WestConnex New M5

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Surface Water Quality and Monitoring Program: 2016 – 2017 Annual Report

Project Name: WestConnex New M5

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Document Approval

[redacted]

Details of Revision Amendments

Amendments

Any revisions or amendments must be approved by the Project Director before being distributed or implemented.

Revision Details

Revision	Details
00	Draft for M5 AT and RMS review
01	Updated to address M5 AT and RMS comments
02	Finalised for submission to DP&E, DPI Water and relevant councils

Contents

1. Introduction

1.1 Purpose and Application

Condition B28 of the Infrastructure Approval (SSI 6788) requires the preparation of a Water Quality Plan and Monitoring Program (WQPMP: M5N-ES-PLN-PWD-0027). In accordance with the WQP&MP, water quality monitoring is undertaken to monitor the effectiveness of mitigation measures as they relate to water quality for the Westconnex New M5 Project. The purpose of this Report is to present the results of surface water quality monitoring undertaken during the first year of the construction phase (August 2016-July 2017). This report presents the data and analysis as required by the approved WQP&MP.

The results of groundwater monitoring undertaken during this period is presented in a separate report (M5N-GOL-TER-100-200-GT-1517). Reporting requirements (refer Table 1: Reporting Requirements (Extract from M5N-ES-PLN-PWD-0027)Table 1) are described in the approved WQP&MP. In accordance with these requirements, this report will be distributed to the Secretary, DPI Water and the relevant councils.

Table 1: Reporting Requirements (Extract from M5N-ES-PLN-PWD-0027)

Project Phase	Report Timing	Reporting Requirement	Compliance
During Construction	Annual	Raw surface and groundwater data to be collected and tabulated. Progressive trends to be identified. Trigger exceedances to be highlighted.	Raw surface water data is presented in Appendix B and C and progressive trends have been identified and discussed in Section 5. Groundwater data is provided in a separate report (M5N-GOL-TER-100-200-GT-1517)
		A brief report on the validation of groundwater modelling (once only, in the initial reporting period).	The Hydrological Design Report will be provided to DPE & DPI Water once 24 months of groundwater data is available and the groundwater model has been updated (in accordance with Condition B27).
		Report on water quality results obtained during construction. Trigger values to be used and triggers and management responses to be documented. Determine the need for adjustments to the Water Quality Monitoring Program, if necessary.	Section 5 and 6 Section 6
		Detail and justification for any alterations to monitoring locations or frequencies.	Section 6
		Document rainfall data	Section 2

1.2 Scope

This Report presents and interprets water quality data collected during the first year of the construction phase of the project (August 2016 – July 2017: the monitoring year).

The scope of monitoring works has been undertaken in accordance with WQP&MP and includes:

- Water quality monitoring at licenced discharge points;
- Monthly surface water monitoring at the project monitoring sites including control and impact sites;
- Quarterly wet weather surface water monitoring during events when more than 10 mm of rainfall is recorded in a 24 hour period (where safe to do so); and

- Visual surveillance for potential streambed fracturing.

The scope of the WQP&MP does not apply to the Alexandria Landfill leachate collection and treatment systems, permanent drainage, stormwater quality and flooding design.

The results of monthly groundwater sampling at monitoring bores installed in ground water dependant ecosystems, Hawkesbury Sandstone, Ashfield Shale, Regentville Siltstone and alluvium are provided in the Groundwater Monitoring Progress Report (M5N-GOL-TER-100-200-GT-1517).

All supporting information, including methods for data collection and analysis are provided in the WQP&MP and the Surface Water Quality Baseline Report (M5N-ES-RPT-PWD-0005)

1.3 Construction progress during monitoring period

Between August 2016 and July 2017, the Westconnex New M5 progressed from site establishment into civil construction and mainline tunnel excavation. Table 2 provides a brief overview of the construction activities which have been achieved in the reporting period in each construction area.

Table 2 Construction progress for 2016 - 2017

Construction Compound	Construction Milestones (August 2016-July 2017)
C1 – 3 **Western Surface Works** **Kingsgrove Tunnels**	• Pile break back • Concrete works • Completion of shaft excavation and commencement of adit excavation using roadheaders • Off-site spoil removal • Completion of acoustic sheds • Commissioning and operation of construction water treatment plant • Installation of drainage and sewer works • Removal of existing M5 noise mounds • Vegetation clearing • Piling • Kindilan underpass-bridge works.
C4 - 6 **Bexley Tunnels**	• Acoustic shed construction and cladding completed • Tunnelling using roadheaders from C4 shaft • Excavation of C5 shaft • Spoil removal off-site • Concrete works • Commissioning and operation of construction water treatment plant.
C7 **Arncliffe Tunnels**	• Testing and treatment of acid sulfate soils • Commissioning and operation of construction water treatment plant • Tunnelling in temporary shaft with roadheaders • Completion of jet-grouting in temporary decline • Commencement of tunnelling in temporary decline with roadheaders • Ventilation shaft D-wall excavation ongoing • Spoil testing and classification • Spoil removal off-site • Frog habitat enhancement pond construction on Kogarah Golf Course • Surface-based grouting adjacent to Cooks River

Construction Compound	Construction Milestones (August 2016-July 2017)
C8 - 11 **St Peters Interchange** **St Peters Tunnels**	• Demolition • Rapid impact compaction • Piling • Application of soil binder across stockpiles and access routes • Commissioning and operation of leachate treatment plant • Concrete works • Excavation and piling for cut and cover structure • Hazardous materials removal • Landfill earthworks, installation of geosynthetic clay liner, waste excavation and placement • Odour monitoring and management activities • Operation of crushing and screening plant • Tunnelling and spoil removal
St Peters Local Roads	• Hazmat investigations and removal where required • Service investigations and relocations • Archival recording • Demolition • Geotechnical and pavement investigations • Materials classification • Vegetation clearing • Temporary barrier relocations • Stripping of general solid waste and top soil layers along Campbell Street and Euston Road • Excavation for cut and cover structure on Campbell Street • Haul road establishment • Piling pad construction for structures • Temporary noise barrier installations • Site establishment of ancillary facilities at Camdenville Park and Albert Street.

2. Rainfall Data

Rainfall data has been collected from weather stations identified in the Construction Soil and Water Quality Sub-Plan. Compounds C1-C6 utilise the Canterbury Racecourse AWS weather station, while Compounds C7 – C11 (including St Peters Local Roads) utilise the Sydney Airport AMO weather station. The monthly totals for rainfall are detailed in Table 3.

Table 3 Monthly rainfall data 2016 - 2017

Monthly rainfall totals (mm) for reporting period		
Month	**Sydney Airport AMO #66037**	**Canterbury Racecourse AWS #066194**
Aug-16	131.4 (76.8)	139.4 (64.8)
Sep-16	67.8 (59.7)	60.2 (44.5)
Oct-16	34.2 (69.7)	20.4 (58.7)
Nov-16	26.8 (80.4	26.8 (76.9)
Dec-16	58.4 (73.6)	68.0 (64.6)
Jan-17	48.4 (94.6)	50.0 (80.8)
Feb-17	158.0 (111.4)	165.0 (103.1)
Mar-17	229.2 (117.0)	213.6 (74.6)
Apr-17	94.4 (108.8)	74.4 (109.3)
May-17	32.4 (96.9)	17.2 (78.1)
Jun-17	113.6 (124.2)	108.8 (108.2)
Jul-17	18.0 (69.6)	6.6 (56.9)
Total	1012.6 (1083.4)	950.4 (970.9)

Long term averages from the Bureau of Meteorology's climate statistics are provided in brackets.

3. Water discharged from construction compounds

3.1 Licenced Discharge Points

The Project has a number of licenced discharge points (including sediment basins and construction water treatment plants) with the EPA in accordance with conditions of EPLs 4627 and 20772 (Table 4). Figure 1 displays the location of the licenced discharge points on a map.

Table 4 Licenced discharge points

Sediment Basin/ Water Treatment Plant Number	Easting	Northing
St Peters Interchange		
Sediment Basin SPI-1	332104	6245600
Water Treatment Plant SPI-2	331312	6245727
Arncliffe Construction Compound		
Water Treatment Plant ARN-1	329702	6243478
Water Treatment Plant ARN-2	329565	6243133
Bexley Construction Compounds		
Water Treatment Plant BED-1	325355	6243481
Kingsgrove Tunnel Sites (Kingsgrove)		
Water Treatment Plant KGD-1	324126	6242846
Western Surface Works (Kingsgrove)		
Sediment Basin WSW-1	323517	6242921
Water Treatment Plant WSW-2	323794	6242866

3.2 Discharge Criteria

Water quality is tested at construction sediment basins prior to controlled discharges to confirm that water for discharge conforms with discharge criteria (refer to Table 5). Discharge of sediment basins occurs via a permit process as described in the approved Construction Soil and Water Quality Sub Plan and in accordance with the Environmental Protection Licences (EPL 20772 and 4627). The Project established a TSS:NTU correlation on April 22nd 2017. When a safety factor was included, the correlation was calculated at one to one.

Table 5 EPL discharge criteria for sediment basins

Parameter	Discharge criteria
Oil and grease	Not Visible
pH	6.5-8.5
Total Suspended Solids (TSS)	<50mg/l

In line with the WQP&MP, Table 6 and Table 7 list the discharge criteria and targets for the WTP's located across the Project.

Table 6 EPL discharge criteria for Water Treatment Plants (daily during discharge)

Parameter	Discharge criteria
pH*	6.5-8.5
Total Suspended Solids (TSS)*	<50mg/l

Table 7 Discharge targets for Water Treatment Plants (monitored quarterly)

Parameter	Measurement & Assessment		Discharge targets	
	Percentile Concentration Limit	Sample method & frequency	Arncliffe & Canal Road site compounds (Estuary receiving environment)	Kingsgrove North, Commercial Road, & Bexley site compounds (Freshwater receiving environment)
Copper	80	Quarterly grab sample	0.008(mg/l)	0.012(mg/l)
Iron	80	Quarterly grab sample	0.3(mg/l)	0.3(mg/l)
Nickel	80	Quarterly grab sample	0.560(mg/l)	0.017(mg/l)
Zinc	80	Quarterly grab sample	0.043(mg/l)	0.059(mg/l)
Manganese	80	Quarterly grab sample	2.5(mg/l)	3.6(mg/l)
Total Nitrogen	80	Quarterly grab sample	1.7(mg/l)	2.9(mg/l)
Total phosphorus	80	Quarterly grab sample	0.2(mg/l)	0.12(mg/l)
Dissolved oxygen	80	Quarterly field sample	39.8% (lower limit)	60% (lower limit)

