailing pollution@nt.gov.au.</i>

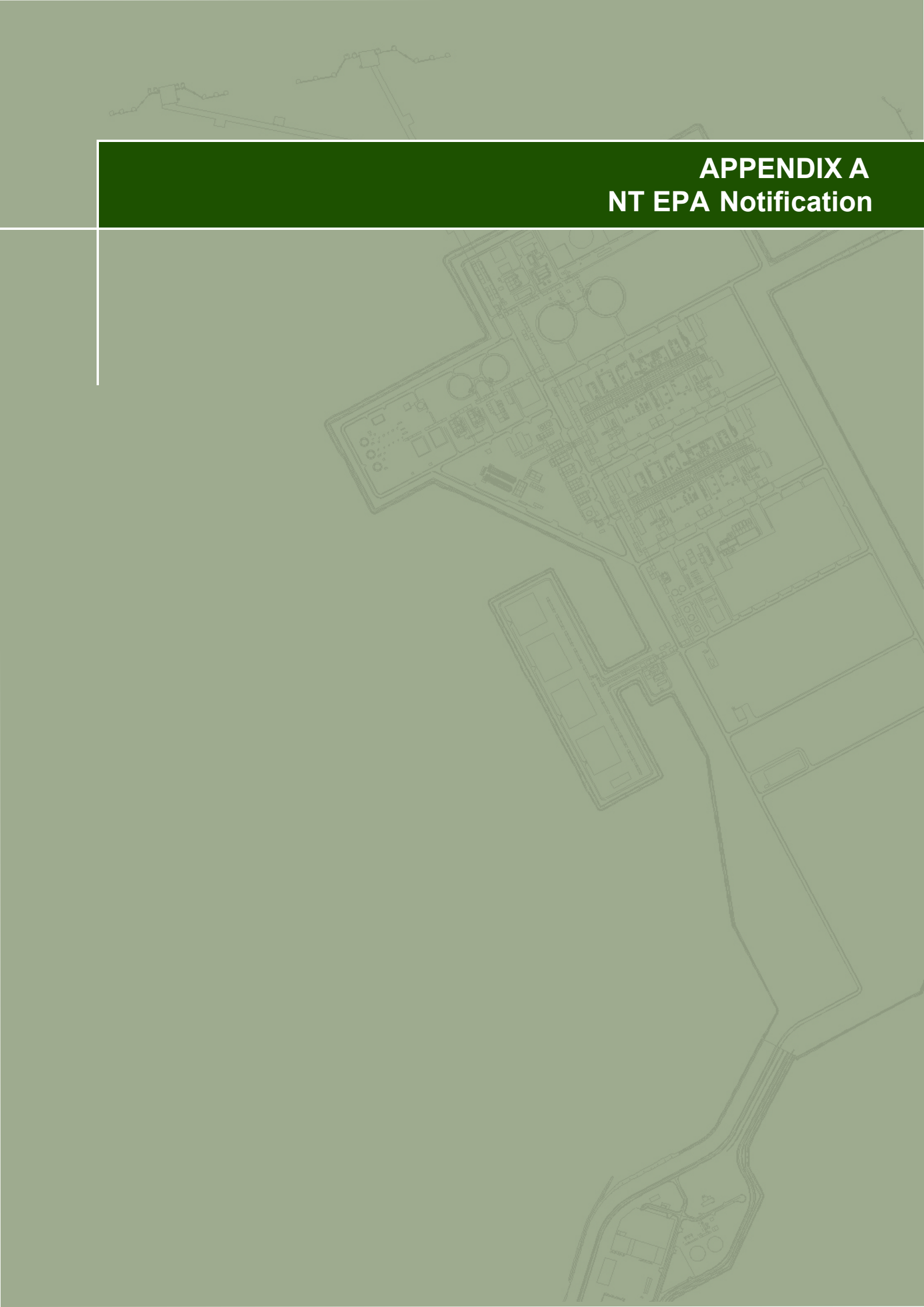
	How	Compliance Monitoring Program per Appendix 1 of WDL 192. Desktop review.
	Evidence	Compliance monitoring per Appendix 1 of WDL 192 commenced in March 2015, which coincided with the commencement of the Licenced Activity. The monitoring data collected to date, which comprises three monthly monitoring events (March 2015 to May 2015), confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity. There was no visible matter, petroleum hydrocarbon sheen or scum, litter or other objectionable matter observed during monitoring events conducted in the receiving environment. There was no evidence of wastewater discharge causing or generating odours which would adversely affect the use of surrounding waters. There was no evidence of algal blooms, abnormal fish behaviour or mortality and no evidence of adverse impacts on marine and intertidal plant species. Results from the compliance monitoring program support the conclusion that WwTP discharges were not impacting on the marine environment or its beneficial uses during the Licence period. The monitoring results have demonstrated that the characteristics of the effluent discharged to Darwin Harbour to date have achieved the treated effluent design specifications under the majority of conditions. In addition, the analytical data collected to date indicates that the WwTP contributions of point source nutrient loads to Darwin Harbour and East Arm is less than that predicted during the WwTP design stages. This result is due to less influent volumes being treated during this period than originally predicted during design stages and lower total phosphorous and total nitrogen concentrations in the effluent than the target effluent design specifications. In addition, it has been confirmed that no community complaints have been received specific to the WwTP and its operations. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. The field records have recorded environmental observations at the time of conducting the compliance monitoring program at the outfall diffuser and at selected reference sites in Darwin Harbour.
	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.

	Status	Compliant
21.	Action	<i>The Licensee must comply with the requirements of section 14 of the Waste Management and Pollution Control Act.</i>
	How	Compliance monitoring Program per Appendix 1 of WDL 192. Desktop review.
	Evidence	Section 14 of the Waste Management and Pollution Control Act pertains to the duty to notify of incidents causing or threatening to cause pollution. As there have been no incidents causing or threatening to cause pollution as a result of the Licenced Activity, this condition has been noted. Compliance monitoring commenced in March 2015 which coincided with the first discharge from the WwTP. The monitoring data collected to date, which comprises three monthly monitoring events (March 2015 to May 2015), confirms that the Declared Beneficial Uses and Objectives of the subject waterways have not been adversely affected by the Licensed Activity. There was no visible matter, petroleum hydrocarbon sheen or scum, litter or other objectionable matter observed during monitoring events conducted in the receiving environment. There was no evidence of wastewater discharge causing or generating odours which would adversely affect the use of surrounding waters. There was no evidence of algal blooms, abnormal fish behaviour or mortality and no evidence of adverse impacts on marine and intertidal plant species. Results from the compliance monitoring program support the conclusion that WwTP discharges were not impacting on the marine environment or its beneficial uses during the Licence period. The monitoring results have demonstrated that the characteristics of the effluent discharged to Darwin Harbour to date have achieved the treated effluent design specifications under the majority of conditions. In addition, the analytical data collected to date indicates that the WwTP contributions of point source nutrient loads to Darwin Harbour and East Arm is less than that predicted during the WwTP design stages. This result is due to less influent volumes being treated during this period than originally predicted during design stages and lower total phosphorous and total nitrogen concentrations in the effluent than the target effluent design specifications. In addition, it has been confirmed that no community complaints have been received specific to the WwTP and its operations. Field records for the compliance monitoring events conducted in March, April and May 2015 are provided as an attachment in Appendix D. Copies of the chain of custodies (COC) and laboratory reports, including laboratory QAQC reports, for the monitoring period are included as Appendix F.

	When (Date)	Discharge from the WwTP commenced on 16/03/2015 for 30 minutes. Discharge then recommenced on the 20/03/2015. Compliance monitoring was conducted per conditions of WDL 192 on: • 17/03/2015 at STPM-01 to STPM-04 and 26/03/2015 at STPM-T1; • 14/04/2015; and • 12/05/2015. Desktop review completed on 27/05/2015.											
	Status	Compliant											
22.	Action	Condition 22 <i>The Licensee must provide to the NT EPA a Periodic Report in accordance with the following schedule:</i> <table><tr><th>Reporting Period</th><th>Report Submission Due:</th></tr><tr><td><i>August 2013 – January 2014</i></td><td><i>6 weeks after final monitoring event</i></td></tr><tr><td><i>February 2014 – July 2014</i></td><td><i>6 weeks after final monitoring event</i></td></tr><tr><td><i>August 2014 – January 2015</i></td><td><i>6 weeks after final monitoring event</i></td></tr><tr><td><i>January 2015 – July 2015</i></td><td><i>6 weeks after final monitoring event</i></td></tr></table> <i>The Periodic report must:</i> <i>22.1 be prepared in accordance with the requirements for a Monitoring Report identified on pages 12-21 of the document: Guidelines for Consultants Reporting on Environmental Issues available from:</i> http://www.ntepa.nt.gov.au/data/assets/pdf_file/0005/136481/guidelines_consultants_reporting_environmental_issues.pdf <i>22.2 include a tabulation of field results and analytical parameters required as a condition of this Licence; and</i> <i>22.3 include a trend analysis and detailed interpretation of surface water monitoring results required as a condition of this Licence</i>		Reporting Period	Report Submission Due:	<i>August 2013 – January 2014</i>	<i>6 weeks after final monitoring event</i>	<i>February 2014 – July 2014</i>	<i>6 weeks after final monitoring event</i>	<i>August 2014 – January 2015</i>	<i>6 weeks after final monitoring event</i>	<i>January 2015 – July 2015</i>	<i>6 weeks after final monitoring event</i>
Reporting Period	Report Submission Due:												
<i>August 2013 – January 2014</i>	<i>6 weeks after final monitoring event</i>												
<i>February 2014 – July 2014</i>	<i>6 weeks after final monitoring event</i>												
<i>August 2014 – January 2015</i>	<i>6 weeks after final monitoring event</i>												
<i>January 2015 – July 2015</i>	<i>6 weeks after final monitoring event</i>												

	How	Desktop review
	Evidence	The Licenced Activity commenced in March 2015 and therefore compliance monitoring commenced in March 2015. As such no periodic report has been submitted to the NT EPA to date. Notifications regarding periodic reporting prior to discharge were provided to NT EPA in Document Reference Number: JKC-NTG-00028 [1/09/2014], JKC-NTG-00030 [15/09/2014], JKC-NTG-00400 [4/02/2014] and JKC-NTG-0048 [13/03/2015]. Refer to Appendix A. The submission date for this Annual Audit and Compliance Report precedes the submission date for the Periodic Report January 2015 to July 2015. As such, this Condition has been noted.
	When (Date)	Desktop review completed on 27/05/2015.
	Status	Compliant
23.	Action	<i>The Licensee must complete the attached Annual Audit and Compliance Report (AACR), Appendix 2 and provide to the NT EPA a minimum of 20 Business Days prior to the anniversary of the commencement date of this Licence, for each year of this Licence noting that the NT EPA may require the Licensee to revise, amend and/or resubmit the AACR.</i>
	How	Refer to this report
	Evidence	This report fulfils Condition 23 of WDL 192
	When (Date)	This Waste Discharge Licence Annual Audit and Compliance Report 2015 will be submitted to the NT EPA on 6/07/2015, which equates to 20 Business Days prior to the anniversary of the commencement date of this Licence (1/08/2013).
	Status	Compliant
24.	Action	<i>The Licensee must provide to the NT EPA a minimum of 20 Business Days prior to the expiry date of this Licence a Licence Report. The Licence Report must include:</i> <i>An update of the environmental risk assessment provided in the document S-0290-1140-3210 - Waste Discharge Licence Application: Supporting Documentation - Temporary Sewage Treatment Plant, based on the evidence collected during this Licence period.</i>

	How	Refer to the Waste Discharge Licence Report 2015.
	Evidence	Refer to the Waste Discharge Licence Report 2015.
	When (Date)	The Waste Discharge Licence Report 2015 will be submitted to the NT EPA on 6/07/2015, which equates to 20 Business Days prior to the expiry date of this Licence (1/08/2013). The submission of the Waste Discharge Licence Report fulfils Condition 24 of WDL 192.
	Status	Compliant

The background of the page is a faint, light-green aerial photograph of an industrial facility. The facility includes several large rectangular buildings, numerous circular storage tanks, and a complex network of pipes and roads. A solid green horizontal bar is positioned at the top of the page, containing the title text in white. A thin white vertical line is located on the left side of the page, intersecting the green bar.

APPENDIX A

NT EPA Notification

Level 6, 66 Smith St,
Darwin NT 0800

Date: 1 September 2014

Reference Number: JKC-NTG-00028

Northern Territory Environment Protection Authority
Pollution Control
GPO Box 3675
Darwin NT 0801

Attention: Roni Opden, Environmental Officer

**Subject: Notification regarding Waste Discharge Licence 192 – Bladin Point
Ichthys LNG Temporary Waste Water Treatment Plant**

Dear Roni,

JKC wishes to notify the Northern Territory Environment Protection Authority (NT EPA) of an amendment to the Licensee Details for Waste Discharge Licence 192 (WDL 192). WDL 192 was issued on 14th June 2013 and relates to the discharge of wastewater from the Bladin Point Ichthys LNG temporary Waste Water Treatment Plant (WWTP). The WWTP is a temporary facility only, for the treatment of waste (ablutions and crib rooms) over an expected five year construction period for the Ichthys Project Onshore LNG Facilities.

In accordance with Condition 2 of the WDL, JKC Australia LNG Pty Ltd (JKC) advises that the nominated Contact Person for the Licensee should be updated to Emma Gilliver, JKC Approvals and Regulatory Compliance Officer with contact details as follows:

- Email: gilliver.emma@jkc-lng.com;
- Telephone: (08) 8980 9813
- Mobile: 0427 038 089

In addition, JKC wishes to notify the NT EPA for information purposes, that influent monitoring of the temporary WWTP identified a variation in influent parameters from the original design assumptions, which has necessitated modifications to the WWTP design.

The WWTP was originally designed for typical low/medium strength influent concentrations with a predicted total daily inflow of 500m³/day. After sampling was conducted on site, the influent was found to be of a higher strength than the original design assumptions. This was associated with a significantly lower than anticipated daily water



JKC AUSTRALIA LNG PTY LTD

ABN 14 154 383 409

usage rate per head, due primarily to the incorporation of minimal shower facilities and a corresponding low input of grey water to the system. The revised maximum daily waste water inflow to the WWTP has been calculated at 400m³/day.

Accordingly, design modifications have been necessary to ensure that the waste water discharge from the temporary WWTP meets the conditions specified by WDL 192. This has involved additional infrastructure being incorporated into the WWTP system to address the higher influent parameters. JKC advises that the treated effluent from the modified WWTP to be discharged to the environment via the nominated outfall location, still meets the specifications included within original supporting documentation to the WDL application. In addition, the maximum volume of waste water to be discharged from the site has been reduced from 500m³, as advised in the original WDL application, to 400m³/day.

In summary, JKC confirms that design modifications to the temporary WWTP have not resulted in increased potential for environmental harm, or affected the ability of JKC to meet the water quality objectives specified in WDL 192.

Yours Sincerely

Bruce Franklin
External Affairs and Business Manager

(EG)

**Level 6, 66 Smith St,
Darwin NT 0800**

Date: 13 March 2015

Reference Number: JKC-NTG-00048

**Northern Territory Environment Protection Authority
Pollution Control
GPO Box 3675
Darwin NT 0801**

Attention: Jane Orr, Senior Environmental Officer

**Subject: Waste Discharge Licence 192 – Periodic Report on Surface Water
Monitoring**

Dear Jane,

As you are aware, JKC Australia LNG Pty Ltd (JKC) was issued Waste Discharge Licence (WDL) 192 by the Northern Territory Environment Protection Authority (NT EPA), for discharge associated with the temporary Waste Water Treatment Plant (WWTP) at Bladin Point.

Condition 22 of WDL 192 requires JKC to provide biannual reporting of results from the Surface Water Monitoring Program specified in Appendix 1. As per this schedule and advice provided by NT EPA, JKC notified NT EPA in February 2014 and September 2014 that the temporary WWTP had not yet been commissioned and no discharge of effluent to the Elizabeth River had occurred. As such, the Surface Water Monitoring Program required by WDL 192 had also not commenced at this time.

Whilst a date of 16 March 2015 has now been established for the commencement of discharge from the temporary WWTP, JKC advises that for the reporting period of August 2014 to January 2015, commissioning of the temporary WWTP was incomplete and there was no discharge of treated effluent to the Elizabeth River. No associated surface water monitoring was therefore required or conducted during this period.



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JKC therefore confirms that Surface Water Monitoring Program did not commence during the reporting period of August 2014 to January 2015 and there is no associated monitoring data to report to NT EPA for this period.

With discharge to the Elizabeth River from the temporary WWTP now anticipated to occur on 16 March 2015, JKC also intends to commence the Surface Water Monitoring Program within several days of this date. Surface water monitoring data will therefore be available to NT EPA for the WDL reporting period concluding 31 July 2015.

Please contact Emma Gilliver, Government Approvals Advisor, on (08) 8980 9813 should you require any further information regarding this matter.

Yours Sincerely

Bruce Franklin
External Affairs and Business Manager

(EG)

**Level 6, 66 Smith St,
Darwin NT 0800**

Date: 15 September 2014

Reference Number: JKC-NTG-00030

**Northern Territory Environment Protection Authority
Pollution Control
GPO Box 3675
Darwin NT 0801**

Attention: Jane Orr, Senior Environmental Officer

**Subject: Waste Discharge Licence 192 – Periodic Report on Surface Water
Monitoring**

Dear Jane,

As you are aware, JKC Australia LNG Pty Ltd (JKC) was issued Waste Discharge Licence (WDL) 192 by the Northern Territory Environment Protection Authority (NT EPA), for discharge associated with the temporary Waste Water Treatment Plant (WWTP) at Bladin Point.

Condition 22 of WDL 192 requires JKC to provide biannual reporting of results from the surface water monitoring program specified in Appendix 1. As per this schedule and advice provided by NT EPA, JKC provided notification to NT EPA in February 2014 that the WWTP was yet to be commissioned or commence discharge of effluent and as such the surface water monitoring program had not yet commenced.

As per recent email correspondence with NT EPA, JKC advises that the WWTP commissioning is not anticipated until later in 2014, with timing yet to be finalised. As such, JKC confirms that the surface water monitoring program has not yet commenced and there is no data to report to NT EPA for the period covering February 2014 – July 2014, as specified in WDL 192.



Please contact Emma Gilliver, Government Approvals Advisor, on (08) 8980 9813 should you require any further information regarding this matter.

Yours Sincerely

A handwritten signature in blue ink, appearing to read "B. Franklin".

Bruce Franklin
External Affairs and Business Manager

(EG)



JKC AUSTRALIA LNG PTY LTD

ABN 14 154 383 409

Level 6, 66 Smith St,
Darwin NT 0800

Date: 4 February 2014

Reference Number: JKC-NTG-00400

NT EPA
GPO Box 3675
Darwin NT, 0801

Attention: Dr W.J. Freeland, Delegate of the Controller of Water Resources

Subject: WDL 192 – Periodic Report on Surface Water Monitoring Program

Dear Dr Feeland,

As you are aware, JKC Australia LNG Pty Ltd (JKC) was issued Waste Discharge Licence 192 by the NT EPA commencing on 1 August 2013.

Condition 22 of WDL 192 requires the Licensee to provide periodic reporting of results from the surface water monitoring program as specified in Appendix 1, with the first report covering the period August 2013 to January 2014.

JKC advises that it is yet to commission the Wastewater Treatment Plant (WWTP) or commence discharge of effluent from the Wastewater Treatment Plant Outfall. As such, JKC is yet to commence the surface water monitoring program. This approach is consistent with email advice from NT EPA staff (Roni Opden) to JKC on 31 July 2013. JKC intends to submit a monitoring report for the reporting period covering February 2014 – July 2014 as per the requirements of WDL 192.

If you require further information please contact Nicolas Morgan, Approvals and Compliance Officer, on (08) 8980 9815.

Yours Sincerely

Bruce Franklin
Business Manager

APPENDIX B
WDL 192 Renewal Application and Notification Letter JKC-NTG_00051



**Level 6, 66 Smith St,
Darwin NT 0800**

Date: 27 April 2015

Reference Number: JKC-NTG-00051

**Northern Territory Environment Protection Authority
Pollution Control
GPO Box 3675
Darwin NT 0801**

Attention: Jane Orr, Senior Environmental Officer

Project: Ichthys Onshore LNG Facilities Project

Subject: Application to Renew Waste Discharge Licence 192

Dear Jane,

Please find attached an application to renew Waste Discharge Licence (WDL) 192 for the temporary Waste Water Treatment Plant (WWTP), for the Ichthys Onshore LNG Facilities Project (the Project) at Bladin Point.