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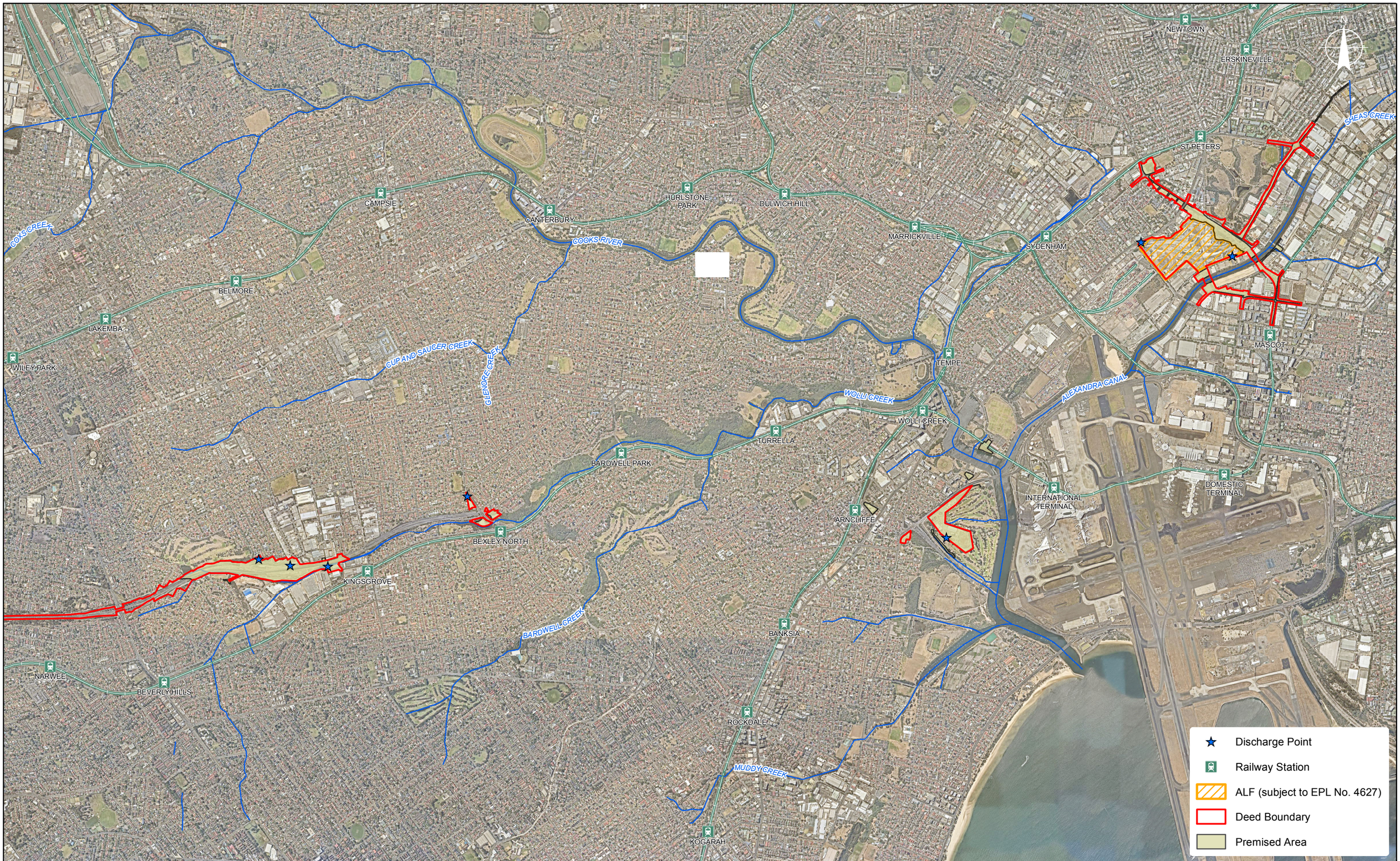

Rev	Description	Date	Approved
M	ALF Boundary and Premise Area modification	16/03/2017	
L	Premised Area boundary modification	27/10/2017	
K	Premised Area boundary modification	12/09/2017	
J	ALF and Premised Area boundary modification	06/06/2017	
I	Modified Premise Area Boundary	31/05/2017	
H	Modified premised area boundary and added discharge point	17/05/2017	
G	Premised Area boundary modification	06/04/2017	

Scales

0 1,000 m

1:30000

Client

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Status

For Information Only - NOT FOR CONSTRUCTION

Original Size	A3	Drawn	PB
Coordinate System	MGA ZONE 56	Requested by	CS
Height Datum	AHD	Date Printed	14/03/2018
Filename:	Premise_Overview_revM.mxd		

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Premise Map Overview

DOCUMENT NUMBER

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4. Surface Water Quality Monitoring

4.1 Locations of monitoring points

Surface water quality monitoring was undertaken at eleven sites as described in Table 8 and shown in Figure 2. The monitoring locations incorporate upstream (control) sites and downstream (impact) sites. This monitoring allows for the assessment of trends in water quality, including natural variations and any potential impacts during construction. The surface water quality monitoring locations are generally consistent with the ten locations identified in the New M5 Environmental Impact Statement (EIS) Water Quality Monitoring Program (Appendix N Surface Water Technical Report). Minor amendments to some monitoring locations were made to provide suitable access for personnel and to ensure appropriate coverage in waterways that receive discharges.

Table 8 Surface water quality monitoring locations

Site ID	Location relative to site compounds	Watercourse name	Sampling Address	Eastings	Northings	Freshwater or estuarine / marine
CDS-SW-01	Upstream	Sheas Creek	Access via Euston Road, Alexandria	332938	6246524	Freshwater
CDS-SW-02	Downstream	Alexandra Canal	Access via Burrows Road or Coward Street via cycleway, Alexandria	331540	6244935	Estuarine / marine
CDS-SW-03	Downstream	Eastern Channel	Sydenham Road, Marrickville.	330581	6245909	Freshwater
CDS-SW-04	Upstream	Eve St Wetlands	Eve St Cycleway, near the entrance to the Barton Park Driving Range	329292	6242429	Estuarine / marine
CDS-SW-05	Upstream	Cooks River	Richardsons Crescent Bridge	329491	6244746	Estuarine / marine
CDS-SW-06	Downstream	Cooks River	Rockwell Avenue	329895	6243716	Estuarine / marine
CDS-SW-07	Downstream	Cooks River	Eve Street near Cooks River M5 infrastructure overpass	329955	6242591	Estuarine / marine
CDS-SW-08	Upstream	Wolli Creek	Footbridge at portion of Beverly Grove Park located south of the M5, access via Tallawalla Street	322993	6242760	Freshwater
CDS-SW-09	Upstream	Wolli Creek	Footbridge at the end of Kooreela Street	324663	6243087	Freshwater
CDS-SW-10	Upstream	Wolli Creek	Bexley Rd bridge, near Bexley North Station	325577	6243239	Freshwater
CDS-SW-11	Downstream	Wolli Creek	Upstream of Henderson St footbridge, near 5-9 Henderson St	327910	6244087	Freshwater
CDS-SW-12	Discharge point	Cooks River	At Arncliffe WTP discharge location,	329988	6243612	Estuarine / Marine

Site ID	Location relative to site compounds	Watercourse name	Sampling Address	Eastings	Northings	Freshwater or estuarine / marine
			upstream of Giovanni Brunetti bridge			

4.2 Trigger values for surface water quality

The surface water quality targets adopted for the Project are listed in Table 9. For further information on these targets, refer to the Surface Water Quality – Baseline Monitoring Report (M5N-ES-RPT-PWD-0005).

Table 9 Trigger values for surface water quality

	Freshwater targets		Estuary targets	
Parameter	**Trigger**	**Adopted trigger**	**Trigger**	**Adopted trigger**
Suspended Solids (TSS: mg/l)	-	**50**	-	**50**
Arsenic (mg/l)	0.360	**0.360**	-	**0.004**
Cadmium (mg/l)	0.0008	**0.0008**	0.036	**0.036**
Chromium (mg/l)	0.040	**0.040**	0.085	**0.085**
Copper (mg/l)	0.0025	**0.012**	0.008	**0.008**
Lead (mg/l)	0.0094	**0.0094**	0.012	**0.012**
Manganese (mg/l)	3.600	**3.600**	-	**2.5**
Nickel (mg/l)	0.017	**0.017**	0.56	**0.56**
Zinc (mg/l)	0.031	**0.059**	0.043	**0.043**
Mercury (mg/l)	0.0054	**0.0054**	0.0014	**0.0014**
Ferrous Iron (mg/l)	-	**0.3**	-	**0.3**
Ammonia (mg/l)	2.3	**2.3**	1.7	**1.7**
Nitrate as N (mg/l)	17	**17**	-	**0.38**
Total Nitrogen as N (mg/l)	1.90	**2.9**	1.04	**1.7**
Total Phosphorus as P (mg/l)	0.12	**0.12**	0.2	**0.2**
pH	6.5 – 7.7	**6.5 – 8.5**	7.0-8.5	**6.5-8.5**
Dissolved Oxygen (% Sat)	60	**60**	39.80	**39.80**
Conductivity (µS/cm)	310-1660	**310-1660**	17540-54200	**54200**
Turbidity (NTU)	29	**29**	15	**15**

Legend

- Surface Water Sample Locations
- Streambed Fracture Monitoring Locations
- Stations
- Watercourse
- Water Body
- Wetlands
- Regional Park
- Compound

Westconnex New M5 Footprint

- Above Ground Construction Footprint
- New M5 Tunnel

LDS-SW-01
LDS-SW-02
LDS-SW-03
LDS-SW-04
LDS-SW-05
LDS-SW-06
LDS-SW-07
LDS-SW-08
LDS-SW-09
LDS-SW-10
LDS-SW-11
LDS-SF-1
LDS-SF-2

Rev	Description	Date	Approved
2	Draft for Comment	29/11/2016	
1	Draft for Comment	13/10/2016	
0	Draft for Comment	18/11/2015	PF

Scale

N

0 500 1,000 1,500 m

Imagery © Nearmap 2016

Client

WestConnex

Status: For Information Only - NOT FOR CONSTRUCTION

Original Size	A3	Drawn	PB
Coordinate System	MGA ZONE 56	Requested by	JM
Height Datum	AHD	Date Printed	29-Nov-16
Filename:	Surface_Water_Sample.mxd		

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Surfacewater Monitoring Locations

DOCUMENT NUMBER

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5. Results and discussion

5.1 Discharge water quality data

Water quality data from licenced sediment basins and Water Treatment Plants (as identified in Table 4) is presented in Appendix A. The data includes results for each day of discharge for pH, Turbidity and/or Total Suspended Solids, and oil and grease (collected in accordance with EPLs 20772 and 4627). Appendix A also presents the broader set of parameters collected quarterly along with the adopted discharge targets.

5.2 Surface water quality data

Raw surface water monitoring data (from monitoring locations identified in Table 8) is presented in Appendix B. Highlighted cells indicate results that are above the adopted trigger value.

5.3 Streambed fracture monitoring

Streambed fracture monitoring at Bardwell Creek and the Cooks River commenced in April 2017. Monitoring included the establishment of photo-points upstream and downstream of locations identified in the Water Quality Plan and Monitoring Program. No tunnel excavation was undertaken within 200 metres of Bardwell Creek or the Cooks River during the monitoring period. Photographs were taken monthly at the photo-points during the monitoring period to establish typical conditions prior to tunnel excavation in this area.

5.4 Summary and analysis of Surface water quality monitoring results

The sections below summarise surface water quality monitoring results obtained for each month. Throughout the period at sites located in Alexandra Canal (LDS-SW-02) and Cooks River (LDS-SW-05, -06, -12), laboratory methods for some analytes were altered due to high Total Dissolved Solids (TDS). These methods resulted in the limit of reporting (LOR) of analytes such as arsenic, copper and zinc being raised higher than the corresponding trigger values. Each instance of this occurrence is noted below. CDS-JV will consult with the lab to assess options for future sampling and reporting of these analytes in locations with high salinity. Discharge results are reported monthly under the EPL 20772 licence and can be found on the project website www.westconnex.com.au/NewM5Environment.

a. August 2016

There were no discharges from CDSJV worksites across the project during this month.

Within the Alexandra Canal and Eastern Channel catchments, nitrogen was recorded above the trigger value upstream of the Project worksite at CDS-SW-01. No arsenic or copper was detected at CDS-SW-02, however, the LOR for these analytes was raised by the laboratory during analysis due to high TDS. For the purposes of this report, values are reported as the LOR of the laboratory. Elevated levels of lead, total nitrogen and ammonia were identified at CDS-SW-03. As there were no discharges from the Project into this catchment during the reporting period, these elevated levels are not attributed to construction works.

LORs for some metals (arsenic, copper, zinc) exceeded trigger values both upstream of the Project worksite at CDS-SW-06 and downstream at CDS-SW-07. These LORs were raised by the laboratory due to high TDS (refer to Certificate of Analysis in Appendix C).As above, none of these metals were actually detected in grab samples, however values are reported as the LOR for the purposes of this report. Results for a range of metals and nutrients at CDS-SW-04 exceeded trigger values in August 2016. It is noted that this sampling location is located in a tributary to Muddy Creek and as no New M5 construction work occurred within this catchment during this month, is not attributed to construction impacts. It is noted that this site captures runoff from the industrial and residential areas surrounding West Botany Street and also market gardens and constructed wetlands.

Within the Wolli Creek catchment, construction activities by others (ie not the New M5 Project) were being undertaken upstream of the New M5 upstream monitoring location, CDS-SW-08. Exceedances at this location in pH, conductivity and total phosphorus are therefore not related to Project works. Exceedances of trigger values for pH at CDS-SW-09 and CDS-SW-10 were detected and were similar

to the upstream pH values. Some trigger values for cadmium and some nutrients were detected at CDS-SW-11, but were not attributed to the New M5 Project as no discharges had taken place from New M5 project sites (Western Surface Works, Kingsgrove Tunnelling and Bexley Tunnelling compounds) at the time of monitoring.

b. September 2016

During the month of September, a temporary water treatment plant became operational at Arncliffe (ARN-1) and was processing water associated with the installation of boreholes used for the surface grouting program. All discharges from site were monitored and were compliant with the EPL discharge criteria as demonstrated in the EPL monthly reports. Inadvertently, no surface water quality monitoring was undertaken during this month.

c. October 2016

Within the Alexandra Canal and Eastern Channel catchments, results indicated that some physical, nutrient and metal parameters were above the adopted criteria upstream of the Project worksite at CDS-SW-01. Arsenic, copper and zinc were not detected at CDS-SW-02, however alternate laboratory methods were used for these analytes due to high TDS which raised LORs.. Elevated levels of copper, total nitrogen and zinc were identified at CDS-SW-03, as well as high levels of turbidity. No Project related activities were undertaken upstream of this monitoring point, however. The only metal detected at CDS-SW-05 was zinc, which was above the trigger value. All LORs were raised by the laboratory for dissolved metal analytes at CDS-SW-04 and CDS-SW-05 due to high TDS. There were no discharges from the St Peters compounds during the month of October.

Within the lower Cooks River catchment, no trigger value exceedances were identified at CDS-SW-06 or CDS-SW-07. All discharges from ARN-1 were compliant for the month of October as shown in the EPL monthly reports.

Within the Wolli Creek catchment, no criteria were exceeded at CDS-SW-09. At CDS-SW-10, pH and copper exceedances are noted, but are not considered to be linked to Project works as no discharge occurred from any worksites upstream of this location (ie Western Surface Works and Kingsgrove Tunnelling compounds). No samples were able to be taken at CDS-SW-08 due to low flow. At CDS-SW-11, an exceedance of cadmium was recorded, however no discharges had occurred from the Bexley compounds.

d. November 2016

There were no discharges from the St Peters compounds during the month of November. Within the Alexandra Canal and Eastern Channel catchments, copper, nickel, zinc and total nitrogen were identified above trigger levels upstream of the CDSJV worksite at CDS-SW-01. Arsenic was not detected at CDS-SW-02 however the limit of detection was raised above the trigger value at this location. Zinc was detected above trigger levels at CDS-SW-02 and CDS-SW-03, indicating a catchment wide elevation and therefore not related to Project activities. Elevated levels (above the criteria) of copper, total nitrogen and ammonia were identified at CDS-SW-03, however no CDSJV related activities were undertaken upstream of this monitoring point and the levels are consistent with catchment wide levels on this sampling occasion. Arsenic was not detected at CDS-SW-05, but again was subject to a raised limit of detection by the laboratory. Zinc was also detected at this location above the trigger value, but with similar elevated levels elsewhere, it was concluded that it was unrelated to the Project.

During the month of November, a discharge from the temporary Water Treatment Plant at Arncliffe (licenced discharge point ARN-1) was recorded as non-compliant (refer to EPL monthly reports). This was subject to investigation and review by the EPA. ARN-1 was immediately decommissioned and ARN-2 was commissioned on the 8/11/16. Following the incident, an additional surface water quality monitoring point (CDS-SW-12) at the discharge point to Cooks River was added to the monitoring program. During subsequent surface water quality monitoring within the Cooks River catchment on the 18/11/16, levels of manganese were above trigger values at CDS-SW-12. No other trigger values were exceeded, however, samples CDS-SW-06 and CDS-SW-07 had elevated TDS, which required the limits of detection to be raised above the trigger values.

Within the Wolli Creek catchment, one parameter (total phosphorus) was recorded above the trigger value at CDS-SW-08, upstream of CDSJV activities. Exceedances at CDS-SW-10 and CDS-SW-11 in

pH, conductivity, cadmium, and total nitrogen were recorded but are not considered to be related to the New M5 Project as levels were similar to previous months and no discharges had taken place from the Project's Western Surface Works, Kingsgrove Tunnelling and Bexley Tunnelling compounds at the time of monitoring.

e. December 2016

There were no discharges from the St Peters compound during the month of December. Within the Alexandra Canal and Eastern Channel catchments, several nutrient and metal parameters were observed above trigger levels upstream of the CDSJV worksite at CDS-SW-01. This included exceedances for copper and zinc which were above the trigger values at CDS-SW-02, CDS-SW-03 and CDS-SW-05. In addition, turbidity at CDS-SW-02 was 20% greater than the upstream value, but an investigation could not attribute this exceedance to Project activities.

Within the lower Cooks River catchment, several metal parameters exceeded trigger values upstream of the Project worksite at CDS-SW-06 including iron levels above the three month rolling average. Arsenic, zinc and copper were all below the limit of detection, however, the laboratory raised the limits of detection above the trigger values due to high TDS. All discharges from the Water Treatment Plant (ARN-2), complied with the EPL requirements.

Post rainfall monitoring was undertaken within the Wolli Creek catchment which identified conductivity, ferrous iron and total phosphorus at levels greater than the trigger values at the upstream site CDS-SW-08. Ferrous Iron and Total Phosphorus were also above trigger values at CDS-SW-10 and CDS-SW-11. Cadmium was identified above trigger values at the sites CDS-SW-09 and CDS-SW-10. CDS-SW-09 also showed elevated pH in both field and laboratory results. As no discharges had taken place however from the Project's Western Surface Works and the Kingsgrove Tunnelling compounds at the time of monitoring, the elevated levels were likely associated with stormwater runoff from nearby roads and M5 motorway. Cadmium levels were also elevated at CDS-SW-10 but no link could be established with the elevated levels and Project activities. It should also be noted that Wolli Creek samples CDS-SW-10 and -11 were not able to be field filtered and this may have impacted on the results obtained for Ferrous Iron and other metals.. The tunnelling water treatment plant at the Bexley North Compound (BED-1) was commissioned in the month of December. All discharges were compliant with the EPL criteria.

f. January 2017

There was no discharge from the St Peters compounds during the month of January. Surface water quality monitoring was performed within the Alexandra Canal and Eastern Channel catchments as a rainfall event commenced. Several parameters exceeded trigger values at more than one location. Physical parameters measured in the field including pH, Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP) and turbidity exceeded trigger levels both upstream and downstream of Project sites, ie monitoring locations CDS-SW-01, CDS-SW-02, CDS-SW-03 and CDS-SW-05. While, manganese, zinc, total nitrogen and total phosphorus at CDS-SW-02 exceeded the criteria, there was no clear link to current Project activities and these exceedances are not likely to be related to the New M5 project. Zinc and total phosphorus were also elevated at CDS-SW-03. Arsenic, manganese and copper exceeded criteria at CDS-SW-05. Zinc was not detected at CDS-SW-05 however the limit of detection was raised for this sample due to high TDS. Other exceedances did not appear to be related to Project activities and were noted at all monitoring locations, including upstream sites.

Within the lower Cooks River catchment, elevated iron levels were identified upstream of the CDSJV worksite at CDS-SW-06. While arsenic, zinc and copper were not detected at CDS-SW-06, CDS-SW-07 or CDS-SW-12, the limit of detection was raised for these samples due to high TDS. All discharges from the water treatment plant (ARN-2) were compliant with the EPL criteria.

Within the Wolli Creek catchment, low flows were observed and no surface water quality monitoring was undertaken at CDS-SW-08 and CDS-SW-09 as insufficient water was available to sample. No exceedances were recorded at CDS-SW-10. Slightly elevated levels of both iron and zinc were recorded at CDS-SW-11, but could not be linked to the Project (there were no project works in the area between CDS-SW-10 (downstream of Bexley) and CDS-SW-11 (at Turrella). All discharges from the construction water treatment plant at Bexley (BED-1) were compliant with EPL criteria.

g. February 2017

Surface water quality monitoring was conducted following a rainfall event in February 2017 (refer Table 3). Within the Alexandra Canal and Eastern Channel catchments, elevated levels of nutrients (phosphorus and nitrogen) were detected upstream of the Project worksite at CDS-SW-01 and at the downstream sites (CDS-SW-03 and CDS-SW-05). The ORP levels were elevated at each site and manganese, zinc and nitrate were elevated at CDS-SW-02. High total suspended solids and low conductivity levels were identified at CDS-SW-03. All erosion and sediment controls were checked and complied with site plans and no discharges were taking place at the time of the monitoring. All discharges from the sediment basin (SPI-1) were compliant during the month of February and the water treatment plant had not yet been commissioned.

Within the lower Cooks River catchment, no water quality parameters were detected above the trigger values at CDS-SW-06, CDS-SW-07 or CDS-SW-12. All discharges from the water treatment plant (ARN-2) were compliant for the month of February. No surface water quality monitoring was undertaken at CDS-SW-04 due to low flow and access difficulties getting into the concrete channel known as the tributary of muddy creek. This area is low flow (concrete channel) and no works were undertaken within that catchment during February 2017.

The water treatment plant at Kingsgrove (KGD-1) was commissioned during the month of February. All discharges were compliant with EPL requirements. Trigger values were exceeded for a range of physical parameters at all surface water monitoring locations, both upstream and downstream of project works. This includes high pH level at CDS-SW-08 and CDS-SW-09, elevated turbidity, total suspended solids and ORP, with low conductivity at all monitoring locations. Reactive phosphorus was also above the three month rolling average at each monitoring location. Erosion and sediment controls were checked and found to be compliant and the Kingsgrove Water Treatment Plant (KGD-1) was not discharging at the time of monitoring. The Bexley water treatment plant (BED-1) was discharging at the time of monitoring and was compliant with requirements. The low conductivity levels and variations in the nutrients and physical parameters were attributed to the rainfall event and not to Project activities.

h. March 2017

March 2017 was the wettest month of the monitoring period and surface water quality monitoring was conducted during rainfall during this month. Within the Alexandra Canal and Eastern Channel catchments, several physical parameters were above trigger values at multiple sites. Turbidity and total suspended solids were elevated at CDS-SW-01 and CDS-SW-03 (both upstream and downstream of worksites), while ORP was elevated above the three month rolling average at all sites. Conductivity was lower than usual in the freshwater environment and reactive phosphorus was above the three month rolling average at each monitoring location. Elevated iron and zinc levels were also detected including at the upstream sites and no triggered values were linked back to Project works. At the time of monitoring, neither the sediment basin (SPI-1) or water treatment plant were discharging. All erosion and sediment controls were checked following monitoring and were compliant with site plans. All discharges from the sediment basin (SPI-1) were compliant during the month of March.

Within the Cooks River catchment, elevated total suspended solids were detected downstream at CDS-SW-12. Field notes recorded at the time of monitoring note the turbidity was related to high wind levels resulting in small waves breaking onto an exposed bank at the monitoring location. Other trigger levels exceeded during this monitoring campaign were related to elevations of the limit of detection for some metals (included arsenic, zinc and copper at CDS-SW-06, CDS-SW-07 and CDS-SW-12) due to turbidity in the matrix at the laboratory, however these metals were not detected in the sample. All discharges from the water treatment plant (ARN-2) were compliant during the month of February.

In the Wolli Creek catchment, elevated levels of nitrogen, phosphorus and iron were recorded upstream and downstream of Project worksites. As these exceedances were catchment wide, they were determined to be not related to Project works. The ORP was also elevated above the three month rolling average at each site. At CDS-SW-09 (downstream of KGD-1 WTP) and CDS-SW-10 (downstream of BED-1 WTP) elevated levels of some metals were detected (including copper, zinc, cadmium and lead). All discharges from the water treatment plants were compliant with requirements and site erosion and sediment controls were checked and found to be compliant also. It was concluded that the elevated levels were related to the rainfall event (i.e. runoff from nearby roads and motorway) and not from the Project as no potential source of these metals could be identified. All discharges from Water Treatment Plants (BED-1 and KGD-1) and sediment basin (WSW-1) were compliant with discharge criteria during March.

i. April 2017

Within the Alexandra Canal and Eastern Channel catchments, elevated levels of nutrients were noted upstream of the CDSJV worksite at CDS-SW-01 and also at downstream sites. While arsenic, zinc and copper were not detected at any sites, the limits of detection were raised by the laboratory for samples collected at CDS-SW-02 and CDS-SW-05 above the trigger value. Some exceedances of trigger values for some physical parameters (ORP, DO) at these sites could not be attributed to Project works. All discharges from the sediment basin (SPI-1) were compliant during the month of April.