As per email advice provided by JKC Australia Pty Ltd (JKC) to the Northern Territory Environment Protection Authority (NT EPA) on 13 March 2015, the temporary WWTP commenced operation and discharge to Darwin Harbour in mid-March 2015. The current WDL 192 is due to expire on 31 July 2015 and JKC wishes to renew this licence to allow continued operation of the temporary WWTP to support Project construction activities.

In accordance with Section 4 of the licence renewal application, please also find attached the following documents to support the renewal of WDL 192:

- 1) *Tristar Process Design Report – Temporary Site Facilities Works* (L300-AP-REP-10000)
- 2) *Ichthys Onshore LNG Facilities – Community Relations Plan* (L290-AB-PLN-0150)
- 3) *Emergency Response Plan Management Plan – Waste Water Treatment Plant – Temporary Site Facilities Works* (L290-AH-PLN-10145)
- 4) *Ichthys Onshore LNG Facilities - Emergency Response Plan* (L290-AH-PLN-0055)

With regards to document 1 listed above, the *Tristar Process Design Report – Temporary Site Facilities Works*, this document describes process modifications to the temporary WWTP which have been implemented to address a variation in influent concentrations from the original design assumptions, as per advice provided to NT EPA on 1 September 2014 (JKC letter reference JKC-NTG-00028). This document supplements the information contained within Section 9 - Discharge Specifications, of *Waste Discharge Licence Application – Supporting documentation – Temporary Sewage Treatment Plant* (L290-AH-FRM-10004), which accompanied the original WDL application to NT EPA for the temporary WWTP in December 2012.

This *Tristar Process Design Report – Temporary Site Facilities Works* also outlines an associated beneficial reduction in the daily flow rate of treated effluent being discharged from the WWTP, from 500 m³/day as advised in the original WDL application, to 400 m³/day. There has been no change to any of the other discharge specifications.

JCK confirms that the process modifications to the WWTP have not in any way resulted in increased potential for environmental harm, or affected the ability of JKC to satisfy the monitoring provisions, or comply with the water quality objectives, specified in the current WDL 192.

With regards to documents 3 and 4 listed above, both of these documents have been provided in support of Item 15 within Section 4 of the licence renewal application. Document 3 is a Sub-contractor document specific to the temporary WWTP, while document 4 addresses site wide Project activities also encompassing the temporary WWTP.

If you have any queries with regards to this application please contact Emma Gilliver, Government Approvals Advisor on (08) 8931 8721 or gilliver.emma@jkc-lng.com.

Yours Sincerely



Bruce Franklin
External Affairs and Business Manager

(EG)

Water Regulations

APPLICATION TO RENEW A WASTE DISCHARGE LICENCE

Pursuant to Regulation 15

For guidance on completing this form please refer to the *Guidelines on Waste Discharge Licensing under the Northern Territory Water Act* available on the Northern Territory Environment Protection Authority (NT EPA) website at <http://www.ntepa.nt.gov.au/waste-pollution/guidelines>.

This is an approved form in accordance with section 3 of the *Water Regulations* (the Regulations). Information on this form is being collected for the purpose of assessing your renewal application for a licence under the *Water Act*. Failure to provide the information requested on this form may result in your application not being considered. Information is collected and managed in accordance with the NT EPA Privacy Statement and the *Information Act*. The privacy statement can be found at: <http://www.ntepa.nt.gov.au/privacy>.

1. APPLICANT DETAILS

Proposed Licence Holder (the Licence Holder must be a legal entity).

Legal Entity Name:	JKC Australia LNG Pty Ltd		
Trading Name	JKC Australia LNG Pty Ltd		
ABN	14 154 383 409	ACN	

Registered Business Address

Street Number	Level 50 / 108	Street Name	St Georges Terrace		
Suburb	Perth	State	WA	Postcode	6000
Registered Business Address					

Postal Address (for all correspondence in relation to this licence application)

PO Box	GPO Box 2079	Suburb	Darwin
State	NT	Post Code	0801

Contact Details

All official correspondence will be directed to this person.

Contact Person	Emma Gilliver	Position Title	Government Approvals Advisor
B/Hours Phone	(08) 8931 8721	A/Hours Phone	
Mobile	0427 038 089	Fax	
Email	gilliver.emma@jkc-lng.com		

2. DETAILS OF CURRENT LICENCE

Licence number:	WDL 192	Expiry date of licence:	31 July 2015
Legal entity name of licensee:	JKC Australia LNG Pty Ltd		
3. EMERGENCY CONTACT			
Please provide contact details for someone who can respond to an incident relating to the licensed activity 24 hours a day.			
Name	Emergency Contact 1: Suzanne Mayne (Project Environment Manager) Emergency Contact 2: Ross McEwan (Resident Construction Manager)		
Position description	As above		
Telephone Number	Emergency Contact 1: 0418 413 382 Emergency Contact 2: 0422 621 909		

4. CHECKLIST			
Complete the checklist of elements required in a WDL application indicating what elements have changed or may change. For further information on each element refer to the <i>Guidelines on waste discharge licensing under the Northern Territory Water Act</i> . Applications cannot be processed unless all appropriate supporting documentation accompanies the application form.			
Element	No change	Change	Comments
1. Location of premises to be licensed*	X		
2. Land ownership	X		<i>Please provide a copy of the land owner consent to conduct the activity generating the waste or to discharge waste over land.</i>
3. Activity*	X		
4. Discharge point(s)*	X		
5. Mixing zone*	X		
6. Factors to be considered under Section 90 of the <i>Water Act</i> *	X		
7. Environmental Assessment	X		<i>For any changes, please provide an update relating to how the requirements of an environmental assessment report have been addressed in relation to the WDL.</i>
8. Mine Management Plan (or equivalent for petroleum sites)	N/A		<i>Please provide a copy of the most current approved plan.</i>
9. WDL justification	X		<i>For any changes, please provide a copy of the most current WDL justification.</i>

10. Continuous improvement plan	N/A		<i>Please provide an update on the plan.</i>
11. Discharge specifications*	X		Please refer to attached document, Tristar Process Design Report – Temporary Site Facilities Works (L300-AP-REP-10000) and associated comment in attached cover letter to this application.
12. Monitoring plan*	X		
13. Conceptual site model	X		<i>For any changes, please provide an update of the conceptual site model.</i>
14. Environmental aspects and impacts register	X		<i>For any changes, please provide a copy of the most current register.</i>
15. Emergency response plan	X		<i>Please provide a copy of the most current plan.</i>
16. Consultation and Communication plan	X		<i>Please provide a copy of the most current plan.</i>

* A change in relation to this element is not suitable for renewal and will require the submission of an *Application for a Waste Discharge Licence*.

5. DECLARATION

This declaration must only be signed by a person with the legal authority to sign it (i.e. a person authorised by the Legal Entity specified in this application).

I hereby declare that:

1. there may have been a change in relation to elements 2, 8, 13, 14, and/or 15 listed in section 4 above and information on these changes has been attached with this application where applicable; and
2. the conditions of the current WDL have been complied with and
3. no changes are required to:
 - a. the authorised discharge point(s); or
 - b. the nature of the waste discharge; or
 - c. trigger values; or
 - d. the monitoring plan(s) required as a condition of the licence; and
4. the information provided in this application and accompanying documents is to the best of my knowledge, true and correct.

Signature	
Name (printed)	Bruce Franklin
Position	Business and External Affairs Manager
Date	27 / 05 / 2015
Seal (if signing under seal):	

6. CHECKLIST OF ATTACHMENTS

Section	Item	Complete and Attached
	Permission to use land	
	Environmental Assessment	
	Mine Management Plan (part A)	
	WDL Justification	
	Conceptual Site Model	
	Environmental Aspects and Impacts Register	
	Emergency Response Plan	
	Consultation and Communication Plan	

Once completed and signed, this form and any attachments should be sent to one of the following:

Email

pollution@nt.gov.au

Post

Pollution Control
Northern Territory Environment Protection Authority
GPO Box 3675
DARWIN NT 0801

APPENDIX C
NT DPC Notification Letter JKC-NTG_00014



JKC AUSTRALIA LNG PTY LTD

ABN 14 154 383 409

Level 50, BankWest Tower
108 St Georges Terrace
Perth WA 6000

Darwin Port Corporation
GPO Box 390
Darwin NT, 0801

Date: 3 April 2014

Reply required : No

Attention: Captain Tony O'Malley
Harbourmaster

Reference Number: JKC-NTG-00014

Subject : Notification of Installation of Wastewater Treatment Plant Outfall Pipeline in Darwin

Dear Captain O'Malley,

As you are aware JKC Australia LNG Pty Ltd (JKC) has completed installation of the temporary Wastewater Treatment Plant (WWTP) and associated outfall pipeline in Darwin Harbour.

In accordance with the Darwin Port Corporation (DPC) approval (dated 29 May 2013) JKC was to provide notification of the final outfall pipeline and diffuser location and characteristics of the special mark.

As-constructed co-ordinates of the outfall pipeline and diffuser and associated levels are shown in Table 1 and Attachment 1 (V-3210-TMP-1-2506_Rev 13).

Table 1: Survey co-ordinates and levels of the outfall pipeline and diffuser

Survey Point ID	Description	Latitude	Longitude	Outfall Invert Level
SOP H221	Outfall Pipeline (above MHWS)	-12°31'35.8026"	130°55'41.943"	4.266 m AHD
SOP H191	Outfall Pipeline	-12°31'32.66644"	130°55'54.54555"	0.0 m AHD
SOP H192	Outfall Pipeline	-12°31'31.60711"	130°55'57.69854"	-2.0 m AHD
SOP H167	Outfall Diffuser	-12°31'29.68628"	130°56'02.54080"	-7.0 m AHD

Characteristics of Special Mark

- Sealite SL-B1750-SM-TM Poseidon 1750mm diameter Ocean Buoy IALA Topmark & Radar Reflector - Yellow in colour
- IALA Topmark is a St Andrews Cross - Yellow in colour
- Solar Navigation Light is a Sealite SL125-1-Y-AIS, 5-7 Nautical Mile 36 LED Single Tier Marine Lantern - Yellow in colour
- Flash rate 5 seconds (0.5 seconds on / 4.5 seconds off).

In addition, Development Permit DP012/0065G (Note 7) requires notification to DPC following installation of the outfall. Please accept this letter as formal notification.

If you require further information please contact Nicolas Morgan, Government Approvals Advisor, on (08) 8980 9815 or email: morgan.nicolas@jkc-Ing.com.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'Sten Jacobsson', written over a horizontal line.

Sten Jacobsson
Commercial Manager

NM

Attachment 1 V-3210-TMP-1-2506_Rev 13 – Outfall Alignment

SCHEDULE OF NORTHINGS & EASTING OF DRAINAGE SETOUT POINTS

SOP	EASTING	NORTHING
SOP H001	708090812	8615448619
SOP H002	708087620	8615479994
SOP H003	708092414	8615500204
SOP H004	708104681	8615507995
SOP H005	708112527	8615493237
SOP H006	708298648	8615592199
SOP H007	708654232	8615921847
SOP H008	708284850	8615618250
SOP H009	708270602	8615654331
SOP H010	708256353	8615658706
SOP H011	708247365	8615675626
SOP H012	708250200	8615684903
SOP H013	708344694	8615642416
SOP H014	708396392	8615624785
SOP H015	708717839	8615795582
SOP H016	708733567	8615709593
SOP H017	708848655	8615851784
SOP H018	708655463	8615920841
SOP H019	708647044	8615911207
SOP H020	708670517	8615867061
SOP H020o	708673577	8615861305
SOP H021	708648205	8615847815
SOP H022	708629380	8615960016
SOP H023	708651556	8615971807
SOP H024	708624099	8616023445
SOP H025	708857075	8615849209
SOP H026	708908316	8615752377
SOP H027	708913558	8615750775
SOP H028	708945484	8615690730
SOP H029	708875116	8615650460
SOP H030	708862520	8615650548
SOP H031	708848967	8615643342
SOP H032	709067227	8615461767
SOP H033	708995526	8615423998
SOP H034	708982621	8615424560
SOP H035	708969589	8615417630
SOP H036	709125686	8615351821
SOP H037	709078488	8615288537
SOP H038	709065093	8615308048
SOP H039	709087094	8615272352
SOP H040	709115232	8615219359
SOP H041	709136380	8615179657
SOP H042	709375114	8614882715
SOP H043	709305110	8614845493
SOP H044	709317184	8614843373
SOP H045	709298089	8614883188
SOP H046	709268438	8614938954
SOP H047	709330237	8614818823
SOP H048	709221670	8614816089
SOP H049	709071353	8614736763
SOP H050	709001977	8614676963

SEWER PUMP STATION SCHEDULE

Pump Station (No)	Dual Pump Model	Each Pump (kW)	Each Pump Duty (Mh)	Diameter of Pump Station (m)	Depth of Pump Station (m)	IL of incoming	Flange No.	PUMP ACTIVATION		SOP
								Pump IL ON (m)	Pump IL OFF (m)	
1	96005351 - APG.50.92.3	9.2	5L/s @ 43.8	1.55	5.5	2.5	T-PS-F-1	2.0	0.5	H008
1A	96075917 - SEG.40.40.2.50B	4	2.5L/s @ 36.2	1.25	4.4	3.5	T-PS-F-1A	2.0	0.5	H004
2	96047449 - SEV.80.80.110.2.51B	11	5L/s @ 39.7	1.55	4.5	3.5	T-PS-F-2	2.0	0.5	H018
2A	96005351 - APG.50.92.3	9.2	5L/s @ 43.8	1.55	5.5	3.5	T-PS-F-2A	2.0	0.5	H029
3	96047449 - SEV.80.80.110.2.51B	11	5L/s @ 38.8	1.55	4.5	3.5	T-PS-F-3	2.0	0.5	H037
3A	96005351 - APG.50.92.3	9.2	5L/s @ 43.8	1.55	5.5	3.5	T-PS-F-3A	2.0	0.5	H033
4	69047201 - SEV.80.80.92.2.51B	9	5L/s @ 32.1	1.55	4.5	3.5	T-PS-F-4	2.0	0.5	H044
5	96047457 - SEV.80.80.75.2.50B	7.5	5L/s @ 27.2	1.55	4.5	3.5	T-PS-F-5	2.0	0.5	H065
5A	96005351 - APG.50.92.3	9.2	5L/s @ 43.8	1.55	5.5	3.5	T-PS-F-5A	2.0	0.5	H066
6	96047465 - SEV.80.80.60.2.50B	6	5L/s @ 24.3	1.55	4.5	3.5	T-PS-F-6	2.0	0.5	H058
6A	96005351 - APG.50.92.3	9.2	5L/s @ 43.8	1.55	5.5	3.5	T-PS-F-6A	2.0	0.5	H139
7	96047473 - SEV.80.80.40.2.50B	4	5L/s @ 12.6	1.55	4.5	3.5	T-PS-F-7	2.0	0.5	H074
8	96075917 - SEG.40.40.2.50B	4	2.5L/s @ 36.2	1.25	4.4	3.5	T-PS-F-8	2.0	0.5	H111
9	96047449 - SEV.80.80.110.2.51B	11	2.5L/s @ 41.7	1.25	4.4	3.5	T-PS-F-9	2.0	0.5	H124

SCHEDULE OF NORTHINGS & EASTING OF DRAINAGE SETOUT POINTS

SOP	EASTING	NORTHING
SOP H051	708955980	8614639468
SOP H052	708882718	8614631665
SOP H053	709316642	8614839147
SOP H054	709152339	8614754053
SOP H055	709080305	8614715750
SOP H056	708874453	8614609212
SOP H058	708876167	8614597701
SOP H059	708892731	8614566542
SOP H060	708869779	8614593846
SOP H061	708861935	8614609853
SOP H062	708780463	8614781742
SOP H063	708789354	8614811495
SOP H064	708715186	8614950984
SOP H065	708812590	8615018001
SOP H066	708796963	8614767442
SOP H067	708790700	8614762489
SOP H068	708658513	8615924285
SOP H069	708679944	8615883977
SOP H070	708654862	8615921971
SOP H071	708670835	8615898358
SOP H072	708744515	8614966579
SOP H073	709112466	8614137810
SOP H074	709169342	8614168051
SOP H075	709163560	8614167696
SOP H077	709185537	8614176661
SOP H078	708978392	8614389965
SOP H079	708947324	8614647293
SOP H080	708949981	8614646456
SOP H082	709175346	8614152983
SOP H085	708833844	8614662620
SOP H086	708834541	8614680035
SOP H087	708244437	8615695741
SOP H088	708249634	8615698504
SOP H090	709106139	8614064640
SOP H091	709100305	8614045558
SOP H092	708294876	8612868385
SOP H093	708291958	8612866833
SOP H094	708288368	8612855089
SOP H095	709141402	8614083389
SOP H096	708957610	8613969686
SOP H097	708925348	8613908019
SOP H098	708902138	8613863827
SOP H099	708878930	8613819539
SOP H100	708855722	8613775252
SOP H101	708832515	8613730964
SOP H102	708808496	8613686676
SOP H104	708751287	8613634403
SOP H105	708707138	8613610925
SOP H106	708662991	861387452
SOP H107	708620601	8613564915
SOP H108	708574696	8613540504

SCHEDULE OF NORTHINGS & EASTING OF DRAINAGE SETOUT POINTS

SOP	EASTING	NORTHING
SOP H109	708532034	8613513284
SOP H110	708493179	8613468145
SOP H111	708519403	8613450078
SOP H112	708474292	8613426354
SOP H113	708459542	8613378580
SOP H114	708444793	8613330804
SOP H115	708430044	8613283029
SOP H116	708415294	8613235254
SOP H117	708400545	8613187479
SOP H118	708385796	8613139704
SOP H119	708371047	8613091929
SOP H120	708356298	8613044154
SOP H121	708341506	8612996240
SOP H122	708326798	8612948599
SOP H123	709079262	8615292143
SOP H124	708301199	8612888740
SOP H125	708309823	8612884592
SOP H126	708291598	8612854101
SOP H127	708827184	8615743982
SOP H128	708869170	8615665017
SOP H129	709079437	8615286754
SOP H130	709317213	8614841016
SOP H131	708805992	8615030412
SOP H132	708811904	8615019292
SOP H133	708795619	8614767861
SOP H134	709062268	8615324105
SOP H135	708790946	8614776013
SOP H136	709750935	8614502443
SOP H137	709731634	8614303199
SOP H139	708952653	8614438375
SOP H140	708963875	8614417269
SOP H141	708898305	8614540195
SOP H142	708905831	8614526042
SOP H143	708953031	8615508202
SOP H144	708990075	8615437721
SOP H145	709135369	8614080181
SOP H146	709123890	8614074078
SOP H147	708300820	8612887520
SOP H148	708305566	8612888572
SOP H149	708310582	8612887039
SOP H157	709542903	8614449799
SOP H165	709717892	8614476015
SOP H167	710158000	8614632000
SOP H169	709085689	8614451430
SOP H169	709085689	8614451430
SOP H170	709079289	8615286371
SOP H171	709077274	8615285497
SOP H172	708282953	8615619848
SOP H173	708657365	8615920260
SOP H178	708875652	8615655275
SOP H179	709317779	8614841506

SCHEDULE OF NORTHINGS & EASTING OF DRAINAGE SETOUT POINTS

SOP	EASTING	NORTHING
SOP H181	708877494	8614596066
SOP H184	708995985	8615428777
SOP H185	708497119	8613363385
SOP H186	708506431	8613360516
SOP H187	708488821	8613365926
SOP H191	709915917	8614542177
SOP H192	710011358	8614574037
SOP H194	708283003	8615617268
SOP H195	708285399	8615626502
SOP H196	708722666	8615805632
SOP H197	708709337	8615830702
SOP H198	708694866	8615836855
SOP H200	709200454	8614180866
SOP H701	708693957	8613604888
SOP H703	708745459	8613632272
SOP H705	708390251	8613157033

TABLE 1.1 - SCHEDULE OF NORTHINGS & EASTING OF DRAINAGE SETOUT POINTS - WWTP SEWAGE OUTFALL

SOP	AUSURV POINT	EASTING	NORTHING	AHD
SOP H167		710158000	8614632000	-7000
SOP H191		709915917	8614542177	0000
SOP H192		710011358	8614574037	-2000
SOP H201	4150	709225748	8614185668	6062
SOP H202	4375	709296104	8614199682	4029
SOP H203	4377	709327924	8614204755	4058
SOP H204	12759	709353823	8614195432	4989
SOP H205	12755	709362262	8614193738	3647
SOP H206	12750	709366045	8614205848	4194
SOP H207	12745	709374414	8614227496	4567
SOP H208	12740	709381918	8614249897	4691
SOP H209	12735	709387483	8614265288	4671
SOP H210	12726	709393252	8614279091	4648
SOP H211	12715	709399822	8614300967	4710
SOP H212	12710	709408261	8614324617	4684
SOP H213	12705	709413867	8614339778	4661
SOP H214	12768	709420887	8614356226	4611
SOP H215	12696	709429806	8614379906	4250
SOP H216	12693	709432747	8614392278	4204
SOP H217	12689	709433096	8614412356	4417
SOP H218	12683	709433292	8614433362	5102
SOP H219	10434	709473473	8614439432	4774
SOP H220	10439	709504167	8614444022	4522
SOP H221	10444	709534672	8614448575	4266
SOP H223	10449	709563695	8614452695	4021
SOP H224	10454	709592837	8614457254	3792
SOP H225	10459	709623194	8614461794	3535
SOP H226	10462	709640847	8614464421	3387
SOP H227	10468	709676279	8614469770	2736
SOP H228	10473	709706017	8614474260	1439
SOP H229	12805	709739240	8614483127	-198
SOP H230	12809	709740706	8614483015	-1400

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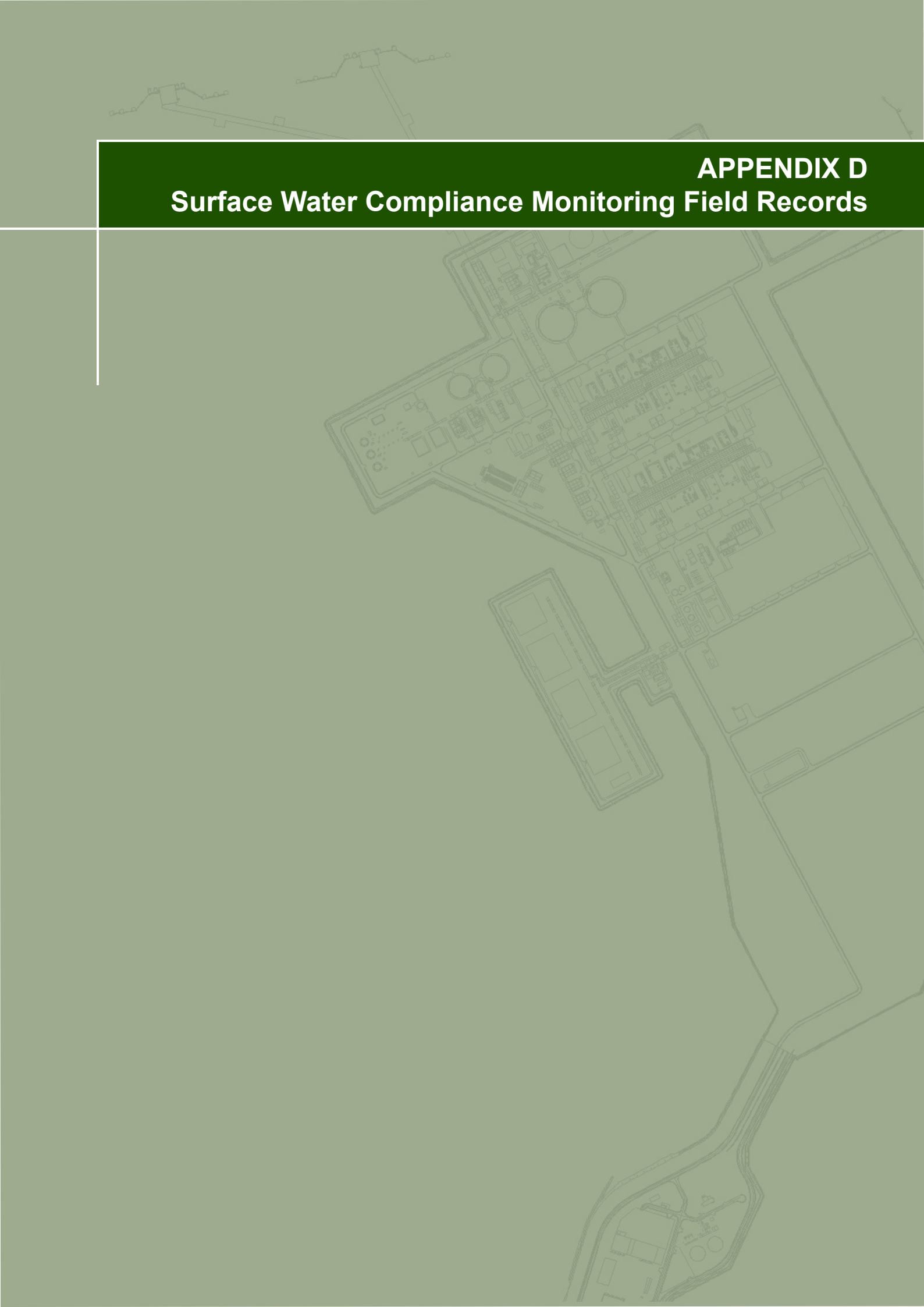
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APPENDIX D

Surface Water Compliance Monitoring Field Records

client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sally-Anne Orchard
location:	Bladin Point	Date:	12.05.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Direct	
	Incoming - Low to Medium	Water meter ID# Smartroll SMARTAC	
		Turbidity Meter ID# TM1	
		Chlorine Meter ID# -	
Time:	0840		
Turbidity (NTU)	1.22	TDS (ppm)	1768.77
Temperature (°C)	28.33	ORP (mV)	210.5
Salinity (PSU)	14	DO (% sat)	93.7
Sp. Conductivity (xS)	2707.8	pH (pH units)	7.7

Field observations: eg. Nearby activities, weather

Weather - fine, sunny, warm.

The WwTp was not actively discharging at the time of sample collection. The Operator (OPS-1) advised that discharge had been intentionally and temporarily stopped to prevent backflow due to incming high tide. Discharge had occurred on prior that morning
The discharge pump was manually operated to allow sample collection.

No visible matter, floating debris observed in purge or sample

No hydrocarbon sheen or scum observed

No odours noticed within purge or sample

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	TQA01	TQA02	Order
	Plastic unpreserved inorganics (1L)	1	1	1	1
	Preserved inorganics (250mL)	1	1		2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1	1	1	3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sally-Anne Orchard	Field Technician #2 Caroline French
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL: STPM-01	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Swing sampler	
	Incoming - Medium	Water meter ID# TPS 90FLVTAB	
		Turbidity Meter ID# TM2	
		Chlorine Meter ID# CL4 (Not required)	
Time:	0830		
Turbidity (NTU)	2.78	TDS (ppm)	37800
Temperature (°C)	26	ORP (mV)	203
Salinity (PSU)	38.9	DO (% sat)	39.4
Sp. Conductivity (xS)	58200	pH (pH units)	8.05

Field observations: eg. Nearby activities, weather

Weather - Sunny, clear sky, no clouds, light breeze.
QA01 and QA02 collected at this location.
Suspicious D.O reading -possible calibration error.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odour, no sheen. Water colour clear. Low turbidity.	Samples Taken	Number	QA 01	QA 02	Order
	Plastic unpreserved inorganics (1L)	1	1	1	3
	Preserved inorganics (250mL)	1	1		1
	Light green 60mL			1	
	Teal 60mL			1	
	Solid Plastic 1L			1	
	Microbiological (250mL)	1	1	1	2
	(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)				

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
STPM-01	Tidal Level (i.e low, medium, high)	Sampling device; Sample Pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Medium - Neap tide	Turbidity Meter ID# TM3	
Time:	10:15		
Turbidity (NTU)	6.0	Sp. Conductivity (×S)	40110
Temperature (°C)	31.2	TDS (ppm)	26060
Salinity (PSU)	25.58	ORP (mV)	-105.7
pH (pH units)	7.86	DO (% sat)	93.04

Field observations: eg. Nearby activities, weather

QA1 and QA2 taken here.
Sunny, very humid, hot, light breeze.
Rain in the early morning.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	QA01	QA02	Order
No odours, no sheens. Clear green coloured water.	Plastic unpreserved inorganics (1L)	1	1	1	1
	Preserved inorganics (250mL)	1	1		2
	Light green 60mL			1	
	Teal 60mL			1	
	Solid Plastic 1L			1	
	Microbiological (250mL)	1	1	1	3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-01	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device	
	Medium-Incoming	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# NA	
Time:	11:03 AM		
Total Chlorine (mg/L) ≤0.02 - 2	Not required	Sp. Conductivity (×S)	33880
Free Chlorine (mg/L) ≤0.02 - 2	Not required	TDS (ppm)	22000
Turbidity (NTU)	2.53	ORP (mV)	-101.7
Temperature (°C)	31.2	DO (% sat)	121.3
Salinity (PSU)	21.14	pH (pH units)	7.57

Field observations: eg. Nearby activities, weather

Weather; scattered cloud, light breeze.
Light green clear water.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Y/N YES

Decontamination procedures followed Y/N YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No sheens, no odours.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Christina Maloney	Field Technician #2 Kat Partridge
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL: STPM-02	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Swing sampler	
	Incoming - Medium	Water meter ID# TPS 90FLVTAB	
		Turbidity Meter ID# TM2	
		Chlorine Meter ID# CL4 (Not required)	
Time:	0845		
Turbidity (NTU)	1.98	TDS (ppm)	37800
Temperature (°C)	26.5	ORP (mV)	157
Salinity (PSU)	38.9	DO (% sat)	39.3
Sp. Conductivity (xS)	58300	pH (pH units)	8.06

Field observations: eg. Nearby activities, weather

Weather - Sunny, clear sky, no clouds, light breeze. Hazy/dusty towards land.
Suspicious D.O reading -possible calibration error.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odour. No sheen. Water colour clear. Low turbidity.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			2
	Preserved inorganics (250mL)	1	N/A	N/A	3
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			1
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL: STPM-02	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device; Grab Pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Medium - Neap tide	Turbidity Meter ID# TM3	
Time:	10:23		
Turbidity (NTU)	5.32	Sp. Conductivity (×S)	39370
Temperature (°C)	31.4	TDS (ppm)	25590
Salinity (PSU)	25.06	ORP (mV)	-126.8
pH (pH units)	7.87	DO (% sat)	94.1

Field observations: eg. Nearby activities, weather					
Sunny, humid, hot, rain earlier in the day.					
Calm surface.					
No visible matter, floating debris observed					
No hydrocarbon sheen or scum observed					
No algal blooms, fish mortality observed					
No signs of pollution observed					
Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES					
Decontamination procedures followed YES					
Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours or sheens. Clear green colour.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	3
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-02	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device	
	Medium - Incoming	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# NA	
Time:	10:58 AM		
Total Chlorine (mg/L) <0.02 - 2	Not required	Sp. Conductivity (×S)	33150
Free Chlorine (mg/L) <0.02 - 2	Not required	TDS (ppm)	22760
Turbidity (NTU)	4.68	ORP (mV)	-99.8
Temperature (°C)	31.0	DO (% sat)	121.9
Salinity (PSU)	22.98	pH (pH units)	7.51

Field observations: eg. Nearby activities, weather					
Weather; scattered cloud, light breeze.					
No visible matter, floating debris observed					
No hydrocarbon sheen or scum observed					
No algal blooms, fish mortality observed					
No signs of pollution observed					
Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Y/N					
Decontamination procedures followed Y/N					
Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours, no sheens. Clear green colour.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Christina Maloney	Field Technician #2 Kat Partridge
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Swing sampler	
	Incoming - Medium	Water meter ID# TPS 90FLVTAB	
		Turbidity Meter ID# TM2	
		Chlorine Meter ID# CL4 (Not required)	
Time:	0850		
Turbidity (NTU)	2.49	TDS (ppm)	38000
Temperature (°C)	26.5	ORP (mV)	157
Salinity (PSU)	39.1	DO (% sat)	39
Sp. Conductivity (×S)	58500	pH (pH units)	8.07

Field observations: eg. Nearby activities, weather

Weather - Sunny, clear sky, no clouds, light breeze. Hazy/dusty towards land.
Suspicious D.O reading -possible calibration error.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	N/A	N/A	3
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
STPM-03	Tidal Level (i.e low, medium, high)	Sampling device; Grab Pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Medium - neap tide	Turbidity Meter ID# TM3	
Time:	10:31		
Turbidity (NTU)	5.89	Sp. Conductivity (×S)	40040
Temperature (°C)	31.3	TDS (ppm)	26080
Salinity (PSU)	25.57	ORP (mV)	-135.2
pH (pH units)	7.87	DO (% sat)	96.4

Field observations: eg. Nearby activities, weather
Rain in the morning, very humid, sunny, hot.
Calm surface, still, hot.
No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES
Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	QA	QA	Order
No odours or sheens. Clear green water.	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-03	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device	
	Medium - Incoming	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# NA	
Time:	10:52 AM		
Total Chlorine (mg/L) <0.02 - 2	Not required	Sp. Conductivity (×S)	33960
Free Chlorine (mg/L) <0.02 - 2	Not required	TDS (ppm)	22050
Turbidity (NTU)	4.44	ORP (mV)	-109.6
Temperature (°C)	31.4	DO (% sat)	121.2
Salinity (PSU)	21.29	pH (pH units)	7.60

Field observations: eg. Nearby activities, weather					
Weather; scattered cloud, light. QA01 and QA02 taken here. No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed					
Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Yes					
Decontamination procedures followed Yes					
Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours, no sheen. Green colour.	Samples Taken	Number	QA01	QA02	Order
	Plastic unpreserved inorganics (1L)	1	1		1
	Preserved inorganics (250mL)	1	1		2
	Light green 60mL			1	
	Teal 60mL			1	
	Solid Plastic 1L			1	
	Microbiological (250mL)	1	1	1	
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Christina Maloney	Field Technician #2 Kat Partridge
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL: STPM-04	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Swing sampler	
	Incoming - Medium	Water meter ID# TPS 90FLVTAB	
		Turbidity Meter ID# TM2	
		Chlorine Meter ID# CL4 (Not required)	
Time:	0854		
Turbidity (NTU)	2.07	TDS (ppm)	38000
Temperature (°C)	26.5	ORP (mV)	164
Salinity (PSU)	39.1	DO (% sat)	37.1
Sp. Conductivity (×S)	58400	pH (pH units)	8.08

Field observations: eg. Nearby activities, weather
Weather - Sunny, clear sky, no clouds, light breeze. Hazy/dusty towards land. Suspicious D.O reading -possible calibration error. No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES
Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odour. No sheen. Water colour clear. Low turbidity.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			2
	Preserved inorganics (250mL)	1	N/A	N/A	1
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
STPM-04	Tidal Level (i.e low, medium, high)	Sampling device; Grab Pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Medium - Neap tide	Turbidity Meter ID# TM3	
Time:	10:37		
Turbidity (NTU)	4.63	Sp. Conductivity (×S)	39540
Temperature (°C)	31.5	TDS (ppm)	25700
Salinity (PSU)	25.21	ORP (mV)	-105.7
pH (pH units)	7.9	DO (% sat)	94.7

Field observations: eg. Nearby activities, weather
Hot, humid, no breeze, sunny. Rain earlier in the day.
Calm surface.
No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES
Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	QA	QA	Order
No odours, no sheens. Green, clear water.	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	3
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-04	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device	
	Medium - Incoming	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# NA	
Time:	11:06 AM		
Total Chlorine (mg/L) ≤0.02 - 2	Not required	Sp. Conductivity (×S)	32800
Free Chlorine (mg/L) ≤0.02 - 2	Not required	TDS (ppm)	21280
Turbidity (NTU)	2.27	ORP (mV)	-103.8
Temperature (°C)	31.5	DO (% sat)	122.6
Salinity (PSU)	20.43	pH (pH units)	7.56

Field observations: eg. Nearby activities, weather

Scattered cloud, light breeze.
 Green, clear water.

No visible matter, floating debris observed
 No hydrocarbon sheen or scum observed
 No algal blooms, fish mortality observed
 No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Yes

Decontamination procedures followed Yes

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours, no sheens.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Christina Maloney	Field Technician #2 Kat Partridge
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL: STPM-R1	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high) Discharge Flow Rate	Sampling device Swing sampler	
	Incoming - Medium	Water meter ID# TPS 90FLVTAB	
		Turbidity Meter ID# TM2	
		Chlorine Meter ID# CL4 (Not required)	
Time:	1057		
Turbidity (NTU)	2.92	TDS (ppm)	38000
Temperature (°C)	26.7	ORP (mV)	151
Salinity (PSU)	39.1	DO (% sat)	42.8
Sp. Conductivity (×S)	58500	pH (pH units)	8.13

Field observations: eg. Nearby activities, weather

Weather - Sunny, clear sky, no clouds,gentle to moderate breeze.
Hazy/dusty towards land.
Suspicious D.O reading -possible calibration error.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odour. No sheen. Water colour clear. Low turbidity.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			3
	Preserved inorganics (250mL)	1	N/A	N/A	1
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
STPM-R1	Tidal Level (i.e low, medium, high)	Sampling device: Sample grab pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Medium - Incoming	Turbidity Meter ID# TM3	
Time:	11:28		
Turbidity (NTU)	4.96	Sp. Conductivity (×S)	41060
Temperature (°C)	32.1	TDS (ppm)	26690
Salinity (PSU)	26.29	ORP (mV)	-122.0
pH (pH units)	7.98	DO (% sat)	97.0

Field observations: eg. Nearby activities, weather
Weather - sunny, scattered cloud, still, no breeze, humid. Mangroves adjacent - approximately 1-2m away (isolated trees) No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES
Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken	Number	QA	QA	Order
No odours, no sheens. Clear water, low turbidity.	Plastic unpreserved inorganics (1L)	1			3
	Preserved inorganics (250mL)	1	NA	NA	1
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-R1	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device: Sample grab pole	
	Med-Low - Incoming	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# N/A	
Time:	12:01 PM		
Total Chlorine (mg/L) <0.02 - 2	Not required	Sp. Conductivity (×S)	36520
Free Chlorine (mg/L) <0.02 - 2	Not required	TDS (ppm)	23740
Turbidity (NTU)	4.49	ORP (mV)	-117
Temperature (°C)	31.9	DO (% sat)	127.0
Salinity (PSU)	23.1	pH (pH units)	7.65

Field observations: eg. Nearby activities, weather					
Weather; sunny, hot, humid, very slight breeze. No major activities nearby. No floating debris. No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed					
Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Y					
Decontamination procedures followed Y					
Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odour, no sheen. Low turbidity. Clear water colour.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			3
	Preserved inorganics (250mL)	1	NA	NA	1
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Christina Maloney	Field Technician #2 Kat Partridge
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sarah Joyce and Stuart Carroll
location:	Bladin Point	Date:	12.05.15

WDL:
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Field observations: eg. Nearby activities, weather

Weather - Sunny, clear sky, no clouds, light breeze.
Hazy/dusty towards land.
Suspicious D.O reading -possible calibration error.