Within the Cooks River catchment, manganese levels at CDS-SW-07 (downstream, near Kyeemagh) were slightly elevated above trigger values. The elevated levels were not attributable to the Project as levels were not elevated adjacent to site (at CDS-SW-12). It is noted that the downstream site is adjacent to the confluence with Muddy Creek which may have been a source for manganese. All discharges from the water treatment plant (ARN-2) were compliant with EPL criteria in April, however the 80th percentile targets for lead and total nitrogen were exceeded in this quarter.

In the Wolli Creek catchment, conductivity was elevated at all sample sites, with elevated levels of cadmium upstream of project work sites. No monitoring was undertaken at CDS-SW-09 due to low flow and it is considered that the low flow may be responsible for the increase in observed conductivity. Some anomalies were also noted in pH, ammonia and total phosphorous but these observations could not be linked to a specific activity related to the Project and were considered to be from external factors. All discharges from water treatment plants (KGD-1 and BED-1) and sediment basins (WSW-1) were compliant in April.

j. May 2017

Within the Alexandra Canal catchment, non-Project related works were occurring adjacent to the upstream monitoring location (Sydney Water). Field pH readings were low, but a probe error is suspected as laboratory assessment returned compliant values. Turbidity, total suspended solids and ORP were noted as above trigger values at each site and it was noted that rain was falling at the time of monitoring, which could have contributed to these slightly elevated readings. Iron levels were above criteria upstream and adjacent to works, but not downstream, and zinc, nitrogen, ammonia and phosphorus levels were elevated at all sites, indicating that these levels are not related to the Project (i.e. catchment wide elevations). Copper was recorded above trigger levels at the upstream site CDS-SW-01. Other exceedances within the catchment included manganese and arsenic, but investigation did not reveal any link to specific activities or Project works. All discharges from the sediment basin (SPI-1) were compliant during the month of May.

Within the Cooks River catchment, manganese and total nitrogen were elevated at the downstream location near Kyeemagh (CDS-SW-12). As these results were not similar to the sample collected adjacent to site CDS-SW-07, and Muddy Creek was influencing the sample location, these elevated levels were not associated with the Project. Arsenic, zinc and copper were not detected at CDS-SW-06 or CDS-SW-07 but were listed as exceeding the criteria, due to the laboratory raising the limit of detection. All discharges from the water treatment plant (ARN-2) were compliant with EPL discharge criteria.

In the Wolli Creek catchment, no monitoring was undertaken at CDS-SW-08 and CDS-SW-09 as low flows prevented the collection of water. At CDS-SW-10 (near Bexley Road) and CDS-SW-11 (Turrella), elevated conductivity, nutrients, cadmium and zinc were detected, but appeared to be consistent with catchment wide previous results and could not be attributed to specific Project works or activities. Discharges from water treatment plants (KGD-1 and BED-1) and the sediment basin (WSW-1) were compliant for the month of May.

k. June 2017

Within the Alexandra Canal catchment, an exceedance of trigger values was noted upstream and downstream of project works for nutrients and ORP. These results were therefore not attributed to Project works. While arsenic, zinc and copper were not detected, they were recorded as exceeding the criteria at CDS-SW-02 as the limit of detection had been raised by the laboratory above the trigger values. Manganese was slightly elevated at CDS-SW-02. This result is unlikely to be related to the Project as, at the time of sampling, no discharges had occurred and the water treatment plant had yet to be commissioned. All discharges from the sediment basin (SPI-1) were compliant during the month

of June. The tunnelling water treatment plant (SPI-2) was commissioned towards the end of the month and all discharges were compliant.

Within the Cooks River catchment, iron, manganese, nitrogen and nitrate were detected above trigger values at CDS-SW-04 in the tributary to Muddy Creek. This sampling point is not located in proximity to New M5 Project works and no works occurred in this catchment during the month. This sampling location is characterised by highly variable water quality as it captures runoff from residential, commercial and industrial areas west of West Botany Street and the market gardens, landing light wetlands and spring street wetlands immediately upstream of the sampling location. Water quality results at this location were not attributed to New M5 works. Manganese was detected at slightly elevated levels at CDS-SW-12, but was not detected adjacent to site. The results from the tributary to Muddy Creek indicate that the downstream elevations noted on this occasion (and potentially on previous months) may be linked to the downstream levels at CDS-SW-12. All discharges from the water treatment plant (ARN-2) were compliant with EPL discharge criteria, however the quarterly sampling conducted in June of additional parameters detected total nitrogen in discharge water at 3.5mg/l, which is above the 80th percentile target of 1.7mg/l for this parameter.

In the Wolli Creek catchment, no water quality samples were taken at CDS-SW-08 and CDS-SW-09 due to low flow within the concrete channel. Conductivity, total nitrogen and ammonia were elevated at CDS-SW-10 and CDS-SW-11, but were consistent with levels over previous dry weather monitoring. Discharges from water treatment plants (KGD-1 and BED-1) and sediment basin (WSW-1) were compliant with EPL requirements for the month of June. However quarterly compliance monitoring undertaken in June for additional parameters detected total nitrogen in the discharge from KGD-1 above the 80th percentile target.

l. July 2017

Within the Alexandra Canal catchment, zinc was noted above trigger values at all sampling sites (i.e. catchment wide, not related to Project) and nitrogen was also elevated upstream of works at CDS-SW-01. Adjacent to the project works (CDS-SW-02), all parameters (apart from zinc) were compliant with the trigger values. Field notes from the downstream site (CDS-SW-03) indicate brown water with low flow and refer to urban stormwater entering the waterbody. Elevated levels of total suspended solids, iron, nitrogen, ammonia, phosphorus were noted along with slight exceedances of copper and lead at levels just above the detection limits. No discharge from site was occurring at the time of sampling. All discharges from the sediment basin (SPI-1) and water treatment plant (SPI-2) were compliant with discharge limits during the month of July.

Within the Cooks River catchment, nutrients (e.g. nitrogen, ammonia, nitrate and reactive phosphorus) levels were elevated within the tributary to Muddy Creek, but no works were in progress within this catchment. Within the main Cooks River Channel near the Arncliffe site, ORP was above the rolling 3 month average. All other parameters were less than the trigger values with the exception of arsenic, zinc and copper which were not detected at any sites, but resulted from the laboratory raising the limits of detection for each sample above the trigger value. All discharge from the water treatment plant at Arncliffe (ARN-2) was compliant during this month.

In the Wolli Creek catchment, low flows were observed in July 2017 and there was insufficient water to sample in the concrete channel at CDS-SW-08 and CDS-SW-09. Conductivity levels were elevated above trigger values, consistent with previous dry weather monitoring. Nutrients at CDS-SW-10 and Cadmium at CDS-SW-11 were above trigger values but appear consistent with earlier monitoring results and could not be specifically linked with Project works. Discharge from water treatment plants KGD-1 and BED-1 were compliant for the month of July.

6. Outcomes

6.1 Proposed changes to water quality monitoring program

During the reporting period, minor alterations were made to sampling locations. The sampling location for CDS-SW-07 was relocated 100 metres further downstream on the Cooks River to provide safer access when sampling. The previous sampling location was on council land, and was accessed through gates, which have now been locked. The sampling location was also difficult to access in wet weather. The new location is approximately 100 metres downstream, adjacent to the confluence with Muddy Creek. There is all weather access to a boat launching facility (pier).

Within the reporting period, CDSJV established two surface grouting sites adjacent to the Rowers Club on the Cooks River. A new sampling location called CDS-SW-12 was added to the sampling program and is located on the Cooks River downstream of these grouting locations and adjacent to the Arncliffe construction compound. Refer to Table 10 for further information.

It is proposed that no further monitoring occur at the tributary to Muddy Creek (CDS-SW-04) as the location identified is not impacted by New M5 works (is in a separate catchment), has highly variable flow (a tidally influenced concrete channel) and is impacted by residential, commercial and industrial premises as well as nearby market gardens and wetlands and therefore is not useful as an impacted site or as a control site. It is also a difficult location to sample safely. A replacement sampling location is not proposed.

Table 10 Proposed changes to surface water quality monitoring locations

Site ID	Location relative to site compounds	Watercourse name	Sampling Address	Eastings	Northings	Freshwater or estuarine / marine
Removal of monitoring point						
CDS-SW-04	Upstream	Eve St Wetlands	Eve St Cycleway, near the entrance to the Barton Park Driving Range	329292	6242429	Estuarine / marine
Additional monitoring point						
CDS-SW-12	Adjacent	Cooks River	Rockwell Avenue	329991	6243607	Estuarine / marine
Movement of monitoring point						
CDS-SW-07	Downstream	Cooks River	Kyeemagh Reserve, access via Mutch Ave, Kyeemagh.	330120	6242327	Estuarine / marine

6.2 Summary

Water quality data for surface water monitoring and licenced discharges is presented in this report for the period from August 2016 to July 2017 (the first year of construction of the New M5 Project). Works associated with the New M5 Project during this period includes the commencement of surface construction activities at all major sites, civil works for major interchanges, the excavation of shafts and commencement of tunnelling.

All water quality monitoring was undertaken in accordance with WQP&MP and included:

- Water quality monitoring at licenced discharged points;
- Monthly surface water monitoring at project monitoring sites including control and impact sites;
- Wet weather monitoring in receiving environments; and

- the commencement of visual surveillance for potential streambed fracturing (no tunnel excavation works within the vicinity of the defined locations commenced during the period).

All discharge monitoring was compliant with EPL discharge requirements except for one discharge into the Cooks River from licenced discharge point ARN-1 in November 2016. This was reported as a pollution incident and following investigation, detailed reports were provided to the EPA, with all recommendations implemented as required.

Surface water quality monitoring was conducted and whilst occasional observed parameters were noted above trigger values, investigation and assessment did not link any observed exceedances to Project works (i.e. trends were more likely related to catchment variability and external factors). Discussion with the analytical laboratory has resulted in an additional volume of sample being collected for metal sampling to reduce the likelihood of the limits of detection being raised above trigger values, especially for arsenic, copper and zinc as occurred frequently during the reporting period. Importantly, during the monitoring period, no adverse water quality impacts were observed at any of the receiving waters that could be attributed to the Project's activities.