No visible matter, floating debris observed
No hydrocarbon sheen or scum observed
No algal blooms, fish mortality observed
No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour	Samples Taken		Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)		1			3
	Preserved inorganics (250mL)		1	N/A	N/A	1
	Light green 60mL					
	Teal 60mL					
	Solid Plastic 1L					
	Microbiological (250mL)		1			2
	(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sarah Joyce	Field Technician #2 Stuart Carroll
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, SJ
location:	Bladin Point	Date:	14.04.15

WDL:	WATER DETAILS	SAMPLING EQUIPMENT	
STPM-R2	Tidal Level (i.e low, medium, high)	Sampling device Grab Pole	
	Discharge Flow Rate	Water meter ID# AR2	
	Low	Turbidity Meter ID# TM3	
Time:	8:39		
Turbidity (NTU)	5.28	Sp. Conductivity (×S)	39400
Temperature (°C)	30.4	TDS (ppm)	25600
Salinity (PSU)	25.07	ORP (mV)	-84.9
pH (pH units)	7.69	DO (% sat)	85.2

Field observations: eg. Nearby activities, weather
Leaf litter scattered. Overcast, slight breeze, rain in the morning. Early morning storm approaching. No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES
Decontamination procedures followed YES

Observations during Sampling:-	Samples Taken	Number	QA	QA	Order
eg. Odours, sheens, turbidity, water colour	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	3
No odours, no sheens Green colour	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			2
	(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)				

Field Technician #1 Kat Partridge	Field Technician #2 Sarah Joyce
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record



client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	KP, CM
location:	Bladin Point	Date:	17.03.15

WDL: STPM-R2	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device: sample grab pole	
	Med-Low Outgoing	Water meter ID# AR1	
		Turbidity Meter ID# TM3	
		Chlorine Meter ID# NA	
Time:	9:15 AM		
Total Chlorine (mg/L) <0.02 - 2	Not required	Sp. Conductivity (×S)	30150
Free Chlorine (mg/L) <0.02 - 2	Not required	TDS (ppm)	19590
Turbidity (NTU)	3.25	ORP (mV)	-105.1
Temperature (°C)	31.3	DO (% sat)	126.1
Salinity (PSU)	18.67	pH (pH units)	7.74

Field observations: eg. Nearby activities, weather
Weather, hot, sunny, no breeze, very calm water, humid. No major activities nearby. No floating debris. Still water. No visible matter, floating debris observed No hydrocarbon sheen or scum observed No algal blooms, fish mortality observed No signs of pollution observed

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Y/N YES

Decontamination procedures followed Y/N YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours, no sheens. Clear water, low turbidity.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1			3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Kat Partridge	Field Technician #2 Christina Maloney
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client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	Sally-Anne Orchard
location:	Bladin Point	Date:	14.04.15

WDL: STPM-T1	WATER DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device: Smartroll AB	
	Discharge Flow Rate	Water meter ID# Smartroll AB	
	NA	Turbidity Meter ID# TM2	
		Chlorine Meter ID# N/A	
Time:	0930		
Turbidity (NTU)	0.25	Sp. Conductivity (×S)	953.9
Temperature (°C)	30.27	TDS (ppm)	620.41
Salinity (PSU)	0.5	ORP (mV)	335.6
pH (pH units)	7.73	DO (% sat)	87.7

Field observations: eg. Nearby activities, weather

Slight odour in surrounding environment.
20 L of water purged prior to sampling.
Purging started at 1 tap on a raised PVC section, however water stopped prior to second 10L bucket being collected.
Purging and sampling continued on a "L" loop. Tap on the same line (0.7 m left of original tap).
Marine field crew notified of sample collection time.
Francis from Leightons present.

Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded YES

Decontamination procedures followed YES

Observations during Sampling:- eg. Odours, sheens, turbidity, water colour Slight odour (air). Brown tinge. No physical matter present. Low turbidity.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1	1	1	1
	Preserved inorganics (250mL)	1	1		2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1	1	1	3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Sally-Anne Orchard	Field Technician #2
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GREENCAP/AEC Environmental
Offshore Waste Discharge Sampling Record

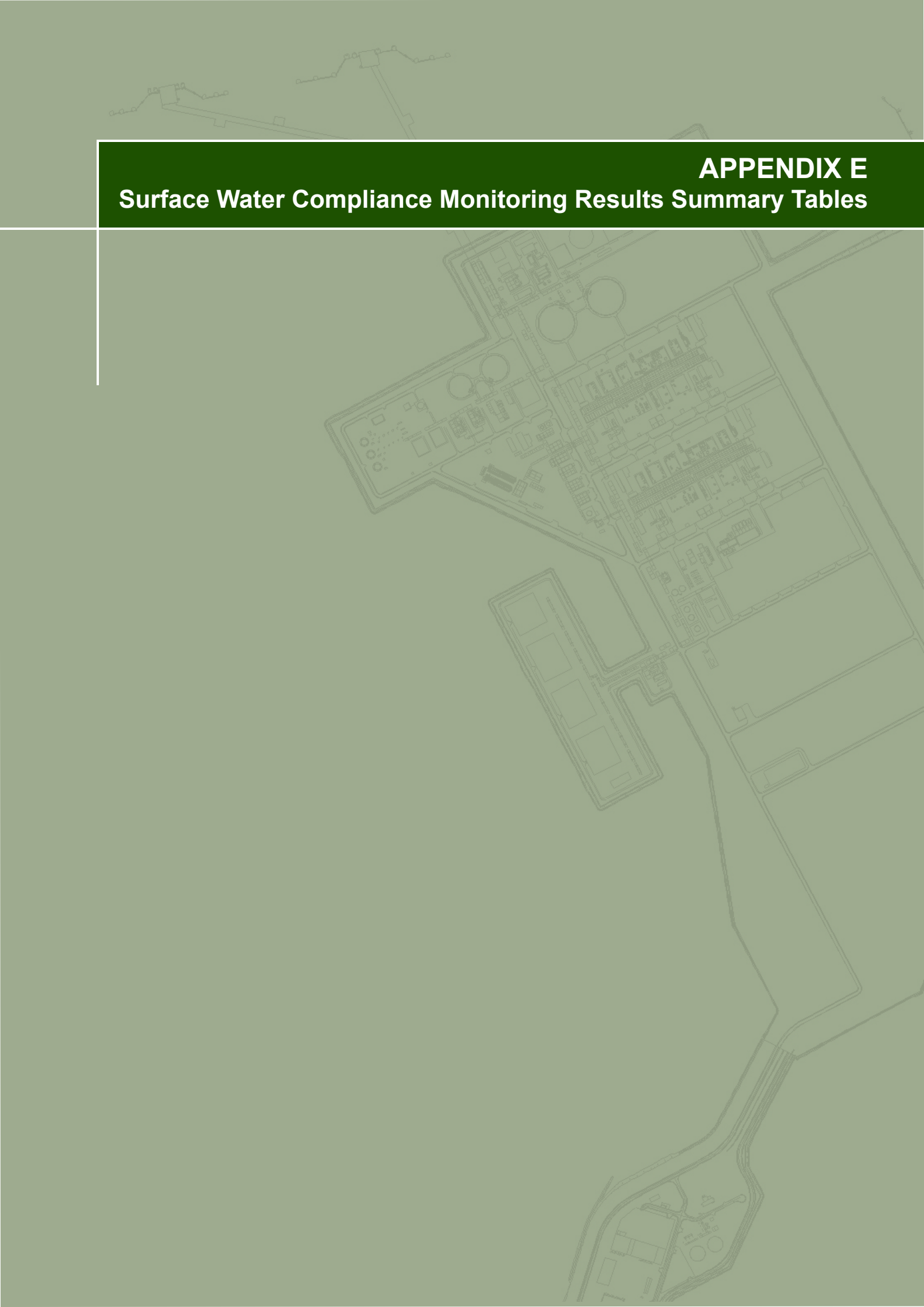


client:	JKC	Job No:	J119486
project:	Ichthys Onshore, Environmental Impact Monitoring Program	Sampled by	CG, SO
location:	Bladin Point	Date:	26.03.15

WDL: STPM-T1	TIDE DETAILS	SAMPLING EQUIPMENT	
	Tidal Level (i.e low, medium, high)	Sampling device: Not applicable - collected direct from tap	
	No Flow to record	Water meter ID# AR1	
		Turbidity Meter ID# NA	
		Chlorine Meter ID# NA	
Time:	11:40 AM		
Total Chlorine (mg/L) <0.02 - 2	Not required	Sp. Conductivity (×S)	1467
Free Chlorine (mg/L) <0.02 - 2	Not required	TDS (ppm)	960
Turbidity (NTU)	46	ORP (mV)	-126.2
Temperature (°C)	31.9	DO (% sat)	100.8
Salinity (PSU)	0.7	pH (pH units)	7.57

Field observations: eg. Nearby activities, weather					
Scattered cloud, light breeze, rain ceased approx. 10 minutes prior to sample collection 20L of effluent discharge was purged from the line prior to field measurements and sample collection The WwTp was not actively discharging at the time of sample collection. The Operator (OPS-1) advised that discharge had been intentionally and temporarily stopped to prevent backflow due to incming high tide. Discharge had occurred on prior that morning The discharge pump wa manually operated to allow sample collection. No visible matter, floating debris observed in purge or sample No hydrocarbon sheen or scum observed No odours noticed within purge or sample					
Has water quality meter and turbidity meter been calibrated in accordance with operating manual and recorded Yes					
Decontamination procedures followed Yes					
Observations during Sampling:- eg. Odours, sheens, turbidity, water colour No odours, no sheens.	Samples Taken	Number	QA	QA	Order
	Plastic unpreserved inorganics (1L)	1			1
	Preserved inorganics (250mL)	1	NA	NA	2
	Light green 60mL				
	Teal 60mL				
	Solid Plastic 1L				
	Microbiological (250mL)	1	1	1	3
(* DESIGNATES SAMPLES FILTERED IN FIELD/LAB)					

Field Technician #1 Chris Gamble	Field Technician #2 Sally-Anne Orchard
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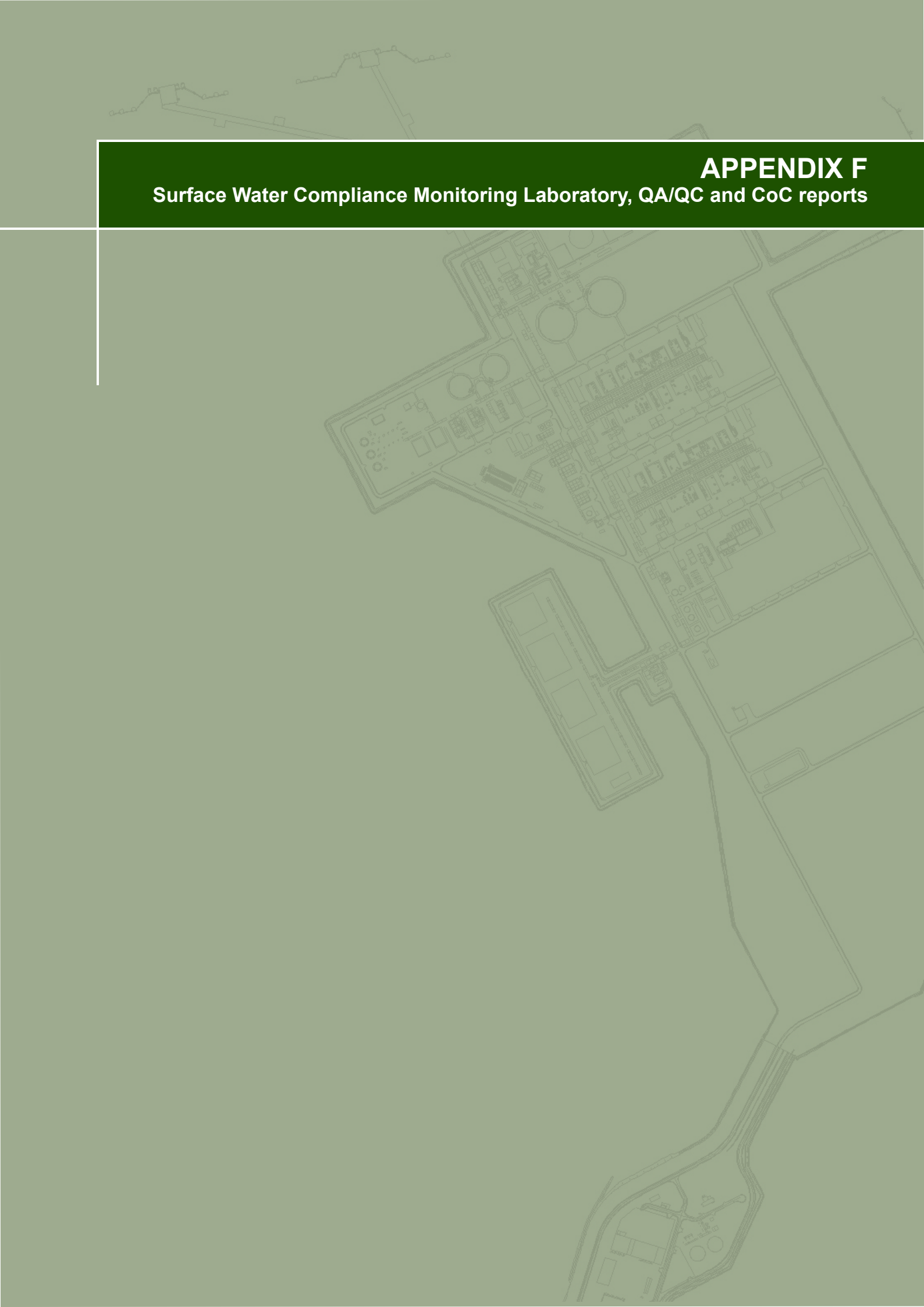
APPENDIX E

Surface Water Compliance Monitoring Results Summary Tables

				Field						Inorganic								Organics	Micro	
				Dissolved Oxygen (%)	Electrical Conductivity	pH	Redox	Temperature	Turbidity	Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Oxides of Nitrogen	Phosphate total (P)	Phosphorous filterable reactive (P)	Chlorophyll a	Enterococci
EQL				% sat	×S/cm	pH units	mV	°C	NTU	×g/L	mg/L	×g/L	×g/L	×g/L	×g/L	×g/L	×g/L	mg/L	cfu/100 ml	
Waste Discharge Trigger Criteria				80 lower limit 100 upper limit		6 lower limit 8.5 upper limit			20	20					300	20	30	10	0.004	50

Monitoring_Round	Location	Field_ID	Sampled_Date-Time																	
201503 WDL	STPM-01	STPM-01_170315	3/17/2015	121.3	33880	7.57	-101.7	31.2	2.53	6	0.1	6	<2	94	110	6	<5	2	<0.005	3
201503 WDL	STPM-02	STPM-02_170315	3/17/2015	121.9	35150	7.51	-99.8	31.0	4.68	<5	0.11	3	<2	110	110	<5	<5	1	<0.005	4
201503 WDL	STPM-03	STPM-03_170315	3/17/2015	121.2	33960	7.60	-109.6	31.4	4.44	8	0.1	6	<2	92	110	8	<5	1	<0.005	1
201503 WDL	STPM-04	STPM-04_170315	3/17/2015	122.6	32800	7.56	-103.8	31.5	2.27	<5	0.11	4	<2	110	110	<5	6	1	<0.005	1
201503 WDL	STPM-R1	STPM-R1_170315	3/17/2015	127.0	36520	7.65	-117.0	31.9	4.49	30	0.14	10	<2	110	150	10	9	2	<0.005	<1
201503 WDL	STPM-R2	STPM-R2_170315	3/17/2015	126.1	30150	7.47	-105.1	31.3	3.25	7	0.11	4	<2	100	110	<5	<5	<1	<0.005	2
201504 WDL	STPM-01	STPM-01_140415	4/14/2015	93.0	40110	7.86	-105.7	31.2	6.00	20	0.25	<2	<2	230	250	<5	66	<1	<0.005	<1
201504 WDL	STPM-02	STPM-02_140415	4/14/2015	94.1	39370	7.37	-126.8	31.4	5.32	17	0.12	<2	<2	100	120	<5	58	<1	<0.005	<1
201504 WDL	STPM-03	STPM-03_140415	4/14/2015	96.4	40040	7.87	-135.2	31.3	5.39	20	0.22	27	<2	200	250	27	59	<1	<0.005	3
201504 WDL	STPM-04	STPM-04_140415	4/14/2015	94.7	39540	7.90	-105.7	31.5	4.63	8	0.14	5	<2	130	150	5	55	<1	<0.005	<1
201504 WDL	STPM-R1	STPM-R1_140415	4/14/2015	97.0	41060	7.98	-122.0	32.1	4.96	9	0.12	<2	<2	110	120	<5	55	<1	<0.005	2
201504 WDL	STPM-R2	STPM-R2_140415	4/14/2015	85.2	39400	7.69	-34.9	30.4	5.28	<5	0.14	<2	<2	140	140	<5	53	<1	<0.005	1
201505 WDL	STPM-01	STPM-01_120515	5/12/2015	39.4	58200	8.05	203.0	26.0	2.78	14	0.14	6	<2	130	150	6	22	5	<0.005	<1
201505 WDL	STPM-02	STPM-02_120515	5/12/2015	39.3	58300	8.06	157.0	26.5	1.98	16	0.12	6	<2	100	130	6	18	5	<0.005	<1
201505 WDL	STPM-03	STPM-03_120515	5/12/2015	39.0	58500	8.07	157.0	26.5	2.49	13	0.12	2	3	110	130	5	17	5	<0.005	<1
201505 WDL	STPM-04	STPM-04_120515	5/12/2015	37.1	58400	8.08	164.0	26.5	2.07	10	0.15	4	<2	140	150	<5	16	5	<0.005	<1
201505 WDL	STPM-R1	STPM-R1_120515	5/12/2015	42.8	58500	8.13	151.0	26.7	2.92	9	0.13	4	<2	120	130	<5	15	5	<0.005	1
201505 WDL	STPM-R2	STPM-R2_120515	5/12/2015	34.2	58300	7.97	210.0	25.5	2.53	17	0.2	4	3	180	210	7	50	5	<0.005	<1

*Data obtained from Leighton Contractors Pty Ltd Water Chemistry Certificate of Analysis (Job Reference W15S0211) and Bacteriological Analysis of Water (Report Number: 42791).

The background of the page is a faint, light green map. It shows a coastal area with a large industrial facility, likely a water treatment plant, featuring several large circular tanks and rectangular buildings. A river or canal flows through the facility. The map is oriented with the coastline at the top.

APPENDIX F

Surface Water Compliance Monitoring Laboratory, QA/QC and CoC reports



Northern
Territory
Government

Department of Primary Industry & Fisheries - Water Chemistry Laboratory

CERTIFICATE OF ANALYSIS *



ACCREDITED FOR
TECHNICAL
COMPETENCE

*Test certificate shall not be reproduced except in full, without written approval of the lab

Accreditation No. 15104
Accredited for
compliance with ISO/IEC
17025

Job Reference
W15S0211

Number of samples Received
1

Client
Leighton Contractors Pty Ltd

54 Graffin Crescent
PO Box 35926

Winnellie

Location/Project
Inpex Ichthys TMP-1

Sampler/Contact
Gareth Cullen

gareth.cullen@leicon.com.au

NT 0820 Order No. **91043264**

Authorised by *K.L. Timms*
Laboratory Manager, Karen Timms

Sample Comments: Sample ambient and within holding time
Relinquished by DL? (Leighton)
1x1L bottle; no air gap; ptn fzn N+P

Sample Date 26/03/15

Test Note:

Samples tested on an 'as received' basis

Received 26/03/15
1st Reported 09/04/15
Printed 17/04/15
Report No. 00020817

Sample ID	Description	Element																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			BOD	Free NH3-N	Organic NH3-N	pH	Reactive PO4-P	Total PO4-P	SS	COD	Turbidity	NO2-N	NO3-N	NOX-N	Total N	Chlorophyll-a	Pheophytin-a	DO	DO %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Unit	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/m3	mg/m3	mg/L	%sat																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		DL	1	0.3	0.4	2.0	0.1	0.1	5	50	0.10	0.10	0.1	0.1	0.01	1	1	0.1	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
C-26-03-15	Inpex WWTP	Lab No	W15 1243	2.3	0.60	2.7	7.91	<0.1	0.10	<5	<50	0.39	<0.10	3.3	3.3	6.66	<1	<1	6.97	77																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</

Department of Primary Industry and Fisheries Water Microbiology Laboratory Darwin G.P.O. Box 3000 Darwin N.T. 0801 Telephone 08 8999 2347 Fax 08 8999 2024	BACTERIOLOGICAL ANALYSIS OF WATER Client: LEIGHTON CONTRACTORS Location: INPEX SITE Sample Collection Date: 26/03/2015
REPORT NUMBER: 42791 Date Testing Commenced: 26/03/2015	Samples Tested as Received Page 1 of 1

Lab Sample Number	Sample Site	Test Criteria	Test Result	Time Sampled*	Storage Time (hh:mm)	Temperature (°C)		Chlorine mg/L*		Total Coliforms per 100mL MPN	<i>E. coli</i> per 100mL MPN	Enterococci per 100mL MPN	<i>Pseudomonas aeruginosa</i> per 100mL	Heterotrophic Colony Count CFU/mL (44hrs 36°C)
						Sample*	Arrival	Free	Total					
131	TEMPORARY WWTP - ICHTHYS	N.A.	N/A	8:30	1:10		30.00	NS	NS	<1	<1	<1	N.T.	N.T.