Appendix A: Discharge water quality results

Quarterly Construction Water Treatment Plant Discharge Results															
WTP discharging into estuary watercourses															
Compound	**Reporting Quarter**	**Date**	**Name**	**Sample ID**	**COC #**	**pH**	**TSS (mg/L)**	**Fe (mg/L)**	**Mn (mg/L)**	**Copper (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Total Nitrogen as N (mg/L)**	**Total Phosphorus as P (mg/L)**	**Dissolved oxygen**
Trigger						6.5-8.5	50	0.3	2.5	0.008	0.56	0.043	1.7	0.2	40%
Arncliffe (C7)	Q2	8/11/2016	CG	161108_ARN2	ES1625720	7.69	5	0.05	0.0002	0.001	0.001	0.006	0.6	0.01	
Arncliffe (C7)	Q3	28/04/2017	MM	170428_ARN2	ES1710098	7.58	5	0.05	0.403	0.001	0.002	0.498	5.6	0.05	
Arncliffe (C7)	Q4	27/06/2017	MM	170627_ARN2	ES1715892	7.53	19	0.05	0.057	0.002	0.002	0.012	3.5	0.05	
SPI (C8)	Q4	29/06/2017	PS	WTPD	ES1716067	7.8	28	0.05	0.018	0.003	0.004	0.007	6.8	0.01	
WTP discharging into freshwater watercourses															
Compound		**Date**	**Name**	**Sample ID**	**COC #**	**pH**	**TSS (mg/L)**	**Fe (mg/L)**	**Mn (mg/L)**	**Copper (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Total Nitrogen as N (mg/L)**	**Total Phosphorus as P (mg/L)**	**Dissolved oxygen**
Trigger						6.5-8.5	50	0.3	3.6	0.012	0.56	0.059	2.9	0.12	60%
Bexley North (C4)	Q2	20/01/2017	CG	170120-BED1	ES1701428	7.84	6	0.05	0.186	0.001	0.001	0.007	0.9	0.01	
Bexley North (C4)	Q3	30/03/2017	CG	170330_BED1	ES1707755	7.22	5	0.05	0.041	0.001	0.002	0.005	2.7	0.01	
Kingsgrove (C3)	Q3	30/03/2017	TM	WTP KGT	ES1705179	8.09	7	0.001	0.3	0.001	0.007	0.044	3.7	0.01	
Bexley North (C4)	Q4	22/06/2017	CG	170622-BED1	ES1715892	7.81	16	0.05	0.004	0.001	0.002	0.005	1.3	0.01	
Kingsgrove (C3)	Q4	28/06/2017	TM	170629 KGD WTP	ES1716176	7.48	5	0.001	0.027	0.061	0.006	0.048	5	0.01	

2016-2017 Period of activity for licenced discharge points							
Discharge Point		WTP ARN-1	WTP ARN-2	WTP BED-1	WTP KGD-1	WSW-1	SPI-1	WTP SPI-2
Aug-16	Q1							
Sep-16								
Oct-16								
Nov-16	Q2							
Dec-16								
Jan-17								
Feb-17	Q3							
Mar-17								
Apr-17								
May-17	Q4							
Jun-17								
Jul-17								

Appendix B: Surface water quality results

AUGUST 2016

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	19/08/2016	1:00:00 PM	RB & CS	Non-CDS-JV works occuring adjacent to the creek.	7.35	6	18.16	208	19.33 mg/L	457	N	water level low. Medium velocity. Water clear.
CDS-SW-02	19/08/2016	2:30:00 PM	RB & CS	Weather fine. No discharges from CDS-JV	7.32	19	20.15	223	11.58 mg/L	4100.7	N	Low tide. Water visibly turbid
CDS-SW-03	19/08/2016	1:50:00 PM	RB & CS	Weather fine. No discharges from CDS-JV	7.4	10.6	22.2	167	14.68 mg/L	810	Y	Water level medium, velocity medium. Clear colour. No odour
CDS-SW-04	22/08/2016	12:00:00 PM	MM & CG	No recent rain	7.3	6.6	15.11		6.17mg/L	31400	N	Light yellow, smalls of H2S present, litter in creek
CDS-SW-05	19/08/2016	3:00:00 PM	RB & CS									
CDS-SW-06	22/08/2016	12:00:00 PM	MM & CG	No recent rain	7.88	7.3	16.09		24.06 mg/L	49200	N	Clear, no odour, no visible rubbish
CDS-SW-07	22/08/2016	12:00:00 PM	MM & CG	No recent rain	6.5	3.8	16.49		22.22 mg/L	51500	N	Clear water, no odour, very little rubbish
CDS-SW-08	22/08/2016	8:45:00 AM	SB & CG	Has been relatively dry	8.89	1.6	14.65		17.01 mg/L	3030	N	Fulton Hogan works upstream, lots of little presentincluding helmet. Yellowing tinge to the water, no smell
CDS-SW-09	22/08/2016	8:45:00 AM	SB & CG	No recent rain	10.01	1.7	13.33		18.09 mg/L	1450	Y	Yellowish tinge, no odour, low flow, oil sheen appeared during sampling - Kingsgrove Rd - Water sampling had been completed prior to the sheen appearing
CDS-SW-10	22/08/2016	9:30:00 AM	SB & CG	No recent rain	9.2	1.5	12.26		16.65 mg/L	1420	Y	Scum on surface - hydrocarbon sheen and brown bubbles. A lot of litter in creek and surrounding vegetation. Water clear - no odour.
CDS-SW-11	22/08/2016	9:30:00 AM	SB & CG	No recent Rain	7.55	2	13.08		18.17 mg/L	1140	N	Water yellow / brown, no smell. Eastern bank disturbed by development works at new facility

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

AUGUST 2016

Lab Test																		
Surface WQ ID	Lab Sample ID + Work Order #	pH	TSS (mg/L)	Conductivity (µS/cm)	Fe (µ/L)	Mn (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Mercury (mg/L)	Ferrous Iron (mg/L)	Total Nitrogen as N (mg/L)	TKN (mg/L)	Ammonia (mg/L)
CDS-SW-01	Sheas Creek ES1618519	7.7	8	459	0.47	0.017	0.002	0.0001	0.001	0.006	0.001	0.001	0.037	0.00004		3.8	3.8	0.12
CDS-SW-02	Alexandra Canal ES1618519	7.67	16	43900	0.5	0.015	0.01	0.001	0.01	0.01	0.01	0.01	0.105	0.00004		2.8	2.7	0.15
CDS-SW-03	Eastern Channel ES1618519	8.75	16	842		0.026	0.001	0.001	0.017	0.009	0.01	0.003	0.024	0.00004		10.2	7.4	6.67
CDS-SW-04	ES1618523-004	7.69	5	31000	0.28	0.028	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00007		4.3	2.2	1.82
CDS-SW-05																		
CDS-SW-06	ES1618523-003	8	7	49600	0.25	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0004		0.5	0.5	0.13
CDS-SW-07	ES1618523-005	8.13	5	51700	0.19	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00036		0.5	0.5	0.03
CDS-SW-08	ES1618523-006	8.56	5	2980	0.46	0.391	0.003	0.0001	0.001	0.001	0.001	0.001	0.05	0.00004		1	0.7	0.21
CDS-SW-09	ES1618523-002	9.3	5	1400	0.26	0.006	0.001	0.0001	0.001	0.003	0.001	0.001	0.005	0.0004		1.6	0.8	0.02
CDS-SW-10	ES1618523-007	8.76	5	1100	0.18	0.014	0.001	0.0009	0.001	0.008	0.001	0.001	0.025	0.001		0.9	0.7	0.03
CDS-SW-11	ES1618523-001	7.31	5	1050	0.02	0.122	0.001	0.0001	0.001	0.002	0.001	0.002	0.026	0.00004		5.7	5	4.6

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

AUGUST 2016

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1618519	0.25	2.31	0.09			20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to Project.
CDS-SW-02	ES1618519	0.02	0.04	0.13			20	100	100	100	1	2	2	2	5	No CDS-JV discharges. Nitrogen exceedence detected upstream. Zn exceedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An and Cu triggered was below limits of detection.
CDS-SW-03	ES1618519	0.98	1.82	0.06			20	100	100	100	1	2	2	2	5	No CDS-JV discharges. No CDS-JV excavation works commenced in the catchment. Exceedences not related to Project.
CDS-SW-04	ES1618523-004	0.08	2.01	0.09			20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Muddy Creek outside of catchment, other exceedences not related to CDSJV activities.
CDS-SW-05																
CDS-SW-06	ES1618523-003	0.01	0.08	0.07			20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-07	ES1618523-005	0.01	0.01	0.05			20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-08	ES1618523-006	0.08	0.27	0.27			20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksites. Non-CDSJV works upstream of monitoring site. Exceedences not related to Project.
CDS-SW-09	ES1618523-002	0.04	0.77	0.06			20	100	100	100	1	2	2	2	5	pH exceeded upstream due to non-CDSJV works. Exceedence not related to Project.
CDS-SW-10	ES1618523-007	0.01	0.24	0.04			20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Non-CDSJV sources contributing to water body between SW-09 and SW-10. Exceedence not related to Project.
CDS-SW-11	ES1618523-001	0.05	0.65	0.04			20	100	100	100	1	2	2	2	5	CDSJV not discharging. Non-CDSJV sources contributing to water body between SW-10 and SW-11. Exceedences not related to Project.

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

August 2016

Three Month Rolling Average

Oxy Redution potenital				
Location	May	Jun	Jul	Average
CDS-SW-01				#DIV/0!
CDS-SW-02				#DIV/0!
CDS-SW-03				#DIV/0!
CDS-SW-04				#DIV/0!
CDS-SW-05				#DIV/0!
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08				#DIV/0!
CDS-SW-09				#DIV/0!
CDS-SW-10				#DIV/0!
CDS-SW-11				#DIV/0!

Iron (mg/L)				
Location	May	Jun	Jul	Average
CDS-SW-01	0.05			0.05
CDS-SW-02	0.1			0.1
CDS-SW-03	0.06			0.06
CDS-SW-04	0.13			0.13
CDS-SW-05	0.1			0.1
CDS-SW-06	0.1			0.1
CDS-SW-07	0.1			0.1
CDS-SW-08	0.14			0.14
CDS-SW-09	0.11			0.11
CDS-SW-10	0.21			0.21
CDS-SW-11	0.47			0.47

Reactive Phosphorus				
Location	May	Jun	Jul	Average
CDS-SW-01	0.03			#DIV/0!
CDS-SW-02	0.03			#DIV/0!
CDS-SW-03	0.03			#DIV/0!
CDS-SW-04	0.11			#DIV/0!
CDS-SW-05	0.02			#DIV/0!
CDS-SW-06	0.03			#DIV/0!
CDS-SW-07	0.03			#DIV/0!
CDS-SW-08	0.16			#DIV/0!
CDS-SW-09	0.4			#DIV/0!
CDS-SW-10				#DIV/0!
CDS-SW-11	0.03			#DIV/0!

C6-10				
Location	May	Jun	Jul	Average
CDS-SW-01	20			20
CDS-SW-02	20			20
CDS-SW-03	20			20
CDS-SW-04	20			20
CDS-SW-05	20			20
CDS-SW-06	20			20
CDS-SW-07	20			20
CDS-SW-08	20			20
CDS-SW-09	190			190
CDS-SW-10	20			20
CDS-SW-11	20			20

C10-C16				
Location	May	Jun	Jul	Average
CDS-SW-01	100			100
CDS-SW-02	100			100
CDS-SW-03	100			100
CDS-SW-04	100			100
CDS-SW-05	100			100
CDS-SW-06	100			100
CDS-SW-07	100			100
CDS-SW-08	100			100
CDS-SW-09	30300			30300
CDS-SW-10	100			100
CDS-SW-11	100			100

C16-C34				
Location	May	Jun	Jul	Average
CDS-SW-01	100			100
CDS-SW-02	100			100
CDS-SW-03	100			100
CDS-SW-04	100			100
CDS-SW-05	100			100
CDS-SW-06	100			100
CDS-SW-07	100			100
CDS-SW-08	100			100
CDS-SW-09	21800			21800
CDS-SW-10	100			100
CDS-SW-11	100			100

C34-C40				
Location	May	Jun	Jul	Average
CDS-SW-01	100			100
CDS-SW-02	100			100
CDS-SW-03	100			100
CDS-SW-04	100			100
CDS-SW-05	100			100
CDS-SW-06	100			100
CDS-SW-07	100			100
CDS-SW-08	100			100
CDS-SW-09	100			100
CDS-SW-10	100			100
CDS-SW-11	100			100

Benzene				
Location	May	Jun	Jul	Average
CDS-SW-01	1			1
CDS-SW-02	1			1
CDS-SW-03	1			1
CDS-SW-04	1			1
CDS-SW-05	1			1
CDS-SW-06	1			1
CDS-SW-07	1			1
CDS-SW-08	1			1
CDS-SW-09	1			1
CDS-SW-10	1			1
CDS-SW-11	1			1

Toulene				
Location	May	Jun	Jul	Average
CDS-SW-01	2			2
CDS-SW-02	2			2
CDS-SW-03	2			2
CDS-SW-04	2			2
CDS-SW-05	2			2
CDS-SW-06	2			2
CDS-SW-07	2			2
CDS-SW-08	2			2
CDS-SW-09	2			2
CDS-SW-10	2			2
CDS-SW-11	2			2

Ethlybenzene				
Location	May	Jun	Jul	Average
CDS-SW-01	2			2
CDS-SW-02	2			2
CDS-SW-03	2			2
CDS-SW-04	2			2
CDS-SW-05	2			2
CDS-SW-06	2			2
CDS-SW-07	2			2
CDS-SW-08	2			2
CDS-SW-09	2			2
CDS-SW-10	2			2
CDS-SW-11	2			2