Remarks: TMP-1 PURCHASE ORDER NUMBER: 91043264			
Assessment (Test) Criteria 1. Guidelines for Drinking Water in Australia NH&MRC / ARMCANZ 2011 2. NTG DoH No. 474 Recommended Monitoring and Sampling Programs for Aquatic Facilities N.A Not Assessed Against Any Criteria / Not Applicable 4. Australian Food Standards Code for Packaged Water Standard	Test Methods - Total Coliforms AS4276.21-2005 - E.Coli AS4276.21-2005 - Enterococci ASTM D 6503-99 (2009) - <i>Pseudomonas aeruginosa</i> AS 4276.13-2008 - Heterotrophic Colony Count AS4276.3.1-2007 (Pour Plate) - Water Microbiology - General information and procedures AS4276.1:2007	Non-Numerical Results N.D. None Detected N.R. No Result N.T. Not Tested N.A. Not Assessed N.S. Not Supplied > Greater than < Less than Measurement Uncertainty (MU) should be considered when assessing quantitative results. Contact the laboratory for current MU values.	Report Authorisation  Dr Rachel De Araujo Laboratory Signatory, Water Microbiology Laboratory This Report was printed: 30/03/2015 Accredited for compliance with ISO/IEC 17025. * Denotes client supplied information which is not included in the laboratory's scope of NATA accreditation.  Accreditation No.: 15606

Purchase Order Number: ZB1986716

1000

Sampled By: CM, KP
Date Sampled: 17/03/2015

Notes :

Please send invoice to the following: -jen.young@aeacus.com.au, impex@greencap.com.au

Time

9.37 am

$$\frac{\pi\pi}{\pi}$$

450949

Sample Receipt Advice

Company name: **AEC Environmental NT**
Contact name: **Jeni Young**
Project name: **ICHTHYS EIMP**
Project ID: **J119486**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 18, 2015 9:37 AM**
Eurofins | mgt reference: **450949**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- ☒ Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☒ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com.au

Results will be delivered electronically via e.mail to Jeni Young - Jeni.Young@aecaust.com.au.

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800
Project Name: ICHTHYS EIMP
Project ID: J119486

Order No.: ZB1986716
Report #: 450949
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Mar 18, 2015 9:37 AM
Due: Mar 25, 2015
Priority: 5 Day
Contact Name: Jeni Young

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chlorophyll a	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Metals M8	Organic Nitrogen Set (as N)	BTEX	Total Nitrogen Set (as N)
Laboratory where analysis is conducted														
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217														
Brisbane Laboratory - NATA Site # 20794														
External Laboratory														
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
STPM-01_170315	Mar 17, 2015		Water	M15-Ma12543	X	X	X	X	X	X		X		X
STPM-02_170315	Mar 17, 2015		Water	M15-Ma12544	X	X	X	X	X	X		X		X
STPM-03_170315	Mar 17, 2015		Water	M15-Ma12545	X	X	X	X	X	X		X		X
STPM-04_170315	Mar 17, 2015		Water	M15-Ma12546	X	X	X	X	X	X		X		X
STPM-R1_170315	Mar 17, 2015		Water	M15-Ma12547	X	X	X	X	X	X		X		X

Received: Mar 18, 2015 9:37 AM
Due: Mar 25, 2015
Priority: 5 Day
Contact Name: Jeni Young

Eurofins | mgt Client Manager: Sarah Gould

[illegible]

Certificate of Analysis

AEC NT
11/14 Winnellie Road
Winnellie
NT 0800



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Jeni Young**

Report **450949-W**
Project name ICHTHYS EIMP
Project ID J119486
Received Date Mar 18, 2015

Client Sample ID			STPM-01_170315	STPM-02_170315	STPM-03_170315	STPM-04_170315
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ma12543	M15-Ma12544	M15-Ma12545	M15-Ma12546
Date Sampled			Mar 17, 2015	Mar 17, 2015	Mar 17, 2015	Mar 17, 2015
Test/Reference	LOR	Unit				
Chlorophyll a	5	ug/L	< 5	< 5	< 5	< 5
Nitrate & Nitrite (as N)	0.005	mg/L	0.006	< 0.005	0.008	< 0.005
Nitrate (as N)	0.002	mg/L	0.006	0.003	0.006	0.004
Nitrite (as N)	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Phosphate total (as P)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Phosphorus filterable reactive (as P)	0.001	mg/L	0.002	0.001	0.001	0.001
Total Nitrogen (as N)	0.05	mg/L	0.11	0.11	0.11	0.11
Enterococci	1	cfu/100mL	~3	~4	~1	~1
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.006	< 0.005	0.008	< 0.005
Organic Nitrogen (as N)	0.05	mg/L	0.094	0.11	0.092	0.11
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.10	0.11	0.10	0.11

Client Sample ID			STPM-R1_170315	STPM-R2_170315	STPM-QA01_170315	STPM-RB01_170315
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ma12547	M15-Ma12548	M15-Ma12549	M15-Ma12550
Date Sampled			Mar 17, 2015	Mar 17, 2015	Mar 17, 2015	Mar 17, 2015
Test/Reference	LOR	Unit				
Chlorophyll a	5	ug/L	< 5	< 5	< 5	-
Nitrate & Nitrite (as N)	0.005	mg/L	0.010	< 0.005	0.015	-
Nitrate (as N)	0.002	mg/L	0.010	0.004	0.015	-
Nitrite (as N)	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Phosphate total (as P)	0.005	mg/L	0.009	< 0.005	< 0.005	-
Phosphorus filterable reactive (as P)	0.001	mg/L	0.002	< 0.001	< 0.001	-
Total Nitrogen (as N)	0.05	mg/L	0.15	0.11	0.11	-
Enterococci	1	cfu/100mL	<1	~2	~2	-
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.030	0.007	< 0.005	-
Organic Nitrogen (as N)	0.05	mg/L	0.11	0.1	0.09	-
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.14	0.11	0.09	-

Client Sample ID			STPM-R1_170315	STPM-R2_170315	STPM-QA01_170315	STPM-RB01_170315
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ma12547	M15-Ma12548	M15-Ma12549	M15-Ma12550
Date Sampled			Mar 17, 2015	Mar 17, 2015	Mar 17, 2015	Mar 17, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	0.0005	mg/L	-	-	-	< 0.0005
Cadmium	0.0002	mg/L	-	-	-	< 0.0002
Chromium	0.0005	mg/L	-	-	-	< 0.0005
Copper	0.001	mg/L	-	-	-	< 0.001
Lead	0.0002	mg/L	-	-	-	< 0.0002
Mercury	0.0001	mg/L	-	-	-	< 0.0001
Nickel	0.0005	mg/L	-	-	-	< 0.0005
Zinc	0.005	mg/L	-	-	-	< 0.005

Client Sample ID			STPM-FB01_170315	STPM-TB01_170315
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M15-Ma12551	M15-Ma12552
Date Sampled			Mar 17, 2015	Mar 17, 2015
Test/Reference	LOR	Unit		
BTEX				
Benzene	0.001	mg/L	-	< 0.001
Toluene	0.001	mg/L	-	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001
Xylenes - Total	0.003	mg/L	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	88
Heavy Metals				
Arsenic	0.0005	mg/L	< 0.0005	-
Cadmium	0.0002	mg/L	< 0.0002	-
Chromium	0.0005	mg/L	< 0.0005	-
Copper	0.001	mg/L	< 0.001	-
Lead	0.0002	mg/L	< 0.0002	-
Mercury	0.0001	mg/L	< 0.0001	-
Nickel	0.0005	mg/L	< 0.0005	-
Zinc	0.005	mg/L	< 0.005	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
BTEX	Melbourne	Mar 18, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Chlorophyll a	Melbourne	Mar 25, 2015	2 Day
- Method: APHA Method 10200H			
Nitrate (as N)	Melbourne	Mar 18, 2015	7 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA			
Nitrite (as N)	Melbourne	Mar 18, 2015	2 Day
- Method: APHA 4500-NO2 Nitrite Nitrogen by FIA			
Phosphate total (as P)	Melbourne	Mar 18, 2015	28 Day
- Method: APHA 4500-P E. Phosphorous			
Phosphorus filterable reactive (as P)	Melbourne	Mar 18, 2015	2 Day
- Method: APHA 4500-P Phosphate (filterable reactive)			
Enterococci	Melbourne	Mar 18, 2015	24 Hour
- Method: 6609: Enterococci by Membrane Filtration - AS/NZS 4276.9:2007			
Organic Nitrogen Set (as N)			
Ammonia (as N)	Melbourne	Mar 25, 2015	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Organic Nitrogen (as N)	Melbourne	Mar 25, 2015	7 Day
- Method: APHA 4500 Organic Nitrogen (N)			
Metals M8	Melbourne	Mar 18, 2015	28 Day
- Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Mar 18, 2015	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Mar 25, 2015	7 Day
- Method: APHA 4500 TKN			

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800
Project Name: ICHTHYS EIMP
Project ID: J119486

Order No.: ZB1986716
Report #: 450949
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Mar 18, 2015 9:37 AM
Due: Mar 25, 2015
Priority: 5 Day
Contact Name: Jeni Young

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chlorophyll a	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Metals M8	Organic Nitrogen Set (as N)	BTEX	Total Nitrogen Set (as N)
Laboratory where analysis is conducted														
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217														
Brisbane Laboratory - NATA Site # 20794														
External Laboratory														
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
STPM-01_170315	Mar 17, 2015		Water	M15-Ma12543	X	X	X	X	X	X		X		X
STPM-02_170315	Mar 17, 2015		Water	M15-Ma12544	X	X	X	X	X	X		X		X
STPM-03_170315	Mar 17, 2015		Water	M15-Ma12545	X	X	X	X	X	X		X		X
STPM-04_170315	Mar 17, 2015		Water	M15-Ma12546	X	X	X	X	X	X		X		X
STPM-R1_170315	Mar 17, 2015		Water	M15-Ma12547	X	X	X	X	X	X		X		X

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800
Project Name: ICHTHYS EIMP
Project ID: J119486

Order No.: ZB1986716
Report #: 450949
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Mar 18, 2015 9:37 AM
Due: Mar 25, 2015
Priority: 5 Day
Contact Name: Jeni Young

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Chlorophyll a	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Metals M8	Organic Nitrogen Set (as N)	BTEX	Total Nitrogen Set (as N)
Laboratory where analysis is conducted														
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217														
Brisbane Laboratory - NATA Site # 20794														
External Laboratory														
STPM-R2_170315	Mar 17, 2015		Water	M15-Ma12548	X	X	X	X	X	X		X		X
STPM-QA01_170315	Mar 17, 2015		Water	M15-Ma12549	X	X	X	X	X	X		X		X
STPM-RB01_170315	Mar 17, 2015		Water	M15-Ma12550							X			
STPM-FB01_170315	Mar 17, 2015		Water	M15-Ma12551							X			
STPM-TB01_170315	Mar 17, 2015		Water	M15-Ma12552									X	

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Chlorophyll a	ug/L	< 5			5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.005			0.005	Pass	
Nitrate (as N)	mg/L	< 0.002			0.002	Pass	
Nitrite (as N)	mg/L	< 0.002			0.002	Pass	
Phosphate total (as P)	mg/L	< 0.005			0.005	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.001			0.001	Pass	
Total Nitrogen (as N)	mg/L	< 0.05			0.05	Pass	
Method Blank							
Organic Nitrogen Set (as N)							
Ammonia (as N)	mg/L	< 0.005			0.005	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.0005			0.0005	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.0005			0.0005	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.0002			0.0002	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.0005			0.0005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	93			70-130	Pass	
Toluene	%	77			70-130	Pass	
Ethylbenzene	%	76			70-130	Pass	
m&p-Xylenes	%	82			70-130	Pass	
Xylenes - Total	%	80			70-130	Pass	
LCS - % Recovery							
Nitrate & Nitrite (as N)	%	97			70-130	Pass	
Nitrate (as N)	%	97			70-130	Pass	
Nitrite (as N)	%	106			70-130	Pass	
Phosphate total (as P)	%	97			70-130	Pass	
Total Nitrogen (as N)	%	101			70-130	Pass	
LCS - % Recovery							
Organic Nitrogen Set (as N)							
Ammonia (as N)	%	92			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	101			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	96			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	91			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper			%	92			80-120	Pass	
Lead			%	94			80-120	Pass	
Mercury			%	84			75-125	Pass	
Nickel			%	91			80-120	Pass	
Zinc			%	97			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Nitrate & Nitrite (as N)	M15-Ma12379	NCP	%	98			70-130	Pass	
Nitrate (as N)	M15-Ma12379	NCP	%	98			70-130	Pass	
Nitrite (as N)	M15-Ma12379	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Organic Nitrogen Set (as N)				Result 1					
Ammonia (as N)	M15-Ma12379	NCP	%	94			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M15-Ma12546	CP	%	103			70-130	Pass	
Total Nitrogen (as N)	M15-Ma12546	CP	%	93			70-130	Pass	
Spike - % Recovery									
Organic Nitrogen Set (as N)				Result 1					
Total Kjeldahl Nitrogen (as N)	M15-Ma12546	CP	%	93			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M15-Ma12547	CP	%	104			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus filterable reactive (as P)	M15-Ma12549	CP	%	115			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-Ma12550	CP	%	100			75-125	Pass	
Cadmium	M15-Ma12550	CP	%	95			75-125	Pass	
Chromium	M15-Ma12550	CP	%	96			75-125	Pass	
Copper	M15-Ma12550	CP	%	95			75-125	Pass	
Lead	M15-Ma12550	CP	%	94			75-125	Pass	
Mercury	M15-Ma12550	CP	%	75			70-130	Pass	
Nickel	M15-Ma12550	CP	%	97			75-125	Pass	
Zinc	M15-Ma12550	CP	%	104			75-125	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M15-Ma11716	NCP	%	112			70-130	Pass	
Toluene	M15-Ma11716	NCP	%	101			70-130	Pass	
Ethylbenzene	M15-Ma11716	NCP	%	107			70-130	Pass	
m&p-Xylenes	M15-Ma11716	NCP	%	111			70-130	Pass	
o-Xylene	M15-Ma11716	NCP	%	98			70-130	Pass	
Xylenes - Total	M15-Ma11716	NCP	%	107			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M15-Ma12379	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M15-Ma12379	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M15-Ma12387	NCP	mg/L	0.045	0.046	4.0	30%	Pass	

Duplicate								
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD		
Ammonia (as N)	M15-Ma12387	NCP	mg/L	0.060	0.060	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M15-Ma12546	CP	mg/L	0.006	0.008	32	30%	Fail
Total Nitrogen (as N)	M15-Ma12546	CP	mg/L	0.11	0.11	1.0	30%	Pass
Duplicate								
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M15-Ma12546	CP	mg/L	0.11	0.11	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus filterable reactive (as P)	M15-Ma12549	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M15-Ma12550	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Cadmium	M15-Ma12550	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-Ma12550	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Copper	M15-Ma12550	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead	M15-Ma12550	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Mercury	M15-Ma12550	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-Ma12550	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Zinc	M15-Ma12550	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M15-Ma12552	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M15-Ma12552	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M15-Ma12552	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M15-Ma12552	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M15-Ma12552	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M15-Ma12552	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Sarah Gould	Analytical Services Manager
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)



Glenn Jackson

National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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AEC Environmental Pty Ltd

Job Number: J119486

Sample Chain of Custody and Testing Request

Purchase Order Number: ZB1986622

Samples Submitted to MGT as per quote #310513AEC

Sheet Number: 1 of 1

Client: AEC Environmental

Sampled By:

14/04/15 1:50 pm

Project: Ichthyos EIMP

Date Sampled:

14/04/15 1:50 pm

Location: Bladin Point

Sample Identification	Water Type	Date	Sampling Containers	Testing Requirements
STPM-01_140415	Marine Water			
STPM-02_140415	Marine Water			
STPM-03_140415	Marine Water			
STPM-04_140415	Marine Water			
STPM-R1_140415	Marine Water			
STPM-R2_140415	Marine Water			
STPM-T1_140415	STP Discharge			
STPM-QA01_140415	Marine Water			
STPM-TQA01_140415	STP Discharge			
STPM-RB01_140415				
STPM-FB01_140415				
STPM-TB01_140415				

Notes:

AEC Contact: Jeni Young

Phone: 08 8984 4244, 0437 858 173

Please email results to the following: jeni.young@aecaus.com.au, inpx@greencap.com.au

Please send invoice to the following: jeni.young@aecaus.com.au, inpx@greencap.com.au

Relinquished by: <i>S. O'NEILL</i>	Company: AEC Environmental 11/14 Winnellie Road, Winnellie, NT 0820 PO Box 39546, Winnellie, NT 0820	Date/Time: 14/04/15 9:40C	Chain of Custody:	Received by - Name & Company: <i>MARK COCHRAN EFMAT</i>	Date: 14/04/15	Time: 1:50 pm
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Cochran
EFMAT

453985

15/4 8:28 am

EnviroSampleVIC

From: Sally-Anne Orchard <Sally-Anne.Orchard@greencap.com.au>
Sent: Wednesday, 15 April 2015 4:21 PM
To: EnviroSampleVIC
Cc: Sarah Gould
Subject: RE: J119486 ZB1986622

Hi,

This is a sample label error of ours which was not amended on the COC. Please refer to these blanks as "01" not "14" on this work order. TB01 was not required and was not submitted, and accidentally not removed from our COC.

Sally-Anne

From: EnviroSampleVIC [<mailto:EnviroSampleVic@eurofins.com.au>]
Sent: Wednesday, 15 April 2015 3:32 PM
To: Sally-Anne Orchard
Subject: RE: J119486 ZB1986622

Hi Sally,

Can you respond to the issues below as asked earlier?

Anthony

Enquiries VIC
Phone :
Email : EnviroSampleVic@eurofins.com.au

To facilitate the use of ESdat's new LSPECS software, all ESdat files will now be accompanied by a Header file.

Eurofins now supports ESdat Online! Produce Exceedances Tables, check QA and overlay on Google Maps – all online, through a browser.

Try two Eurofins reports for free. Simply send an email indicating which two Eurofins reports you would like to trial to info@esdat.net and cc your Eurofins contact.

You will receive a login and a link, it's that easy!

ESdat Online is a pay-per-lab report Software as a Service, produced by EScIS.com.au (no relation to Eurofins) [Read more about it!](#)

From: Sally-Anne Orchard [<mailto:Sally-Anne.Orchard@greencap.com.au>]
Sent: Wednesday, 15 April 2015 3:54 PM
To: EnviroSampleVIC
Cc: Sarah Gould
Subject: RE: J119486 ZB1986622

Hi,

Yes I am. Though please continue to send lab SRNs etc to inplex@greencap, and utilise my contact details if something is amiss with the sample receipt.

Thanks,

Sally-Anne

From: EnviroSampleVIC [<mailto:EnviroSampleVic@eurofins.com.au>]

Sent: Wednesday, 15 April 2015 12:12 PM

To: Sally-Anne Orchard

Cc: Sarah Gould

Subject: FW: J119486 ZB1986622

Hi Sally,

I was just informed that Jeni no longer works for AEC and that yo'rer now the new contact.

Please advise on the issues below.

Anthony

Enquiries VIC

Phone :

Email : EnviroSampleVic@eurofins.com.au

To facilitate the use of ESdat's new LSPECS software, all ESdat files will now be accompanied by a Header file.

Eurofins now supports ESdat Online! Produce Exceedances Tables, check QA and overlay on Google Maps – all online, through a browser.

Try two Eurofins reports for free. Simply send an email indicating which two Eurofins reports you would like to trial to info@esdat.net and cc your Eurofins contact.

You will receive a login and a link, it's that easy!

ESdat Online is a pay-per-lab report Software as a Service, produced by EScIS.com.au (no relation to Eurofins) [Read more about it!](#)

From: EnviroSampleVIC

Sent: Wednesday, 15 April 2015 11:03 AM

To: jeni.young@aecaust.com.au

Subject: J119486 ZB1986622

Jeni,

We haven't received RB01, FB01 or TB01.

We have received RB14 and FB14.

Please advise asap.

Anthony

Enquiries VIC

Eurofins | mgt

2-5 Kingston Town Close

OAKLEIGH VIC 3166

AUSTRALIA

Sample Receipt Advice

Company name: **AEC Environmental NT**
Contact name: Sally-Anne Orchard
Project name: ICHTHYS EIMP
Project ID: J119486
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Apr 15, 2015 8:28 AM
Eurofins | mgt reference: **453985**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- ☒ Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☒ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Received MICRO container only for STPM-TQA01_140415 & ECOLI logged in.

Contact notes

If you have any questions with respect to these samples please contact:

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com.au

Results will be delivered electronically via e.mail to Sally-Anne Orchard - sally-anne.orchard@aecaust.com.au.