Xylene				
Location	May	Jun	Jul	Average
CDS-SW-01	2			2
CDS-SW-02	2			2
CDS-SW-03	2			2
CDS-SW-04				#DIV/0!
CDS-SW-05	2			2
CDS-SW-06	2			2
CDS-SW-07	2			2
CDS-SW-08	2			2
CDS-SW-09	2			2
CDS-SW-10	2			2
CDS-SW-11	2			2

Naphthalene				
Location	May	Jun	Jul	Average
CDS-SW-01	5			5
CDS-SW-02	5			5
CDS-SW-03	5			5
CDS-SW-04	5			5
CDS-SW-05	5			5
CDS-SW-06	5			5
CDS-SW-07	5			5
CDS-SW-08	5			5
CDS-SW-09	5			5
CDS-SW-10	5			5
CDS-SW-11	5			5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

OCTOBER 2016

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	28/10/2016	1:00:00 PM	RB & DL	Weather Fine. Non-CDS-JV works occuring adjacent to the creek.	7.22	0	20.59	158	12.78 mg/L	472	N	Water level high. Fast flow. Water clear.
CDS-SW-02	28/10/2016	11:30:00 AM	RB & DL	Weather Fine. No CDS-JV discharges	7.47	24.2	19.83	109	9.66 mg/L	33500	N	Water High. Tide going in. Water murky. No odour
CDS-SW-03	28/10/2016	11:00:00 AM	RB & DL	Weather Fine. No CDS-JV discharges	7.25	19	26.67	147	11.72 mg/L	122	N	Water level low. Clear. Low flow. No odour
CDS-SW-04	25/10/2016	10:00:00 AM	MM & CG									No flow, hazardous entry
CDS-SW-05	28/10/2016	12:00:00 PM	DL & RB	Weather Fine.								Field Data Misplaced
CDS-SW-06	25/10/2016	10:00:00 AM	MM & CG	Rain over 21st/22nd ~15mm, high tide @ 05:29	7.78	3.4	19.37		4.38 mg/L	43700	N	Clear, no odour, flowing, colourless
CDS-SW-07	25/10/2016	10:00:00 AM	MM & CG	Rain over 21st/22nd ~15mm, high tide @ 05:29	8.07	2.4	19.86		3.4 mg/L	45100	N	Clear water, no odour, very little rubbish
CDS-SW-08	28/10/2016	12:00:00 PM	SB & CG	Fulton Hogan worksite clearly visible from sampling location								Extrememly low flow - no samples taken.
CDS-SW-09	28/10/2016	12:00:00 PM	SB & CG	Low flow - light rain the previous day	9.88	77.2	20.99	140	8.14 mg/L	2480	N	Low flow, no litter
CDS-SW-10	28/10/2016	12:00:00 PM	SB & CG	Small amount of rain the day previous	8.74	2.4	18.73	198	9.64 mg/L	1210	N	Yellow colour, scum floating downstream, littler
CDS-SW-11	28/10/2016	12:00:00 PM	SB & CG	Small amount of rain the day previous	7.76	4.6	18.6	217	10.86 mg/L	517	N	Yellow, scum on top of water particularly upstream of fish weir

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

OCTOBER 2016

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1624509-001	8.05	5	481	0.23	0.006	0.001	0.0001	0.001	0.009	0.001	0.002	0.081	0.00004	0.05	4.3	1.2	0.09
CDS-SW-02	ES1624509-003	8.06	5	31500	0.55	0.026	0.01	0.001	0.01	0.01	0.01	0.01	0.068	0.00004	0.05	1.1	0.8	0.06
CDS-SW-03	ES1624509-002	8.05	20	686	1.14	0.025	0.001	0.0001	0.004	0.022	0.001	0.002	0.269	0.00004	0.05	7.1	5.4	2.77
CDS-SW-04																		
CDS-SW-05	ES1624509-004	7.88	5	42800	0.5	0.021	0.01	0.001	0.01	0.01	0.01	0.01	0.114	0.00004	0.05	0.6	0.5	0.06
CDS-SW-06	ES1624242-001	7.76	5	43500	0.05	0.024	0.003	0.0002	0.001	0.001	0.001	0.001	0.014	0.0001	0.05	1	0.9	0.12
CDS-SW-07	ES1624242-002	7.84	5	45200	0.05	0.019	0.001	0.0005	0.001	0.001	0.001	0.001	0.012	0.001	0.05	1	0.8	0.28
CDS-SW-08																		
CDS-SW-09	ES1624524-001	7.96	5	1180	0.31	0.074	0.001	0.0002	0.02	0.007	0.001	0.002	0.037	0.00004	0.3	1	0.9	0.03
CDS-SW-10	ES1624524-002	9.28	12	1040	0.08	0.004	0.001	0.0007	0.001	0.036	0.001	0.001	0.02	0.00088	0.05	2	1.5	0.07
CDS-SW-11	ES1624524	7.33	5	497	0.41	0.131	0.001	0.0019	0.001	0.002	0.001	0.001	0.013	0.00004	0.16	1.4	1.1	0.48

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

OCTOBER 2016

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1624509-001	0.07	0.07	0.06	0.06	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to the Project.
CDS-SW-02	ES1624509-003	0.02	0.29	0.04	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. Zn exceedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An triggered was below limits of detection.
CDS-SW-03	ES1624509-002	0.31	1.36	0.09	0.02	5	40	3040	210	100	1	2	2	2	5	No CDS-JV discharges. No CDS-JV works commenced in the catchment. Exceedences not related to the Project.
CDS-SW-04																
CDS-SW-05	ES1624509-004	0.01	0.07	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Zn exccedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An triggered was below limits of detection.
CDS-SW-06	ES1624242-001	0.01	0.1	0.05	0	5	20	100	100	100	1	2	2	2	5	No exceedences detected
CDS-SW-07	ES1624242-002	0.01	0.17	0.05	0	5	20	100	100	100	1	2	2	2	5	No exceedences detected
CDS-SW-08																
CDS-SW-09	ES1624524-001	0.01	0.09	0.05	0.01	5	20	100	100	100	1	2	2	2	5	No exceedences detected
CDS-SW-10	ES1624524-002	0.04	0.44	0.1	0.02	5	20	100	100	100	1	2	2	2	5	No discharges from CDSJV worksite, exceedences not related to Project.
CDS-SW-11	ES1624524	0.02	0.26	0.06	0.01	5	20	120	100	100	1	2	2	2	5	No discharges from CDSJV worksite, exceedences not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

October 2016

Three Month Rolling Average

Oxy Redution potenital				
Location	Jul	Aug	Sep	Average
CDS-SW-01				#DIV/0!
CDS-SW-02				#DIV/0!
CDS-SW-03				#DIV/0!
CDS-SW-04				#DIV/0!
CDS-SW-05				#DIV/0!
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08				#DIV/0!
CDS-SW-09				#DIV/0!
CDS-SW-10				#DIV/0!
CDS-SW-11				#DIV/0!

Iron (mg/L)				
Location	Jul	Aug	Sep	Average
CDS-SW-01		0.47		0.47
CDS-SW-02		0.5		0.5
CDS-SW-03				#DIV/0!
CDS-SW-04		0.28		0.28
CDS-SW-05				#DIV/0!
CDS-SW-06		0.25		0.25
CDS-SW-07		0.19		0.19
CDS-SW-08		0.46		0.46
CDS-SW-09		0.26		0.26
CDS-SW-10		0.18		0.18
CDS-SW-11		0.02		0.02

Reactive Phosphorus				
Location	Jul	Aug	Sep	Average
CDS-SW-01				#DIV/0!
CDS-SW-02				#DIV/0!
CDS-SW-03				#DIV/0!
CDS-SW-04				#DIV/0!
CDS-SW-05				#DIV/0!
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08				#DIV/0!
CDS-SW-09				#DIV/0!
CDS-SW-10				#DIV/0!
CDS-SW-11				#DIV/0!

C6-10				
Location	Jul	Aug	Sep	Average
CDS-SW-01		20		20
CDS-SW-02		20		20
CDS-SW-03		20		20
CDS-SW-04		20		20
CDS-SW-05				#DIV/0!
CDS-SW-06		20		20
CDS-SW-07		20		20
CDS-SW-08		20		20
CDS-SW-09		20		20
CDS-SW-10		20		20
CDS-SW-11		20		20

C10-C16				
Location	Jul	Aug	Sep	Average
CDS-SW-01		100		100
CDS-SW-02		100		100
CDS-SW-03		100		100
CDS-SW-04		100		100
CDS-SW-05				#DIV/0!
CDS-SW-06		100		100
CDS-SW-07		100		100
CDS-SW-08		100		100
CDS-SW-09		100		100
CDS-SW-10		100		100
CDS-SW-11		100		100

C16-C34				
Location	Jul	Aug	Sep	Average
CDS-SW-01		100		100
CDS-SW-02		100		100
CDS-SW-03		100		100
CDS-SW-04		100		100
CDS-SW-05				#DIV/0!
CDS-SW-06		100		100
CDS-SW-07		100		100
CDS-SW-08		100		100
CDS-SW-09		100		100
CDS-SW-10		100		100
CDS-SW-11		100		100

C34-C40				
Location	Jul	Aug	Sep	Average
CDS-SW-01		100		100
CDS-SW-02		100		100
CDS-SW-03		100		100
CDS-SW-04		100		100
CDS-SW-05				#DIV/0!
CDS-SW-06		100		100
CDS-SW-07		100		100
CDS-SW-08		100		100
CDS-SW-09		100		100
CDS-SW-10		100		100
CDS-SW-11		100		100

Benzene				
Location	Jul	Aug	Sep	Average
CDS-SW-01		1		1
CDS-SW-02		1		1
CDS-SW-03		1		1
CDS-SW-04		1		1
CDS-SW-05				#DIV/0!
CDS-SW-06		1		1
CDS-SW-07		1		1
CDS-SW-08		1		1
CDS-SW-09		1		1
CDS-SW-10		1		1
CDS-SW-11		1		1

Toulene				
Location	Jul	Aug	Sep	Average
CDS-SW-01		2		2
CDS-SW-02		2		2
CDS-SW-03		2		2
CDS-SW-04		2		2
CDS-SW-05				#DIV/0!
CDS-SW-06		2		2
CDS-SW-07		2		2
CDS-SW-08		2		2
CDS-SW-09		2		2
CDS-SW-10		2		2
CDS-SW-11		2		2

Ethlybenzene				
Location	Jul	Aug	Sep	Average
CDS-SW-01		2		2
CDS-SW-02		2		2
CDS-SW-03		2		2
CDS-SW-04		2		2
CDS-SW-05				#DIV/0!
CDS-SW-06		2		2
CDS-SW-07		2		2
CDS-SW-08		2		2
CDS-SW-09		2		2
CDS-SW-10		2		2
CDS-SW-11		2		2

Xylene				
Location	Jul	Aug	Sep	Average
CDS-SW-01		2		2
CDS-SW-02		2		2
CDS-SW-03		2		2
CDS-SW-04		2		2
CDS-SW-05				#DIV/0!
CDS-SW-06		2		2
CDS-SW-07		2		2
CDS-SW-08		2		2
CDS-SW-09		2		2
CDS-SW-10		2		2
CDS-SW-11		2		2

Naphthalene				
Location	Jul	Aug	Sep	Average
CDS-SW-01		5		5
CDS-SW-02		5		5
CDS-SW-03		5		5
CDS-SW-04		5		5
CDS-SW-05				#DIV/0!
CDS-SW-06		5		5
CDS-SW-07		5		5
CDS-SW-08		5		5
CDS-SW-09		5		5
CDS-SW-10		5		5
CDS-SW-11		5		5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

November 2016

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	14/11/2016	10:00:00 AM	DL & RB	Non-CDS-JV works occuring adjacent to the creek. Rain 11.8mm 12/11/17.	6.68	0.7	21.13	128	10.43 mg/L	491	N	Waterflow moderate. Water level high, clear with visible algae no odour.
CDS-SW-02	14/11/2016	10:30:00 AM	RB & DL	Weather Fine. Rain 11.8mm 12/11/17. No CDS_JV discharges from site	7.72	4.2	21.9	174	5.99 mg/L	46600	N	Water flow High. Water Clear. Tide going in.
CDS-SW-03	14/11/2016	11:00:00 AM	RB & DL	Weather Fine. Rain 11.8mm 12/11/17. No CDS_JV discharges from site	7.23	34.1	23.1	145	-	1070	N	Water level low. Water clear
CDS-SW-04	3/11/2016	12:30:00 PM	MM & CG									No flow, hazardous entry
CDS-SW-05	14/11/2016	10:45:00 AM	DL & RB	Weather Fine. Rain 11.8mm 12/11/17.	8.26	13.4	25.93	200	5.99 mg/L	42300	N	Water flow High. Water Clear. Tide going in.
CDS-SW-06	18/11/2016	12:45:00 PM	MM & CG	No recent rain	8.08	2.4	23.94		11.02 mg/L	45200	N	Clear water, visible rubbish, no odour, colourless
CDS-SW-07	18/11/2016	12:30:00 PM	MM & CG	Discharging water from ARN-2, high tide @12:21	8.27	0	23.88		5 mg/L	46800	N	Clear water, no odour, no rubbish present, some organic material present.
CDS-SW-08	21/11/2016	9:00:00 AM	SB & HY	Fulton Hogan finihsed concrete works in the area	7.26	2.2	23.49	248	10.03 mg/L	3410	N	Littered with organic matter. No rain for over a week.
CDS-SW-09	21/11/2016	9:30:00 AM	SB & HY	Low flow - scummy								No sample taken due to the low flow
CDS-SW-10	21/11/2016	10:00:00 AM	SB & HY	No recent rain	6.99	3.6	25.99	230	11.12 mg/L	1110	N	Sheen and scum on surface. Rubbish on banks and in water. Yellow colour. No odour
CDS-SW-11	21/11/2016	11:00:00 AM	SB & HY	No recent rain	7.6	2	26.77	195	7.03 mg/L	5120	N	Not flowing, green, algae
CDS-SW-12	18/11/2016	12:45:00 PM	MM & CG	Discharging from ARN-2 at time of monitoring	8.18	1	24.24		17 mg/L	46100	N	Discharge from WTP occuring during monitoring, no discolouration evident, clear water, no rubbish present.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

November 2016

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1627432-001	7.99	30	433	0.08	0.006	0.002	0.0001	0.001	0.008	0.001	0.001	0.118	0.0001	0.05	4.1	1.4	0.18
CDS-SW-02	ES1627432-003	7.86	5	45200	0.5	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0001	0.05	0.8	0.8	0.05
CDS-SW-03	ES1627432-002	7.79	15	619	0.07	0.006	0.002	0.0001	0.002	0.01	0.001	0.004	0.301	0.0001	0.42	3.6	2.5	1.37
CDS-SW-04																		
CDS-SW-05	ES1627432-004	7.97	5	50200	0.5	0.011	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0001	0.05	0.9	0.9	0.1
CDS-SW-06	ES1626388-003	7.97	8	45500	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0001	0.05	0.8	0.8	0.05
CDS-SW-07	ES1626388-004	8.07	12	48300	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0001	0.05	0.5	0.5	0.5
CDS-SW-08	ES1626480-001	8.12	23	1560	0.304	0.11	0.004	0.001	0.001	0.002	0.001	0.003	0.005	0.0001	0.1	1.8	1.8	0.44
CDS-SW-09																		
CDS-SW-10	ES1626480-002	8.6	17	9620	0.048	0.36	0.001	0.0096	0.001	0.006	0.001	0.002	0.024	0.0001	0.33	2.5	2.4	0.41
CDS-SW-11	ES1626480-003	8.38	12	3360	0.141	0.1	0.001	0.0001	0.0014	0.001	0.001	0.001	0.008	0.0001	0.05	3	2.6	1.57
CDS-SW-12	ES1626388-009	8.07	5	46400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.0001	0.05	0.5	0.5	0.17

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

November 2016

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1627432-001	0.1	2.39	0.08	0.04	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to Project.
CDS-SW-02	ES1627432-003	0.01	0.03	0.48	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. Total P exceedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An and Cu triggered was below limits of detection.
CDS-SW-03	ES1627432-002	0.2	0.88	0.05	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. No CDS-JV excavation works commenced in the catchment. Exceedences not related to Project.
CDS-SW-04																
CDS-SW-05	ES1627432-004	0.01	0.03	0.14	0.02	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters Cu, Zn and An triggered was below limits of detection.
CDS-SW-06	ES1626388-003	0.01	0.01	0.05	0	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-07	ES1626388-004	0.01	0.01	0.05	0	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-08	ES1626480-001	0.01	0.02	0.16	0.01	5	20	100	100	100	1	2	2	2	5	Sampling location upstream of CDSJV worksite. Exceedences not related to Project.
CDS-SW-09																
CDS-SW-10	ES1626480-002	0.09	0.01	0.11	0.01	5	20	100	100	100	1	2	2	2	5	No discharges from CDSJV worksite. Exceedences not related to Project.
CDS-SW-11	ES1626480-003	0.01	0.37	0.09	0.11	5	20	100	100	100	1	2	2	2	5	Non-CDSJV sources contributing to water body between SW-10 and SW-07. Exceedence not related to Project.
CDS-SW-12	ES1626388-009	0.01	0.02	0.05	0	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

November 2016

Three Month Rolling Average

Oxy Redution potenital				
Location	Aug	Sept	Oct	Average
CDS-SW-01	208		158	183
CDS-SW-02	223		109	166
CDS-SW-03	167		147	157
CDS-SW-04				#DIV/0!
CDS-SW-05				#DIV/0!
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08				#DIV/0!
CDS-SW-09			140	140
CDS-SW-10			198	198
CDS-SW-11			217	217
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Aug	Sept	Oct	Average
CDS-SW-01	0.47		0.23	0.35
CDS-SW-02	0.5		0.55	0.525
CDS-SW-03			1.14	1.14
CDS-SW-04	0.28			0.28
CDS-SW-05			0.5	0.5
CDS-SW-06	0.25		0.05	0.15
CDS-SW-07	0.19		0.05	0.12
CDS-SW-08	0.46			0.46
CDS-SW-09	0.26		0.31	0.285
CDS-SW-10	0.18		0.08	0.13
CDS-SW-11	0.02		0.41	0.215
CDS-SW-12				#DIV/0!

Reactive Phosphorus				
Location	Aug	Sept	Oct	Average
CDS-SW-01			0.06	0.06
CDS-SW-02			0.01	0.01
CDS-SW-03			0.02	0.02
CDS-SW-04				#DIV/0!
CDS-SW-05			0.01	0.01
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08				#DIV/0!
CDS-SW-09			0.01	0.01
CDS-SW-10			0.02	0.02
CDS-SW-11			0.01	0.01
CDS-SW-12				#DIV/0!

C6-10				
Location	Aug	Sept	Oct	Average
CDS-SW-01	20		20	20
CDS-SW-02	20		20	20
CDS-SW-03	20		40	30
CDS-SW-04	20			20
CDS-SW-05			20	20
CDS-SW-06	20		20	20
CDS-SW-07	20		20	20
CDS-SW-08	20			20
CDS-SW-09	20		20	20
CDS-SW-10	20		20	20
CDS-SW-11	20		20	20
CDS-SW-12				#DIV/0!

C10-C16				
Location	Aug	Sept	Oct	Average
CDS-SW-01	100		100	100
CDS-SW-02	100		100	100
CDS-SW-03	100		3040	1570
CDS-SW-04	100			100
CDS-SW-05			100	100
CDS-SW-06	100		100	100
CDS-SW-07	100		100	100
CDS-SW-08	100			100
CDS-SW-09	100		100	100
CDS-SW-10	100		100	100
CDS-SW-11	100		120	110
CDS-SW-12				#DIV/0!

C16-C34				
Location	Aug	Sept	Oct	Average
CDS-SW-01	100		100	100
CDS-SW-02	100		100	100
CDS-SW-03	100		210	155
CDS-SW-04	100			100
CDS-SW-05			100	100
CDS-SW-06	100		100	100
CDS-SW-07	100		100	100
CDS-SW-08	100			100
CDS-SW-09	100		100	100
CDS-SW-10	100		100	100
CDS-SW-11	100		100	100
CDS-SW-12				#DIV/0!

C34-C40				
Location	Aug	Sept	Oct	Average
CDS-SW-01	100		100	100
CDS-SW-02	100		100	100
CDS-SW-03	100		100	100
CDS-SW-04	100			100
CDS-SW-05			100	100
CDS-SW-06	100		100	100
CDS-SW-07	100		100	100
CDS-SW-08	100			100
CDS-SW-09	100		100	100
CDS-SW-10	100		100	100
CDS-SW-11	100		100	100
CDS-SW-12				#DIV/0!

Benzene				
Location	Aug	Sept	Oct	Average
CDS-SW-01	1		1	1
CDS-SW-02	1		1	1
CDS-SW-03	1		1	1
CDS-SW-04	1			1
CDS-SW-05			1	1
CDS-SW-06	1		1	1
CDS-SW-07	1		1	1
CDS-SW-08	1			1
CDS-SW-09	1		1	1
CDS-SW-10	1		1	1
CDS-SW-11	1		1	1
CDS-SW-12				#DIV/0!

Toulene				
Location	Aug	Sept	Oct	Average
CDS-SW-01	2		2	2
CDS-SW-02	2		2	2
CDS-SW-03	2		2	2
CDS-SW-04	2			2
CDS-SW-05			2	2
CDS-SW-06	2		2	2
CDS-SW-07	2		2	2
CDS-SW-08	2			2
CDS-SW-09	2		2	2
CDS-SW-10	2		2	2
CDS-SW-11	2		2	2
CDS-SW-12				#DIV/0!

Ethlybenzene				
Location	Aug	Sept	Oct	Average
CDS-SW-01	2		2	2
CDS-SW-02	2		2	2
CDS-SW-03	2		2	2
CDS-SW-04	2			2
CDS-SW-05			2	2
CDS-SW-06	2		2	2
CDS-SW-07	2		2	2
CDS-SW-08	2			2
CDS-SW-09	2		2	2
CDS-SW-10	2		2	2
CDS-SW-11	2		2	2
CDS-SW-12				#DIV/0!

Xylene				
Location	Aug	Sept	Oct	Average
CDS-SW-01	2		2	2
CDS-SW-02	2		2	2
CDS-SW-03	2		2	2
CDS-SW-04	2			2
CDS-SW-05			2	2
CDS-SW-06	2		2	2
CDS-SW-07	2		2	2
CDS-SW-08	2			2
CDS-SW-09	2		2	2
CDS-SW-10	2		2	2
CDS-SW-11	2		2	2
CDS-SW-12				#DIV/0!

Naphthalene				
Location	Aug	Sept	Oct	Average
CDS-SW-01	5		5	5
CDS-SW-02	5		5	5
CDS-SW-03	5		5	5
CDS-SW-04	5			5
CDS-SW-05			5	5
CDS-SW-06	5		5	5
CDS-SW-07	5		5	5
CDS-SW-08	5			5
CDS-SW-09	5		5	5
CDS-SW-10	5		5	5
CDS-SW-11	5		5	5
CDS-SW-12				#DIV/0!