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800
Project Name: ICHTHYS EIMP
Project ID: J119486

Order No.: ZB1986622
Report #: 453985
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Apr 15, 2015 8:28 AM
Due: Apr 22, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID													
STPM-01_140415	Apr 14, 2015		Water	M15-Ap09835		X			X	X	X	X	X			X	X
STPM-02_140415	Apr 14, 2015		Water	M15-Ap09836		X			X	X	X	X	X			X	X
STPM-03_140415	Apr 14, 2015		Water	M15-Ap09837		X			X	X	X	X	X			X	X
STPM-04_140415	Apr 14, 2015		Water	M15-Ap09838		X			X	X	X	X	X			X	X
STPM-R1_140415	Apr 14, 2015		Water	M15-Ap09839		X			X	X	X	X	X			X	X

Order No.: ZB1986622
Report #: 453985
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Apr 15, 2015 8:28 AM
Due: Apr 22, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Eurofins | mgt Client Manager: Sarah Gould

[illegible]

Certificate of Analysis

AEC NT
11/14 Winnellie Road
Winnellie
NT 0800



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Sally-Anne Orchard**

Report **453985-W**
Project name **ICHTHYS EIMP**
Project ID **J119486**
Received Date **Apr 15, 2015**

Client Sample ID			STPM-01_140415	STPM-02_140415	STPM-03_140415	STPM-04_140415
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ap09835	M15-Ap09836	M15-Ap09837	M15-Ap09838
Date Sampled			Apr 14, 2015	Apr 14, 2015	Apr 14, 2015	Apr 14, 2015
Test/Reference	LOR	Unit				
Chlorophyll a	5	ug/L	< 5	< 5	< 5	< 5
Nitrate & Nitrite (as N)	0.005	mg/L	< 0.005	< 0.005	0.027	0.005
Nitrate (as N)	0.002	mg/L	< 0.002	< 0.002	0.027	0.005
Nitrite (as N)	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Phosphate total (as P)	0.005	mg/L	0.066	0.058	0.059	0.055
Phosphorus filterable reactive (as P)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total Nitrogen (as N)	0.05	mg/L	0.25	0.12	0.25	0.15
Enterococci	1	cfu/100mL	<1	<1	~3	<1
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.020	0.017	0.020	0.008
Organic Nitrogen (as N)	0.05	mg/L	0.23	0.10	0.20	0.13
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.25	0.12	0.22	0.14

Client Sample ID			STPM-R1_140415	STPM-R2_140415	STPM-T1_140415	STPM-QA01_140415
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ap09839	M15-Ap09840	M15-Ap09841	M15-Ap09842
Date Sampled			Apr 14, 2015	Apr 14, 2015	Apr 14, 2015	Apr 14, 2015
Test/Reference	LOR	Unit				
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	-	-	< 5	-
Chlorophyll a	5	ug/L	< 5	< 5	< 5	< 5
Nitrate & Nitrite (as N)	0.005	mg/L	< 0.005	< 0.005	1.5	< 0.005
Nitrate (as N)	0.002	mg/L	< 0.002	< 0.002	1.5	< 0.002
Nitrite (as N)	0.002	mg/L	< 0.002	< 0.002	0.005	< 0.002
Phosphate total (as P)	0.005	mg/L	0.055	0.053	0.13	0.053
Phosphorus filterable reactive (as P)	0.001	mg/L	< 0.001	< 0.001	0.059	< 0.001
Suspended Solids	1	mg/L	-	-	< 1	-
Total Nitrogen (as N)	0.05	mg/L	0.12	0.14	2.1	0.15
E.coli	1	cfu/100mL	-	-	<1	-
E.coli - time tested		hr:min	-	-	15:55	-
Enterococci	1	cfu/100mL	~2	~1	<1	<1

Client Sample ID			STPM-R1_140415	STPM-R2_140415	STPM-T1_140415	STPM-QA01_140415
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-Ap09839	M15-Ap09840	M15-Ap09841	M15-Ap09842
Date Sampled			Apr 14, 2015	Apr 14, 2015	Apr 14, 2015	Apr 14, 2015
Test/Reference	LOR	Unit				
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.009	< 0.005	0.007	< 0.005
Organic Nitrogen (as N)	0.05	mg/L	0.11	0.14	0.67	0.15
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.12	0.14	0.68	0.15

Client Sample ID			STPM-TQA01_140415	STPM-RB01_140415	STPM-FB01_140415
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-Ap09843	M15-Ap09844	M15-Ap09845
Date Sampled			Apr 14, 2015	Apr 14, 2015	Apr 14, 2015
Test/Reference	LOR	Unit			
E.coli	1	cfu/100mL	<1	-	-
E.coli - time tested		hr:min	15:55	-	-
Heavy Metals					
Arsenic	0.0005	mg/L	-	< 0.0005	< 0.0005
Cadmium	0.0002	mg/L	-	< 0.0002	< 0.0002
Chromium	0.0005	mg/L	-	< 0.0005	< 0.0005
Copper	0.001	mg/L	-	< 0.001	< 0.001
Lead	0.0002	mg/L	-	< 0.0002	< 0.0002
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001
Nickel	0.0005	mg/L	-	< 0.0005	< 0.0005
Zinc	0.005	mg/L	-	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Biochemical Oxygen Demand (BOD-5 Day) - Method: APHA 5210B	Melbourne	Apr 15, 2015	2 Day
Chlorophyll a - Method: APHA Method 10200H	Melbourne	Apr 16, 2015	2 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Apr 16, 2015	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Apr 16, 2015	2 Day
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 17, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Apr 16, 2015	2 Day
Suspended Solids - Method: APHA 2540D Total Suspended Solids	Melbourne	Apr 15, 2015	7 Day
E.coli - Method: 6607: Microbes by Membrane Filtration AS/NZS 4276.7:2007	Melbourne	Apr 15, 2015	24 Hour
Enterococci - Method: 6609: Enterococci by Membrane Filtration - AS/NZS 4276.9:2007	Melbourne	Apr 15, 2015	24 Hour
Organic Nitrogen Set (as N)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Apr 16, 2015	28 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 16, 2015	7 Day
Metals M8 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Apr 15, 2015	28 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 16, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 16, 2015	7 Day

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800
Project Name: ICHTHYS EIMP
Project ID: J119486

Order No.: ZB1986622
Report #: 453985
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: Apr 15, 2015 8:28 AM
Due: Apr 22, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID													
STPM-01_140415	Apr 14, 2015		Water	M15-Ap09835		X			X	X	X	X	X			X	X
STPM-02_140415	Apr 14, 2015		Water	M15-Ap09836		X			X	X	X	X	X			X	X
STPM-03_140415	Apr 14, 2015		Water	M15-Ap09837		X			X	X	X	X	X			X	X
STPM-04_140415	Apr 14, 2015		Water	M15-Ap09838		X			X	X	X	X	X			X	X
STPM-R1_140415	Apr 14, 2015		Water	M15-Ap09839		X			X	X	X	X	X			X	X

Company Name: AEC Environmental NT
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Contact Name: Sally-Anne Orchard

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Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
STPM-R2_140415	Apr 14, 2015		Water	M15-Ap09840		X			X	X	X	X	X			X	X
STPM-T1_140415	Apr 14, 2015		Water	M15-Ap09841	X	X	X	X	X	X	X	X	X	X		X	X
STPM-QA01_140415	Apr 14, 2015		Water	M15-Ap09842		X			X	X	X	X	X			X	X
STPM-TQA01_140415	Apr 14, 2015		Water	M15-Ap09843			X	X									
STPM-RB01_140415	Apr 14, 2015		Water	M15-Ap09844											X		
STPM-FB01_140415	Apr 14, 2015		Water	M15-Ap09845											X		

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Biochemical Oxygen Demand (BOD-5 Day)			mg/L	< 5			5	Pass	
Chlorophyll a			ug/L	< 5			5	Pass	
Phosphate total (as P)			mg/L	< 0.005			0.005	Pass	
Phosphorus filterable reactive (as P)			mg/L	< 0.001			0.001	Pass	
Suspended Solids			mg/L	< 1			1	Pass	
Total Nitrogen (as N)			mg/L	< 0.05			0.05	Pass	
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.0005			0.0005	Pass	
Cadmium			mg/L	< 0.0002			0.0002	Pass	
Chromium			mg/L	< 0.0005			0.0005	Pass	
Copper			mg/L	< 0.001			0.001	Pass	
Lead			mg/L	< 0.0002			0.0002	Pass	
Mercury			mg/L	< 0.0001			0.0001	Pass	
Nickel			mg/L	< 0.0005			0.0005	Pass	
Zinc			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Nitrate & Nitrite (as N)			%	101			70-130	Pass	
Nitrate (as N)			%	101			70-130	Pass	
Phosphate total (as P)			%	99			70-130	Pass	
Suspended Solids			%	100			70-130	Pass	
Total Nitrogen (as N)			%	130			70-130	Pass	
LCS - % Recovery									
Organic Nitrogen Set (as N)									
Ammonia (as N)			%	100			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	99			80-120	Pass	
Cadmium			%	97			80-120	Pass	
Chromium			%	96			80-120	Pass	
Copper			%	95			80-120	Pass	
Lead			%	95			80-120	Pass	
Mercury			%	89			75-125	Pass	
Nickel			%	95			80-120	Pass	
Zinc			%	99			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Nitrate & Nitrite (as N)	M15-Ap09835	CP	%	108			70-130	Pass	
Nitrate (as N)	M15-Ap09835	CP	%	108			70-130	Pass	
Nitrite (as N)	M15-Ap09835	CP	%	108			70-130	Pass	
Phosphate total (as P)	M15-Ap09835	CP	%	103			70-130	Pass	
Total Nitrogen (as N)	M15-Ap09835	CP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Organic Nitrogen Set (as N)									
Ammonia (as N)	M15-Ap09835	CP	%	105			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M15-Ap11413	NCP	%	79			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus filterable reactive (as P)	M15-Ap09839	CP	%	117			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-Ap09845	CP	%	97			75-125	Pass	
Cadmium	M15-Ap09845	CP	%	99			75-125	Pass	
Chromium	M15-Ap09845	CP	%	97			75-125	Pass	
Copper	M15-Ap09845	CP	%	93			75-125	Pass	
Lead	M15-Ap09845	CP	%	99			75-125	Pass	
Mercury	M15-Ap09845	CP	%	98			70-130	Pass	
Nickel	M15-Ap09845	CP	%	94			75-125	Pass	
Zinc	M15-Ap09845	CP	%	102			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M15-Ap09835	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nitrate (as N)	M15-Ap09835	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Nitrite (as N)	M15-Ap09835	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Phosphate total (as P)	M15-Ap09835	CP	mg/L	0.066	0.056	16	30%	Pass	
Total Nitrogen (as N)	M15-Ap09835	CP	mg/L	0.25	0.23	6.0	30%	Pass	
Duplicate									
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD			
Ammonia (as N)	M15-Ap09835	CP	mg/L	0.020	0.022	5.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M15-Ap11413	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus filterable reactive (as P)	M15-Ap09839	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	M15-Ap09688	NCP	mg/L	980	930	5.0	30%	Pass	
Suspended Solids	M15-Ap09598	NCP	mg/L	17	18	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M15-Ap09845	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium	M15-Ap09845	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M15-Ap09845	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Copper	M15-Ap09845	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M15-Ap09845	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Mercury	M15-Ap09845	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M15-Ap09845	CP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Zinc	M15-Ap09845	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Sarah Gould	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)



Glenn Jackson

National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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AEC Environmental Pty Ltd
Sample Chain of Custody and Testing Request
Samples Submitted to MGT as per quote #310513AEC
Client: AEC Environmental
Project: Ichthyos EIMP: WDL Sampling
Location: Bladin Point

Job Number: J119486
Sheet Number: 1 of 1

Purchase Order Number: **ZB1986569**
Sampled By: **SARAH JOYCE + STU CARROLL**
Date Sampled: **12.05.15**

Sample Identification	Water Type	Date Time	Sampling Containers								Testing Requirements								
			Purple Label Plastic Nutrients	Green Label Unpreserved Plastic 1L	Grey Label Micro Clear Plastic	Red Label Plastic Metals	Pink Label Clear Glass vial												
STPM-01_120515	Marine Water		X	X	X														
STPM-02_120515	Marine Water		X	X	X														
STPM-03_120515	Marine Water		X	X	X														
STPM-04_120515	Marine Water		X	X	X														
STPM-R1_120515	Marine Water		X	X	X														
STPM-R2_120515	Marine Water		X	X	X														
STPM-T1_120515	STP Discharge		X	X	X														
STPM-QA01_120515	Marine Water		X	X	X														
STPM-TQA01_120515	STP Discharge			X	X														
STPM-RB01_120515						X												X	
STPM-FB01_120515						X												X	

Notes:
AEC Contact: Sally-Anne Orchard
Phone: 08 8984 4244, 0423 787 608
Please email results to the following: inpx@greencap.com.au
Please send invoice to the following: inpx@greencap.com.au

Relinquished by: **S. Joyce** Date: **12/5/15** Time: **1:45pm**

Chain of Custody: Received by - Name & Company: **MARK**

Simon Lowe #457381
13/5/15 9:11AM

Sample Receipt Advice

Company name: **AEC Environmental NT**
Contact name: Sally-Anne Orchard
Project name: ICHTHYS EIMP: WDL SAMPLING (BLADIN POINT)
Project ID: J119486
COC number: Not provided
Turn around time: 5 Day
Date/Time received: May 13, 2015 9:11 AM
Eurofins | mgt reference: **457381**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- ☒ Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☒ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com.au

Results will be delivered electronically via e.mail to Sally-Anne Orchard - sally-anne.orchard@aecaust.com.au.

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800

Order No.: ZB1986569
Report #: 457381
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: May 13, 2015 9:11 AM
Due: May 20, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Project Name: ICHTHYS EIMP: WDL SAMPLING (BLADIN POINT)
Project ID: J119486

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID													
STPM-01_120515	May 12, 2015		Water	M15-My11769		X			X	X	X	X	X			X	X
STPM-02_120515	May 12, 2015		Water	M15-My11770		X			X	X	X	X	X			X	X
STPM-03_120515	May 12, 2015		Water	M15-My11771		X			X	X	X	X	X			X	X
STPM-04_120515	May 12, 2015		Water	M15-My11772		X			X	X	X	X	X			X	X
STPM-R1_120515	May 12, 2015		Water	M15-My11773		X			X	X	X	X	X			X	X

Received: May 13, 2015 9:11 AM
Due: May 20, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Eurofins | mgt Client Manager: Sarah Gould

[illegible]

Certificate of Analysis

AEC NT
11/14 Winnellie Road
Winnellie
NT 0800



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Sally-Anne Orchard

Report **457381-W**
Project name ICHTHYS EIMP: WDL SAMPLING (BLADIN POINT)
Project ID J119486
Received Date May 13, 2015

Client Sample ID			STPM-01_120515	STPM-02_120515	STPM-03_120515	STPM-04_120515
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-My11769	M15-My11770	M15-My11771	M15-My11772
Date Sampled			May 12, 2015	May 12, 2015	May 12, 2015	May 12, 2015
Test/Reference	LOR	Unit				
Chlorophyll a	5	ug/L	< 5	< 5	< 5	< 5
Nitrate & Nitrite (as N)	0.005	mg/L	0.006	0.006	0.005	< 0.005
Nitrate (as N)	0.002	mg/L	0.006	0.006	0.002	0.004
Nitrite (as N)	0.002	mg/L	< 0.002	< 0.002	0.003	< 0.002
Phosphate total (as P)	0.005	mg/L	0.022	0.018	0.017	0.016
Phosphorus filterable reactive (as P)	0.001	mg/L	0.005	0.005	0.005	0.005
Total Nitrogen (as N)	0.05	mg/L	0.15	0.13	0.13	0.15
Enterococci	1	cfu/100mL	<1	<1	<1	<1
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.014	0.016	0.013	0.010
Organic Nitrogen (as N)	0.05	mg/L	0.13	0.10	0.11	0.14
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.14	0.12	0.12	0.15

Client Sample ID			STPM-R1_120515	STPM-R2_120515	STPM-T1_120515	STPM-QA01_120515
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-My11773	M15-My11774	M15-My11775	M15-My11776
Date Sampled			May 12, 2015	May 12, 2015	May 12, 2015	May 12, 2015
Test/Reference	LOR	Unit				
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	-	-	< 5	-
Chlorophyll a	5	ug/L	< 5	< 5	< 5	< 5
Nitrate & Nitrite (as N)	0.005	mg/L	< 0.005	0.007	3.3	0.007
Nitrate (as N)	0.002	mg/L	0.004	0.004	3.2	0.007
Nitrite (as N)	0.002	mg/L	< 0.002	0.003	0.062	< 0.002
Phosphate total (as P)	0.005	mg/L	0.015	0.050	1.1	0.069
Phosphorus filterable reactive (as P)	0.001	mg/L	0.005	0.005	0.94	0.005
Suspended Solids	1	mg/L	-	-	1.3	-
Total Nitrogen (as N)	0.05	mg/L	0.13	0.21	4.7	0.16
E.coli	1	cfu/100mL	-	-	<1	-
E.coli - time tested		hr:min	-	-	14:05	-
Enterococci	1	cfu/100mL	~1	<1	<1	<1

Client Sample ID			STPM-R1_120515	STPM-R2_120515	STPM-T1_120515	STPM-QA01_120515
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-My11773	M15-My11774	M15-My11775	M15-My11776
Date Sampled			May 12, 2015	May 12, 2015	May 12, 2015	May 12, 2015
Test/Reference	LOR	Unit				
Organic Nitrogen Set (as N)						
Ammonia (as N)	0.005	mg/L	0.009	0.017	0.15	0.013
Organic Nitrogen (as N)	0.05	mg/L	0.12	0.18	1.3	0.14
Total Kjeldahl Nitrogen (as N)	0.05	mg/L	0.13	0.20	1.4	0.15

Client Sample ID			STPM-TQA01_120515	STPM-RB01_120515	STPM-FB01_120515
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-My11777	M15-My11778	M15-My11779
Date Sampled			May 12, 2015	May 12, 2015	May 12, 2015
Test/Reference	LOR	Unit			
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	-	-
Suspended Solids	1	mg/L	1.9	-	-
E.coli	1	cfu/100mL	<1	-	-
E.coli - time tested		hr:min	14:05	-	-
Heavy Metals					
Arsenic	0.0005	mg/L	-	< 0.0005	< 0.0005
Cadmium	0.0002	mg/L	-	< 0.0002	< 0.0002
Chromium	0.0005	mg/L	-	< 0.0005	< 0.0005
Copper	0.001	mg/L	-	< 0.001	< 0.001
Lead	0.0002	mg/L	-	< 0.0002	< 0.0002
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001
Nickel	0.0005	mg/L	-	< 0.0005	< 0.0005
Zinc	0.005	mg/L	-	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	May 13, 2015	2 Day
- Method: APHA 5210B			
Chlorophyll a	Melbourne	May 13, 2015	2 Day
- Method: APHA Method 10200H			
Nitrate (as N)	Melbourne	May 13, 2015	7 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA			
Nitrite (as N)	Melbourne	May 13, 2015	2 Day
- Method: APHA 4500-NO2 Nitrite Nitrogen by FIA			
Phosphate total (as P)	Melbourne	May 14, 2015	28 Day
- Method: APHA 4500-P E. Phosphorous			
Phosphorus filterable reactive (as P)	Melbourne	May 14, 2015	2 Day
- Method: APHA 4500-P Phosphate (filterable reactive)			
Suspended Solids	Melbourne	May 13, 2015	7 Day
- Method: APHA 2540D Total Suspended Solids			
E.coli	Melbourne	May 13, 2015	24 Hour
- Method: 6607: Microbes by Membrane Filtration AS/NZS 4276.7:2007			
Enterococci	Melbourne	May 13, 2015	24 Hour
- Method: 6609: Enterococci by Membrane Filtration - AS/NZS 4276.9:2007			
Organic Nitrogen Set (as N)			
Ammonia (as N)	Melbourne	May 14, 2015	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Organic Nitrogen (as N)	Melbourne	May 14, 2015	7 Day
- Method: APHA 4500 Organic Nitrogen (N)			
Metals M8	Melbourne	May 13, 2015	28 Day
- Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	May 13, 2015	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 14, 2015	7 Day
- Method: APHA 4500 TKN			

Company Name: AEC Environmental NT
Address: 11/14 Winnellie Road
Winnellie
NT 0800

Order No.: ZB1986569
Report #: 457381
Phone: 61 8 8984 4244
Fax: 61 8 8984 3105

Received: May 13, 2015 9:11 AM
Due: May 20, 2015
Priority: 5 Day
Contact Name: Sally-Anne Orchard

Project Name: ICHTHYS EIMP: WDL SAMPLING (BLADIN POINT)
Project ID: J119486

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID													
STPM-01_120515	May 12, 2015		Water	M15-My11769		X			X	X	X	X	X			X	X
STPM-02_120515	May 12, 2015		Water	M15-My11770		X			X	X	X	X	X			X	X
STPM-03_120515	May 12, 2015		Water	M15-My11771		X			X	X	X	X	X			X	X
STPM-04_120515	May 12, 2015		Water	M15-My11772		X			X	X	X	X	X			X	X
STPM-R1_120515	May 12, 2015		Water	M15-My11773		X			X	X	X	X	X			X	X

Company Name: AEC Environmental NT
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Winnellie
NT 0800
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Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Chlorophyll a	E.coli	E.coli - time tested	Enterococci	Nitrate (as N)	Nitrite (as N)	Phosphate total (as P)	Phosphorus filterable reactive (as P)	Suspended Solids	Metals M8	Organic Nitrogen Set (as N)	Total Nitrogen Set (as N)
Laboratory where analysis is conducted																	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																	
Brisbane Laboratory - NATA Site # 20794																	
External Laboratory																	
STPM-R2_120515	May 12, 2015		Water	M15-My11774		X			X	X	X	X	X			X	X
STPM-T1_120515	May 12, 2015		Water	M15-My11775	X	X	X	X	X	X	X	X	X	X		X	X
STPM-QA01_120515	May 12, 2015		Water	M15-My11776		X			X	X	X	X	X			X	X
STPM-TQA01_120515	May 12, 2015		Water	M15-My11777	X		X	X						X			
STPM-RB01_120515	May 12, 2015		Water	M15-My11778											X		
STPM-FB01_120515	May 12, 2015		Water	M15-My11779											X		

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank								
Biochemical Oxygen Demand (BOD-5 Day)			mg/L	< 5		5	Pass	
Chlorophyll a			ug/L	< 5		5	Pass	
Nitrate & Nitrite (as N)			mg/L	< 0.005		0.005	Pass	
Nitrate (as N)			mg/L	< 0.002		0.002	Pass	
Nitrite (as N)			mg/L	< 0.002		0.002	Pass	
Phosphate total (as P)			mg/L	< 0.005		0.005	Pass	
Phosphorus filterable reactive (as P)			mg/L	< 0.001		0.001	Pass	
Suspended Solids			mg/L	< 1		1	Pass	
Total Nitrogen (as N)			mg/L	< 0.05		0.05	Pass	
Method Blank								
Organic Nitrogen Set (as N)								
Ammonia (as N)			mg/L	< 0.005		0.005	Pass	
Method Blank								
Heavy Metals								
Arsenic			mg/L	< 0.0005		0.0005	Pass	
Cadmium			mg/L	< 0.0002		0.0002	Pass	
Chromium			mg/L	< 0.0005		0.0005	Pass	
Copper			mg/L	< 0.001		0.001	Pass	
Lead			mg/L	< 0.0002		0.0002	Pass	
Mercury			mg/L	< 0.0001		0.0001	Pass	
Nickel			mg/L	< 0.0005		0.0005	Pass	
Zinc			mg/L	< 0.005		0.005	Pass	
LCS - % Recovery								
Nitrate & Nitrite (as N)			%	98		70-130	Pass	
Nitrate (as N)			%	97		70-130	Pass	
Nitrite (as N)			%	107		70-130	Pass	
Phosphate total (as P)			%	101		70-130	Pass	
Suspended Solids			%	101		70-130	Pass	
Total Nitrogen (as N)			%	85		70-130	Pass	
LCS - % Recovery								
Organic Nitrogen Set (as N)								
Ammonia (as N)			%	98		70-130	Pass	
LCS - % Recovery								
Heavy Metals								
Arsenic			%	97		80-120	Pass	
Cadmium			%	94		80-120	Pass	
Chromium			%	94		80-120	Pass	
Copper			%	94		80-120	Pass	
Lead			%	94		80-120	Pass	
Mercury			%	80		75-125	Pass	
Nickel			%	94		80-120	Pass	
Zinc			%	95		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	M15-My11406	NCP	%	96		70-130	Pass	
Nitrate (as N)	M15-My11406	NCP	%	96		70-130	Pass	
Nitrite (as N)	M15-My11406	NCP	%	108		70-130	Pass	
Phosphorus filterable reactive (as P)	M15-My11790	NCP	%	104		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Organic Nitrogen Set (as N)				Result 1					
Ammonia (as N)	M15-My11406	NCP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M15-My11773	CP	%	98			70-130	Pass	
Total Nitrogen (as N)	M15-My11773	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M15-My11776	CP	%	104			70-130	Pass	
Total Nitrogen (as N)	M15-My11776	CP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	M15-My11776	CP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Heavy Metals				Result 1					
Arsenic	M15-My09972	NCP	%	93			75-125	Pass	
Cadmium	M15-My09972	NCP	%	91			75-125	Pass	
Chromium	M15-My09972	NCP	%	94			75-125	Pass	
Copper	M15-My09972	NCP	%	92			75-125	Pass	
Lead	M15-My09972	NCP	%	93			75-125	Pass	
Mercury	M15-My09972	NCP	%	84			70-130	Pass	
Nickel	M15-My09972	NCP	%	91			75-125	Pass	
Zinc	M15-My09972	NCP	%	91			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M15-My11406	NCP	mg/L	0.27	0.28	1.0	30%	Pass	
Nitrate (as N)	M15-My11406	NCP	mg/L	0.27	0.28	1.0	30%	Pass	
Nitrite (as N)	M15-My11406	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphorus filterable reactive (as P)	M15-My11790	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD			
Ammonia (as N)	M15-My11406	NCP	mg/L	0.074	0.073	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M15-My11773	CP	mg/L	0.015	0.015	<1	30%	Pass	
Total Nitrogen (as N)	M15-My11773	CP	mg/L	0.13	0.13	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M15-My11773	CP	mg/L	0.13	0.13	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	M15-My11407	NCP	mg/L	160	170	1.0	30%	Pass	
Suspended Solids	M15-My12496	NCP	mg/L	1700	1700	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M15-My11776	CP	mg/L	0.069	0.064	7.0	30%	Pass	
Total Nitrogen (as N)	M15-My11776	CP	mg/L	0.16	0.16	<1	30%	Pass	

Duplicate								
Organic Nitrogen Set (as N)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M15-My11776	CP	mg/L	0.15	0.15	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M15-My09972	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M15-My09972	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-My09972	NCP	mg/L	0.0040	0.0040	8.0	30%	Pass
Copper	M15-My09972	NCP	mg/L	0.0040	0.0040	4.0	30%	Pass
Lead	M15-My09972	NCP	mg/L	0.0010	0.0010	1.0	30%	Pass
Mercury	M15-My09972	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-My09972	NCP	mg/L	0.0030	0.0030	5.0	30%	Pass
Zinc	M15-My09972	NCP	mg/L	0.010	0.013	19	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Sarah Gould	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)



Glenn Jackson

National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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CERTIFICATE OF ANALYSIS

Work Order	: ES1506306	Page	: 1 of 3
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ZB1986717	Date Samples Received	: 18-MAR-2015
C-O-C number	: ----	Issue Date	: 25-MAR-2015
Sampler	: CM & KP	No. of samples received	: 1
Site	: BLADIN POINT	No. of samples analysed	: 1
Quote number	: SY/861/13-V2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Sarah Axisa	Microbiologist	Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **MW023 is ALS's internal code and is equivalent to AS4276.9.**



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

STPM-QA02_170315

Client sampling date / time

[17-MAR-2015]

Compound	CAS Number	LOR	Unit	ES1506306-001	----	----	----	----
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m ³	<1	----	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	12	----	----	----	----
Ultra-Trace Nutrients								
Organic Nitrogen as N	----	0.01	mg/L	0.20	----	----	----	----
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
Nitrite as N	----	0.002	mg/L	<0.002	----	----	----	----
Nitrate as N	14797-55-8	0.002	mg/L	0.023	----	----	----	----
Total Nitrogen as N	----	0.01	mg/L	0.22	----	----	----	----
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.002	----	----	----	----
Total Phosphorus as P	----	0.005	mg/L	0.007	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: ES1506306	Page	: 1 of 5
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BLADIN POINT		
C-O-C number	: ----	Date Samples Received	: 18-MAR-2015
Sampler	: CM & KP	Issue Date	: 25-MAR-2015
Order number	: ZB1986717		
Quote number	: SY/861/13-V2	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Sarah Axisa	Microbiologist	Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Ultra-Trace Nutrients (QC Lot: 3863929)									
ES1506306-001	STPM-QA02_170315	EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3863930)									
ES1506306-001	STPM-QA02_170315	EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3863931)									
ES1506306-001	STPM-QA02_170315	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.002	0.002	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3863932)									
ES1506306-001	STPM-QA02_170315	EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	0.007	0.007	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3863933)									
ES1506306-001	STPM-QA02_170315	EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	0.22	0.18	16.7	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
				Result			Low	High
EP008: Chlorophyll (QCLot: 3865046)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	115	70	130
Ultra-Trace Nutrients (QCLot: 3863929)								
EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	0.1 mg/L	104	88	130
Ultra-Trace Nutrients (QCLot: 3863930)								
EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	98.8	68	130
Ultra-Trace Nutrients (QCLot: 3863931)								
EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	98.6	68	120
Ultra-Trace Nutrients (QCLot: 3863932)								
EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.44 mg/L	107	73	129
Ultra-Trace Nutrients (QCLot: 3863933)								
EK262PA-CM: Total Nitrogen as N	----	0.05	mg/L	<0.01	1.0 mg/L	98.5	72	114

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
Ultra-Trace Nutrients (QCLot: 3863929)							
ES1506306-001	STPM-QA02_170315	EK257A-CM: Nitrite as N	----	0.1 mg/L	107	70	130
Ultra-Trace Nutrients (QCLot: 3863930)							
ES1506306-001	STPM-QA02_170315	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	94.2	70	130
Ultra-Trace Nutrients (QCLot: 3863931)							
ES1506306-001	STPM-QA02_170315	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	78.5	70	130
Ultra-Trace Nutrients (QCLot: 3863932)							
ES1506306-001	STPM-QA02_170315	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	101	70	130
Ultra-Trace Nutrients (QCLot: 3863933)							
ES1506306-001	STPM-QA02_170315	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	116	70	130



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
Ultra-Trace Nutrients (QCLot: 3863929)										
ES1506306-001	STPM-QA02_170315	EK257A-CM: Nitrite as N	----	0.1 mg/L	107	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3863930)										
ES1506306-001	STPM-QA02_170315	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	94.2	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3863931)										
ES1506306-001	STPM-QA02_170315	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	78.5	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3863932)										
ES1506306-001	STPM-QA02_170315	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	101	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3863933)										
ES1506306-001	STPM-QA02_170315	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	116	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1506306	Page	: 1 of 5
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BLADIN POINT	Date Samples Received	: 18-MAR-2015
C-O-C number	: ----	Issue Date	: 25-MAR-2015
Sampler	: CM & KP	No. of samples received	: 1
Order number	: ZB1986717	No. of samples analysed	: 1
Quote number	: SY/861/13-V2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK255A-CM) STPM-QA02_170315	17-MAR-2015	---	18-MAR-2015	----	18-MAR-2015	18-MAR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK257A-CM) STPM-QA02_170315	17-MAR-2015	---	18-MAR-2015	----	18-MAR-2015	18-MAR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK262PA-CM) STPM-QA02_170315	17-MAR-2015	18-MAR-2015	18-MAR-2015	✓	18-MAR-2015	18-MAR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK267PA-CM) STPM-QA02_170315	17-MAR-2015	18-MAR-2015	18-MAR-2015	✓	18-MAR-2015	18-MAR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK271A-CM) STPM-QA02_170315	17-MAR-2015	---	18-MAR-2015	----	18-MAR-2015	18-MAR-2015	✓
EP008: Chlorophyll a & Pheophytin a							
White Plastic Bottle - Unpreserved (EP008) STPM-QA02_170315	17-MAR-2015	----	----	----	18-MAR-2015	19-MAR-2015	✓
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) STPM-QA02_170315	17-MAR-2015	----	----	----	18-MAR-2015	18-MAR-2015	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NH ₃ H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace for Catchment Monitoring	EK258A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NO ₃ - I Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Organic Nitrogen as N (diss. TN - NH ₃ -N - NO _x -N) (FIA-UT)	EK260PA-CM	WATER	Calculated by difference from total Nitrogen and inorganic Nitrogen (Ammonia, Nitrate and Nitrite). Contributing method parameters are determined by FIA. APHA 21st ed., 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen, 4500 NO ₃ - I. NO _x and 4500 NH ₃ + -H Ammonia. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 21st ed., 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	In house: Referenced to AS4276.9: - 2007
Preparation Methods	Method	Matrix	Method Descriptions
Persulfate Digestion for UT TN and TP for FIA finish.	EK262/267-PA Prep	WATER	APHA 21st ed., 4500 P - J. This method is compliant with NEPM (2013) Schedule B(3)



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **ES1506306**

Client : **AEC ENVIRONMENTAL PTY LTD**
 Contact : **JENI YOUNG**
 Address : **11/14 Winnellie Road**
WINNELLIE NT, AUSTRALIA 0820

Laboratory : **Environmental Division Sydney**
 Contact : **Client Services**
 Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **jeni.young@greencap.com.au**
 Telephone : **+61 08 8984 4244**
 Facsimile : **+61 08 8984 3105**

E-mail : **sydney@alsglobal.com**
 Telephone : **+61-2-8784 8555**
 Facsimile : **+61-2-8784 8500**

Project : **J119486 ICHTHYS EIMP**
 Order number : **ZB1986717**
 C-O-C number : **----**
 Site : **BLADIN POINT**
 Sampler : **CM & KP**

Page : **1 of 3**
 Quote number : **ES2013ADEENV0180 (SY/861/13-V2)**

QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**

Dates

Date Samples Received : **18-MAR-2015**
 Client Requested Due Date : **25-MAR-2015**

Issue Date : **18-MAR-2015 08:50**
 Scheduled Reporting Date : **25-MAR-2015**

Delivery Details

Mode of Delivery : **Carrier**
 No. of coolers/boxes : **1 HARD**
 Security Seal : **Intact.**

Temperature : **8.0°C - Ice present**
 No. of samples received : **1**
 No. of samples analysed : **1**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EK255A-CM Ammonia as N (Ultra-trace by Flow Injection)	WATER - EK257A-CM Nitrite as N (Ultra-trace by Flow Injection Analysis) for	WATER - EK258A-CM Nitrate as N by difference between NOx and NO2	WATER - EK260PA-CM Organic Nitrogen by calculated difference between	WATER - EK262PA-CM Total Nitrogen by Persulfate Digestion (Ultra-trace by	WATER - EK267PA-CM Total Phosphorus by Persulfate Digestion	WATER - EK271A-CM Reactive Phosphorus (Ultra-trace by Flow Injection)	WATER - EP008 Chlorophyll a
ES1506306-001	[17-MAR-2015]	STPM-QA02_170315	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - MW023 Enterococci - Enumeration by Membrane Filtration
ES1506306-001	[17-MAR-2015]	STPM-QA02_170315	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Email jeni.young@greencap.com.au

CERTIFICATE OF ANALYSIS

Work Order	: ES1508449	Page	: 1 of 3
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP-WDL STP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ZB1986626		
C-O-C number	: ----	Date Samples Received	: 15-APR-2015
Sampler	: SO, KP	Issue Date	: 22-APR-2015
Site	: BLADIN POINT		
Quote number	: SY/861/13-V2	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Tony DeSouza	Senior Microbiologist	Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **Microbiological Comment:** According to ALS work instruction for membrane filtration, the suggested volume for filtration of non treated / non-drinking water starts from 10mL or 50mL if the sample is turbid. A result of <10cfu or <2cfu/100mL is reported when there is no target organism growth from a volume of 10 or 50mL respectively..
- **Microbiological Comment:** Membrane filtration (MF) results for MW023 are reported as an estimate (~) when the growth of bacteria on the filter membrane is counted <10cfu and/or >100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- MW023 is ALS's internal code and is equivalent to AS4276.9.



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

				STPM-QA02_140415	STPM-TQA02_140415	----	----	----
				[14-APR-2015]	[14-APR-2015]	----	----	----
Compound	CAS Number	LOR	Unit	ES1508449-001	ES1508449-002	----	----	----
EA025: Suspended Solids								
Suspended Solids (SS)	----	5	mg/L	----	16	----	----	----
EP008: Chlorophyll a & Pheophytin a								
Chlorophyll a	----	1	mg/m³	2	----	----	----	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	----	<2	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Escherichia coli	----	1	CFU/100mL	----	<2	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	~3	----	----	----	----
Ultra-Trace Nutrients								
Ammonia as N	7664-41-7	0.005	mg/L	<0.005	----	----	----	----
Nitrite as N	----	0.002	mg/L	<0.002	----	----	----	----
Nitrate as N	14797-55-8	0.002	mg/L	<0.002	----	----	----	----
Total Nitrogen as N	----	0.01	mg/L	0.15	----	----	----	----
Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.004	----	----	----	----
Total Phosphorus as P	----	0.005	mg/L	<0.005	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: ES1508449	Page	: 1 of 5
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP-WDL STP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BLADIN POINT		
C-O-C number	: ----	Date Samples Received	: 15-APR-2015
Sampler	: SO, KP	Issue Date	: 22-APR-2015
Order number	: ZB1986626		
Quote number	: SY/861/13-V2	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Ankit Joshi
Tony DeSouza

Position

Inorganic Chemist
Senior Microbiologist

Accreditation Category

Sydney Inorganics
Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA025: Suspended Solids (QC Lot: 3899405)									
ES1508415-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	6	18.2	No Limit
EW1501213-016	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 3901519)									
ES1508449-002	STPM-TQA02_140415	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit
ES1508572-011	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	3	4	28.6	No Limit
Ultra-Trace Nutrients (QC Lot: 3899429)									
ES1508449-001	STPM-QA02_140415	EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	<0.002	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3899430)									
ES1508449-001	STPM-QA02_140415	EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3899431)									
ES1508449-001	STPM-QA02_140415	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.004	0.004	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3899447)									
ES1508449-001	STPM-QA02_140415	EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.0	No Limit
Ultra-Trace Nutrients (QC Lot: 3899448)									
ES1508449-001	STPM-QA02_140415	EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	0.15	0.15	0.0	0% - 50%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA025: Suspended Solids (QCLot: 3899405)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	101	83	129
				----	1000 mg/L	96.8	86	110
EP008: Chlorophyll (QCLot: 3899867)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	90.0	70	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 3901519)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	78.0	74	110
Ultra-Trace Nutrients (QCLot: 3899429)								
EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	0.1 mg/L	99.1	88	130
Ultra-Trace Nutrients (QCLot: 3899430)								
EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	97.7	68	130
Ultra-Trace Nutrients (QCLot: 3899431)								
EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	102	68	120
Ultra-Trace Nutrients (QCLot: 3899447)								
EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.44 mg/L	98.2	73	129
Ultra-Trace Nutrients (QCLot: 3899448)								
EK262PA-CM: Total Nitrogen as N	----	0.05	mg/L	<0.01	1.0 mg/L	91.2	72	114

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
Ultra-Trace Nutrients (QCLot: 3899429)							
ES1508449-001	STPM-QA02_140415	EK257A-CM: Nitrite as N	----	0.1 mg/L	109	70	130
Ultra-Trace Nutrients (QCLot: 3899430)							
ES1508449-001	STPM-QA02_140415	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	80.6	70	130
Ultra-Trace Nutrients (QCLot: 3899431)							
ES1508449-001	STPM-QA02_140415						



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
Ultra-Trace Nutrients (QCLot: 3899431) - continued							
ES1508449-001	STPM-QA02_140415	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	75.3	70	130
Ultra-Trace Nutrients (QCLot: 3899447)							
ES1508449-001	STPM-QA02_140415	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	103	70	130
Ultra-Trace Nutrients (QCLot: 3899448)							
ES1508449-001	STPM-QA02_140415	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	110	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
Ultra-Trace Nutrients (QCLot: 3899429)										
ES1508449-001	STPM-QA02_140415	EK257A-CM: Nitrite as N	----	0.1 mg/L	109	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3899430)										
ES1508449-001	STPM-QA02_140415	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	80.6	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3899431)										
ES1508449-001	STPM-QA02_140415	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	75.3	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3899447)										
ES1508449-001	STPM-QA02_140415	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	103	----	70	130	----	----
Ultra-Trace Nutrients (QCLot: 3899448)										
ES1508449-001	STPM-QA02_140415	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	110	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1508449	Page	: 1 of 6
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: JENI YOUNG	Contact	: Client Services
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jeni.young@greencap.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIMP-WDL STP	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BLADIN POINT	Date Samples Received	: 15-APR-2015
C-O-C number	: ----	Issue Date	: 22-APR-2015
Sampler	: SO, KP	No. of samples received	: 2
Order number	: ZB1986626	No. of samples analysed	: 2
Quote number	: SY/861/13-V2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Suspended Solids							
Clear Plastic Bottle - Natural (EA025H) STPM-TQA02_140415	14-APR-2015	---	21-APR-2015	----	15-APR-2015	21-APR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK255A-CM) STPM-QA02_140415	14-APR-2015	---	15-APR-2015	----	15-APR-2015	15-APR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK257A-CM) STPM-QA02_140415	14-APR-2015	---	15-APR-2015	----	15-APR-2015	15-APR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK262PA-CM) STPM-QA02_140415	14-APR-2015	15-APR-2015	15-APR-2015	✓	15-APR-2015	15-APR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK267PA-CM) STPM-QA02_140415	14-APR-2015	15-APR-2015	15-APR-2015	✓	15-APR-2015	15-APR-2015	✓
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK271A-CM) STPM-QA02_140415	14-APR-2015	---	15-APR-2015	----	15-APR-2015	15-APR-2015	✓
EP008: Chlorophyll a & Pheophytin a							
White Plastic Bottle - Unpreserved (EP008) STPM-QA02_140415	14-APR-2015	----	----	----	15-APR-2015	16-APR-2015	✓
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030) STPM-TQA02_140415	14-APR-2015	----	----	----	16-APR-2015	16-APR-2015	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) STPM-TQA02_140415	14-APR-2015	----	----	----	15-APR-2015	15-APR-2015	✓
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) STPM-QA02_140415	14-APR-2015	----	----	----	15-APR-2015	15-APR-2015	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 21st ed., 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace for Catchment Monitoring	EK258A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-NO3- I Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	WATER	In house: Referenced to APHA 21st ed., 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 21st ed., 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 21st ed., 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	In house: Referenced to AS4276.9: - 2007
Preparation Methods	Method	Matrix	Method Descriptions



Preparation Methods	Method	Matrix	Method Descriptions
Persulfate Digestion for UT TN and TP for FIA finish.	EK262/267-PA Prep	WATER	APHA 21st ed., 4500 P - J. This method is compliant with NEPM (2013) Schedule B(3)



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **ES1508449**

Client : **AEC ENVIRONMENTAL PTY LTD**
 Contact : **JENI YOUNG**
 Address : **11/14 Winnellie Road**
WINNELLIE NT, AUSTRALIA 0820

Laboratory : **Environmental Division Sydney**
 Contact : **Client Services**
 Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **jeni.young@greencap.com.au**
 Telephone : **+61 08 8984 4244**
 Facsimile : **+61 08 8984 3105**

E-mail : **sydney@alsglobal.com**
 Telephone : **+61-2-8784 8555**
 Facsimile : **+61-2-8784 8500**

Project : **J119486 ICHTHYS EIMP-WDL STP**
 Order number : **ZB1986626**
 C-O-C number : **----**
 Site : **BLADIN POINT**
 Sampler : **SO, KP**

Page : **1 of 3**
 Quote number : **ES2013ADEENV0180 (SY/861/13-V2)**

QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**

Dates

Date Samples Received : **15-APR-2015**
 Client Requested Due Date : **22-APR-2015**

Issue Date : **15-APR-2015 12:03**
 Scheduled Reporting Date : **22-APR-2015**

Delivery Details

Mode of Delivery : **Carrier**
 No. of coolers/boxes : **----**
 Security Seal : **Intact.**

Temperature : **:**
 No. of samples received : **2**
 No. of samples analysed : **2**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA025H Suspended Solids (High Level)	WATER - EK255A-CM Ammonia as N (Ultra-trace by Flow Injection)	WATER - EK257A-CM Nitrite as N (Ultra-trace by Flow Injection Analysis) for	WATER - EK258A-CM Nitrate as N by difference between NOx and NO2	WATER - EK262PA-CM Total Nitrogen by Persulfate Digestion (Ultra-trace by	WATER - EK267PA-CM Total Phosphorus by Persulfate Digestion	WATER - EK271A-CM Reactive Phosphorus (Ultra-trace by Flow Injection)	WATER - EP008 Chlorophyll a
ES1508449-001	[14-APR-2015]	STPM-QA02_140415		✓	✓	✓	✓	✓	✓	✓
ES1508449-002	[14-APR-2015]	STPM-TQA02_140415	✓							

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP030 BOD	WATER - MW006 (Ec) E.coli by Membrane Filtration	WATER - MW023 Enterococci - Enumeration by Membrane Filtration
ES1508449-001	[14-APR-2015]	STPM-QA02_140415			✓
ES1508449-002	[14-APR-2015]	STPM-TQA02_140415	✓	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Purchase Order Number: ZB1986626

Sampled By: SO KP

Date Sampled: 11-1-15

Purchase Order Number: 2519866260

Sampled By:
Date Sampled:

30 KP
14-4-15

Telephone : +61-2-8784 8555

URGENT

LAB OF ORIGIN

DARWIN

ES1508449

Notes

AEC Contact:- Jeni Young

Phone:- 08 8984 4244, 0437 856 172

Please email results to the following :- jen.young@aecaust.com.au, inpex@greencap.com.au

Please send invoice to the following:- bnl.young@aeccaust.com.au, inpex@greencap.com.au, Deniz.Yavus@greencap.com.au

Relinquished by -	Company
✓	

Date/Time

Received by - Naithe & Company

Date _____

11

5-01144
JACU Environmental
1114 Wonnelle Road, Wonnelle, NT 0820
PO Box 39545, Wonnelle, NT 0820

14-4-15, 14th of 9/11 2:00 pm

Received by:

David
15/4



ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES1521719	Page	: 1 of 4
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS SALLY-ANNE ORCHARD	Contact	:
Address	: 11/14 Winnellie Road	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	WINNELLIE NT, AUSTRALIA 0820		
E-mail	: Sally-Anne.Orchard@greencap.com.au	E-mail	:
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIM: WDL SAMPLING	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ZB1986570	Date Samples Received	: 13-May-2015 08:00
C-O-C number	: ----	Date Analysis Commenced	: 13-May-2015
Sampler	: STUART CARROLL	Issue Date	: 20-May-2015 18:10
Site	: BLADIN POINT		
Quote number	: ----	No. of samples received	: 2
		No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Dian Dao		Sydney Inorganics
Sarah Axisa	Microbiologist	Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

- It has been noted that Reactive P is greater than Total P, however this difference is within the limits of experimental variation.
- Microbiological Comment: According to ALS work instruction for membrane filtration, the suggested volume for filtration of non-treated / non-drinking water starts from 50 mL if the sample is turbid. A result of <2 cfu/100 mL is reported when there is no target organism growth from a volume of 50 mL. It may be informative to record this fact.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: MARINE WATER
 (Matrix: WATER)

Client sample ID

STPM-QA02_120515

Client sampling date / time

[12-May-2015]

Compound

CAS Number

LOR

Unit

ES1521719-001

Result

Result

Result

Result

Result

EP008: Chlorophyll a & Pheophytin a

Chlorophyll a

1

mg/m³

1

MW023: Enterococci by Membrane Filtration

Enterococci

1

CFU/100mL

<1

Ultra-Trace Nutrients

Ammonia as N

7664-41-7

0.005

mg/L

<0.005

Nitrite as N

0.002

mg/L

<0.002

^ Nitrate as N

14797-55-8

0.002

mg/L

0.021

Nitrite + Nitrate as N

0.002

mg/L

0.021

^ Total Kjeldahl Nitrogen as N

0.01

mg/L

0.04

Total Nitrogen as N

0.01

mg/L

0.06

Reactive Phosphorus as P

14265-44-2

0.001

mg/L

0.007

Total Phosphorus as P

0.005

mg/L

<0.005



Analytical Results

Sub-Matrix: **WASTEWATER**
 (Matrix: **WATER**)

Client sample ID

				STPM-TQA02_120515	----	----	----	----
Client sampling date / time				[12-May-2015]	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1521719-002	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	----	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Escherichia coli	----	1	CFU/100mL	<2	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: ES1521719	Page	: 1 of 5
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS SALLY-ANNE ORCHARD	Contact	:
Address	: 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: Sally-Anne.Orchard@greencap.com.au	E-mail	:
Telephone	: +61 08 8984 4244	Telephone	: +61-2-8784 8555
Facsimile	: +61 08 8984 3105	Facsimile	: +61-2-8784 8500
Project	: J119486 ICHTHYS EIM: WDL SAMPLING	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ZB1986570	Date Samples Received	: 13-May-2015
C-O-C number	: ----	Date Analysis Commenced	: 13-May-2015
Sampler	: STUART CARROLL	Issue Date	: 20-May-2015
Site	: BLADIN POINT	No. of samples received	: 2
Quote number	: ----	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Dian Dao		Sydney Inorganics
Sarah Axisa	Microbiologist	Sydney Microbiology



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA025: Suspended Solids (QC Lot: 100758)									
ES1521681-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	2040	2180	6.48	0% - 20%
ES1521881-019	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	2770	2850	2.85	0% - 20%
EP008: Chlorophyll (QC Lot: 99627)									
ES1521719-001	STPM-QA02_120515	EP008: Chlorophyll a	----	1	mg/m³	1	<1	0.00	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 99861)									
ES1521719-002	STPM-TQA02_120515	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	9	127	No Limit
EW1510159-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	3	5	50.0	No Limit
Ultra-Trace Nutrients (QC Lot: 99296)									
ES1521679-001	Anonymous	EK259A-CM: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	<0.002	0.00	No Limit
Ultra-Trace Nutrients (QC Lot: 99297)									
ES1521679-001	Anonymous	EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	<0.002	0.00	No Limit
Ultra-Trace Nutrients (QC Lot: 99299)									
ES1521679-001	Anonymous	EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	<0.005	0.00	No Limit
Ultra-Trace Nutrients (QC Lot: 99300)									
ES1521719-001	STPM-QA02_120515	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.007	0.005	23.0	No Limit
Ultra-Trace Nutrients (QC Lot: 99527)									
ES1521679-001	Anonymous	EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	0.05	0.04	0.00	No Limit
Ultra-Trace Nutrients (QC Lot: 99528)									
ES1521679-001	Anonymous	EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	0.182	0.179	1.94	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA025: Suspended Solids (QCLot: 100758)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	98.0	83	129
				<5	1000 mg/L	88.3	86	110
EP008: Chlorophyll (QCLot: 99627)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	85.0	70	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 99861)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	94.5	74	110
Ultra-Trace Nutrients (QCLot: 99296)								
EK259A-CM: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	102	89	123
Ultra-Trace Nutrients (QCLot: 99297)								
EK257A-CM: Nitrite as N	----	0.002	mg/L	<0.002	0.1 mg/L	104	87	129
Ultra-Trace Nutrients (QCLot: 99299)								
EK255A-CM: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	109	80	122
Ultra-Trace Nutrients (QCLot: 99300)								
EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	102	78	120
Ultra-Trace Nutrients (QCLot: 99527)								
EK262PA-CM: Total Nitrogen as N	----	0.01	mg/L	<0.01	1 mg/L	99.5	78	112
Ultra-Trace Nutrients (QCLot: 99528)								
EK267PA-CM: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.44 mg/L	98.3	88	114

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
Ultra-Trace Nutrients (QCLot: 99296)							
ES1521679-001	Anonymous	EK259A-CM: Nitrite + Nitrate as N	----	0.1 mg/L	107	70	130
Ultra-Trace Nutrients (QCLot: 99297)							
ES1521679-001	Anonymous	EK257A-CM: Nitrite as N	----	0.1 mg/L	116	70	130
Ultra-Trace Nutrients (QCLot: 99299)							
ES1521679-001	Anonymous	EK255A-CM: Ammonia as N	7664-41-7	0.1 mg/L	71.7	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
Ultra-Trace Nutrients (QCLot: 99300)							
ES1521719-001	STPM-QA02_120515	EK271A-CM: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	109	70	130
Ultra-Trace Nutrients (QCLot: 99527)							
ES1521679-001	Anonymous	EK262PA-CM: Total Nitrogen as N	----	0.5 mg/L	122	70	130
Ultra-Trace Nutrients (QCLot: 99528)							
ES1521679-001	Anonymous	EK267PA-CM: Total Phosphorus as P	----	0.5 mg/L	116	70	130

QA/QC Compliance Assessment for DQO Reporting

Work Order	: ES1521719	Page	: 1 of 7
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS SALLY-ANNE ORCHARD	Telephone	: +61-2-8784 8555
Project	: J119486 ICHTHYS EIM: WDL SAMPLING	Date Samples Received	: 13-May-2015
Site	: BLADIN POINT	Issue Date	: 20-May-2015
Sampler	: STUART CARROLL	No. of samples received	: 2
Order number	: ZB1986570	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Ultra-Trace Nutrients						
Clear Plastic - Filtered (AS) - for UT Nut. STPM-QA02_120515	----	----	----	14-May-2015	13-May-2015	1
Clear Plastic Bottle - Natural (AS) STPM-QA02_120515	14-May-2015	13-May-2015	1	14-May-2015	13-May-2015	1

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Suspended Solids							
Clear Plastic Bottle - Natural (EA025H) STPM-TQA02_120515	12-May-2015	----	----	----	15-May-2015	19-May-2015	✔
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK255A-CM) STPM-QA02_120515	12-May-2015	----	----	----	14-May-2015	13-May-2015	✘
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK257A-CM) STPM-QA02_120515	12-May-2015	----	----	----	14-May-2015	13-May-2015	✘
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK259A-CM) STPM-QA02_120515	12-May-2015	----	----	----	14-May-2015	13-May-2015	✘
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK262PA-CM) STPM-QA02_120515	12-May-2015	14-May-2015	13-May-2015	✘	14-May-2015	13-May-2015	✘
Ultra-Trace Nutrients							
Clear Plastic Bottle - Natural (AS) (EK267PA-CM) STPM-QA02_120515	12-May-2015	14-May-2015	13-May-2015	✘	14-May-2015	13-May-2015	✘
Ultra-Trace Nutrients							
Clear Plastic - Filtered (AS) - for UT Nut. (EK271A-CM) STPM-QA02_120515	12-May-2015	----	----	----	14-May-2015	13-May-2015	✘

Page : 3 of 7
 Work Order : ES1521719
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J119486 ICHTHYS EIM: WDL SAMPLING



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP008: Chlorophyll							
White Plastic Bottle - Unpreserved (EP008) STPM-QA02_120515	12-May-2015	----	----	----	14-May-2015	14-May-2015	✔
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030) STPM-TQA02_120515	12-May-2015	----	----	----	14-May-2015	14-May-2015	✔
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) STPM-TQA02_120515	12-May-2015	----	----	----	13-May-2015	13-May-2015	✔
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) STPM-QA02_120515	12-May-2015	----	----	----	13-May-2015	13-May-2015	✔

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	5	20.00	9.09	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	2	13	15.38	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	1	100.00	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	5	20.00	9.52	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	5	20.00	9.52	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.00	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.00	9.52	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	5	20.00	9.52	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	5	20.00	10.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	5	20.00	4.55	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	13	7.69	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	1	100.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	2	20	10.00	9.52	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	5	20.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	5	20.00	4.55	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	13	7.69	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chlorophyll a and Pheophytin a	EP008	1	1	100.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)	EA025H	1	20	5.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	5	20.00	4.76	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	5	20.00	5.00	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	1	5	20.00	4.55	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	1	5	20.00	4.76	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	1	5	20.00	4.76	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	1	1	100.00	5.00	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	1	5	20.00	4.76	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	1	5	20.00	5.00	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N - Ultra-Trace for Catchment Monitoring	EK255A-CM	WATER	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Ultra-Trace for Catchment Monitoring	EK257A-CM	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace for Catchment Monitoring	EK258A-CM	WATER	In house: Referenced to APHA 4500-NO3- I Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx) - Ultra-Trace for Catchment M	EK259A-CM	WATER	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.
TKN (Total N - NOx-N). (FIA - UT) for Catchment Monitoring	EK261PA-CM	WATER	In house: Referenced to APHA 4500-P J. & 4500-NO3- I . Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (Persulfate digestion)-Ultra-Trace - CM	EK262PA-CM	WATER	In house: Referenced to APHA 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus(Persulfate Digestion) - Ultra-Trace for CM	EK267PA-CM	WATER	In house: Referenced to APHA 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace for Catchment M	EK271A-CM	WATER	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Chlorophyll a and Pheophytin a	EP008	WATER	In house: Referenced to APHA 10200 H. The pigments are extracted into aqueous acetone. The optical density of the extract before and after acidification at both 664 nm and 665 nm is determined spectrometrically.
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (2013) Schedule B(3)

Page : 7 of 7
Work Order : ES1521719
Client : AEC ENVIRONMENTAL PTY LTD
Project : J119486 ICHTHYS EIM: WDL SAMPLING



Analytical Methods	Method	Matrix	Method Descriptions
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	In house: Referenced to AS4276.9: - 2007

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1521719

Client : AEC ENVIRONMENTAL PTY LTD Contact : MS SALLY-ANNE ORCHARD Address : 11/14 Winnellie Road WINNELLIE NT, AUSTRALIA 0820 E-mail : Sally-Anne.Orchard@greencap.com.au Telephone : +61 08 8984 4244 Facsimile : +61 08 8984 3105 Project : J119486 ICHTHYS EIM: WDL SAMPLING Order number : ZB1986570 C-O-C number : ---- Site : BLADIN POINT Sampler : STUART CARROLL	Laboratory : Environmental Division Sydney Contact : Address : 277-289 Woodpark Road Smithfield NSW Australia 2164 E-mail : Telephone : +61-2-8784 8555 Facsimile : +61-2-8784 8500 Page : 1 of 2 Quote number : ES2013ADEENV0180 (SY/861/13-V2) QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement
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Dates

Date Samples Received : 13-May-2015	Issue Date : 13-May-2015
Client Requested Due Date : 20-May-2015	Scheduled Reporting Date : 20-May-2015

Delivery Details

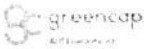
Mode of Delivery : Undefined	Security Seal : Intact.
No. of coolers/boxes : ----	Temperature : 22.8'C - Ice present
Receipt Detail :	No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

[illegible]

LADIN POINT
/DL
.LS



AEC Environmental Pty Ltd

Sample Chain of Custody and Testing Request

Samples Submitted to ALS as per quote SY-861-13-V2

Client: AEC Environmental

Project: Ichthys EIMP: WDL Sampling

Location: Bladin Point

Job Number: J119486

Sheet Number: 1 of 1

Purchase Order Number: 281986570

Sampled By: Sarah Joyce + Stu Carroll

Date Sampled: 10-05-15

Sample Identification	Water Type	Date Time	Sampling Containers						Testing Requirements									
			Teal 60mL	Green Label Unpreserved Plastic 500mL	Grey Label Micro Clear Plastic 500mL	Light Green 60mL	Solid Plastic 1L	Amber 100mL	Nutrients - (Ultra Trace): Total Nitrogen, Ammonia, Nitrate, Nitrite, Total Phosphorous as P and Filterable Reactive Phosphorous as P	TSS	Chlorophyll A	Enterococci	BOD	E. Coli	Endocrine Disrupting Compounds			
STPM-QA02_120515	Marine Water		X	X	X	X	X		X		X	X						
STPM-TQA02_120515	Waste Discharge			X	X					X			X	X				

LAB OF ORIGIN:
DARWIN

ES1521719

Notes:
AEC Contact :- Sally-Anne Orchard
Phone:- 08 8984 4244, 0423 787 608
Please email results to the following :- sally-anne.orchard@aecaust.com.au, inpex@greencap.com.au
Please send invoice to the following:- sally-anne.orchard@aecaust.com.au, inpex@greencap.com.au, Deniz Yavus@greencap.com.au

Chain of Custody			Received by - Name & Company		Date	Time
Relinquished by -	Company	Date/Time				
S. Joyce	AEC Environmental 11/14 Winnellie Road, Winnellie, NT 0820 PO Box 39546, Winnellie, NT 0820	10.05.15	g.t 12/5/15 1:30pm			