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

December 2016

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	14/12/2016	11:50:00 AM	DL & RB	Non-CDS-JV works occuring adjacent to the creek.	7.22	7.1	24.74	119	108.2	513	N	Water level high. Water flow fast. Clear and no odour.
CDS-SW-02	14/12/2016	12:00:00 PM	DL & RB	Weather Fine. No discharges from CDS-JV	6.29	12.6	25.99	175	82.9	40900	N	Water High. Tide going out. Water clear. No odour
CDS-SW-03	14/12/2016	1:00:00 PM	DL & RB	Weather Fine. No discharges from CDS-JV								Field Data Misplaced
CDS-SW-04	8/12/2016		MM & CG	No flow, hazardous entry								
CDS-SW-05	14/12/2016	1:00:00 PM	DL & RB	Weather Fine.								Field Data Misplaced.
CDS-SW-06	8/12/2016	11:30:00 AM	MM & CG	17.5mm since 5/12/16	7.97	3.9	27.16		15.2 mg/L	39100	N	Windy, murky water, organic debry on surface, no odour
CDS-SW-07	8/12/2016	12:00:00 PM	MM & CG	Fine, Windy, 17.5mm rain since 5/12/16, ARN-2 discharging at time of sampling.	8.12	0.3	26.6		4.34 mg/L	20090	N	Leaf debry, rubbish present, windy, jet skier, clear water, faint odour
CDS-SW-08	9/12/2016	7:30:00 AM	SB & CG		7.93	2	19.73	280	12.12 mg/L	1900	N	Yellow colour, organic smell
CDS-SW-09	9/12/2016	7:30:00 AM	SB & CG	Rain 2 days prior - quite heavy rain	9.11	3.8	18.2	158	10.84 mg/L	1220	N	Yellowy tinge, no signs of oil and grease
CDS-SW-10	9/12/2016	1:00:00 PM	SB & CG	Rain 2 days prior - quite heavy	8.74	42.9	27.1	179	9.76 mg/L	1020	N	Ferrous iron wasn't filtered, yellow colour
CDS-SW-11	9/12/2016	1:00:00 PM	SB & CG	Rain 2 days prior - very heavy	7.83	5.2	25.96	170	10.83 mg/L	341	N	Very yellow, sewer like sewer in the area. Filters were broken so no filtered samples i.e. metals or Ferrous iron
CDS-SW-12	8/12/2016	11:45:00 AM	MM & CG	ARN-2 discharging at time of sampling, windy, slightly murky from organic debry in water, no evidence of discolouration from discharge water.	7.96	2.5	27.33		5.2 mg/L	35800	N	Low velocity, current presenet, clear water, slight petrol odour - jet skier operating in close proximity to sampling point.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

December 2016

Lab Test																	
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1628847-001	7.5	5	471			0.001	0.0001	0.001	0.013	0.001	0.002	0.111	0.00004		6.1	3.7	2.06
CDS-SW-02	ES1628847 -003	7.75	20	44100			0.01	0.001	0.01	0.01	0.01	0.01	0.105	0.00004		0.6	0.5	0.08
CDS-SW-03	ES1628847-002	8.57	26	722			0.003	0.0001	0.002	0.015	0.006	0.003	0.213	0.00004		3.8	3	1.17
CDS-SW-04																		
CDS-SW-05	ES1628847-004	8.82	17.9	49600			0.01	0.001	0.01	0.01	0.01	0.01	0.051	0.00004		0.8	0.8	0.14
CDS-SW-06	ES1628395-001	7.97	2.8	45000	0.1	0.013	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.07	0.4	
CDS-SW-07	ES1628395-003	8.04	5	50000	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00008	0.05	0.5	0.4	
CDS-SW-08	ES1628390-001	7.98	15	1800	0.249	0.32	0.003	0.0003	0.001	0.005	0.001	0.002	0.008	0.00199	0.38	1.3	1.3	0.16
CDS-SW-09	ES1628390-002	8.53	11	1160	0.01	0.32	0.001	0.0026	0.001	0.007	0.001	0.001	0.018	0.00004	0.14	0.9	0.7	0.04
CDS-SW-10	ES1628390-003	8.13	24	1180	0.47	0.105	0.003	0.0018	0.001	0.005	0.001	0.001	0.014	0.00004	0.79	2.3	2.3	0.24
CDS-SW-11	ES1628390-004	7.59	10	329	1.19	0.064	0.001	0.0001	0.007	0.004	0.002	0.001	0.019	0.0004	1.12	1	0.9	0.28
CDS-SW-12	ES1628395-002	7.98	5	40300	0.1	0.021	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00007	0.05	1.1	1	

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

December 2016

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1628847-001	2.16	2.38	0.24	0.2	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to Project.
CDS-SW-02	ES1628847 -003	0.02	0.05	0.05	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An triggered was below limits of detection.
CDS-SW-03	ES1628847-002	0.17	0.65	0.1	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. No CDS-JV excavation works commenced in the catchment. Exceedences not related to Project.
CDS-SW-04																
CDS-SW-05	ES1628847-004	0.01	0.02	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Zn exccedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters Cu and An triggered was below limits of detection.
CDS-SW-06	ES1628395-001	0.01	0.07	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-07	ES1628395-003	0.01	0.07	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-08	ES1628390-001	0.04	0.01	0.26	0.23	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Exceedences not related to Project.
CDS-SW-09	ES1628390-002	0.02	0.18	0.06	0.02	5	20	100	100	100	1	2	2	2	5	No discharges from CDSJV worksite. Exceedences not related to Project.
CDS-SW-10	ES1628390-003	0.01	0.01	0.23	0.01	11	20	100	100	100	1	5	2	2	5	No discharges from CDSJV worksite upstream (WSW/KGD). Exceedences not related to Project.
CDS-SW-11	ES1628390-004	0.02	0.04	0.08	0.05	5	20	100	100	100	1	2	2	2	5	No Exceedences.
CDS-SW-12	ES1628395-002	0.02	0.05	0.04	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

December 2016

Three Month Rolling Average

Oxy Redution potenital				
Location	Sept	Oct	Nov	Average
CDS-SW-01		158	128	143
CDS-SW-02		109	174	141.5
CDS-SW-03		147	145	146
CDS-SW-04				#DIV/0!
CDS-SW-05			200	200
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08			248	248
CDS-SW-09		140		140
CDS-SW-10		198	230	214
CDS-SW-11		217	195	206
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Sept	Oct	Nov	Average
CDS-SW-01		0.23	0.08	0.155
CDS-SW-02		0.55	0.5	0.525
CDS-SW-03		1.14	0.07	0.605
CDS-SW-04				#DIV/0!
CDS-SW-05		0.5	0.5	0.5
CDS-SW-06		0.05	0.1	0.075
CDS-SW-07		0.05	0.1	0.075
CDS-SW-08			0.304	0.304
CDS-SW-09		0.31		0.31
CDS-SW-10		0.08	0.048	0.064
CDS-SW-11		0.41	0.141	0.2755
CDS-SW-12			0.1	0.1

Reactive Phosphorus				
Location	Sept	Oct	Nov	Average
CDS-SW-01		0.06	0.04	0.05
CDS-SW-02		0.01	0.01	0.01
CDS-SW-03		0.02	0.01	0.015
CDS-SW-04				#DIV/0!
CDS-SW-05		0.01	0.02	0.015
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08			0.01	0.01
CDS-SW-09		0.01		0.01
CDS-SW-10		0.02	0.01	0.015
CDS-SW-11		0.01	0.11	0.06
CDS-SW-12				#DIV/0!

C6-10				
Location	Sept	Oct	Nov	Average
CDS-SW-01		20	20	20
CDS-SW-02		20	20	20
CDS-SW-03		40	20	30
CDS-SW-04				#DIV/0!
CDS-SW-05		20	20	20
CDS-SW-06		20	20	20
CDS-SW-07		20	20	20
CDS-SW-08			20	20
CDS-SW-09		20		20
CDS-SW-10		20	20	20
CDS-SW-11		20	20	20
CDS-SW-12			20	20

C10-C16				
Location	Sept	Oct	Nov	Average
CDS-SW-01		20	20	20
CDS-SW-02		20	20	20
CDS-SW-03		40	20	30
CDS-SW-04				#DIV/0!
CDS-SW-05		20	20	20
CDS-SW-06		20	20	20
CDS-SW-07		20	20	20
CDS-SW-08			20	20
CDS-SW-09		20		20
CDS-SW-10		20	20	20
CDS-SW-11		20	20	20
CDS-SW-12			20	20

C16-C34				
Location	Sept	Oct	Nov	Average
CDS-SW-01		100	100	100
CDS-SW-02		100	100	100
CDS-SW-03		3040	100	1570
CDS-SW-04				#DIV/0!
CDS-SW-05		100	100	100
CDS-SW-06		100	100	100
CDS-SW-07		100	100	100
CDS-SW-08			100	100
CDS-SW-09		100		100
CDS-SW-10		100	100	100
CDS-SW-11		120	100	110
CDS-SW-12			100	100

C34-C40				
Location	Sept	Oct	Nov	Average
CDS-SW-01		100	100	100
CDS-SW-02		100	100	100
CDS-SW-03		100	100	100
CDS-SW-04				#DIV/0!
CDS-SW-05		100	100	100
CDS-SW-06		100	100	100
CDS-SW-07		100	100	100
CDS-SW-08			100	100
CDS-SW-09		100		100
CDS-SW-10		100	100	100
CDS-SW-11		100	100	100
CDS-SW-12			100	100

Benzene				
Location	Sept	Oct	Nov	Average
CDS-SW-01		1	1	1
CDS-SW-02		1	1	1
CDS-SW-03		1	1	1
CDS-SW-04				#DIV/0!
CDS-SW-05		1	1	1
CDS-SW-06		1	1	1
CDS-SW-07		1	1	1
CDS-SW-08			1	1
CDS-SW-09		1		1
CDS-SW-10		1	1	1
CDS-SW-11		1	1	1
CDS-SW-12			1	1

Toulene				
Location	Sept	Oct	Nov	Average
CDS-SW-01		2	2	2
CDS-SW-02		2	2	2
CDS-SW-03		2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05		2	2	2
CDS-SW-06		2	2	2
CDS-SW-07		2	2	2
CDS-SW-08			2	2
CDS-SW-09		2		2
CDS-SW-10		2	2	2
CDS-SW-11		2	2	2
CDS-SW-12			2	2

Ethlybenzene				
Location	Sept	Oct	Nov	Average
CDS-SW-01		2	2	2
CDS-SW-02		2	2	2
CDS-SW-03		2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05		2	2	2
CDS-SW-06		2	2	2
CDS-SW-07		2	2	2
CDS-SW-08			2	2
CDS-SW-09		2		2
CDS-SW-10		2	2	2
CDS-SW-11		2	2	2
CDS-SW-12			2	2

Xylene				
Location	Sept	Oct	Nov	Average
CDS-SW-01		2	2	2
CDS-SW-02		2	2	2
CDS-SW-03		2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05		2	2	2
CDS-SW-06		2	2	2
CDS-SW-07		2	2	2
CDS-SW-08			2	2
CDS-SW-09		2		2
CDS-SW-10		2	2	2
CDS-SW-11		2	2	2
CDS-SW-12			2	2

Naphthalene				
Location	Sept	Oct	Nov	Average
CDS-SW-01		5	5	5
CDS-SW-02		5	5	5
CDS-SW-03		5	5	5
CDS-SW-04				#DIV/0!
CDS-SW-05		5	5	5
CDS-SW-06		5	5	5
CDS-SW-07		5	5	5
CDS-SW-08			5	5
CDS-SW-09		5		5
CDS-SW-10		5	5	5
CDS-SW-11		5	5	5
CDS-SW-12			5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

JANUARY 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	25/01/2017	3:30:00 PM	DL & RB	Non-CDS-JV works occuring adjacent to the creek. Weather overcast. Rain 5mm	8.61	44.3	23.2	186	61.5	475	N	Water level moderate. Flow moderate. Clear and no odour
CDS-SW-02	25/01/2017	3:40:00 PM	RB& DL	Weather overcast. Rain 5mm. No CDS-JV discharge.	7.83	12.6	24.87	177	44.6	38800	N	Low tide. Water murky. Flow flow.
CDS-SW-03	25/01/2017	5:00:00 PM	RB & DL	Weather overcast. Rain 5mm. No CDS-JV discharge.	9.5	138	25.61	126	79.7	850	Y	Water level moderate. Flow low. Water murky; draininlet (downstream of CDS-JV works) discharging turbid water.
CDS-SW-04	27/01/2017	11:30:00 AM	MM & CG	Overcast, light showers earlier in morning (<1mm), High tide @ 9:00, NE breeze, tiding going out.	7.81	14.3	23.39		9.17 mg/L	39200	N	Yellow tinge, slight odour.
CDS-SW-05	25/01/2017	4:34:00 PM	DL & RB	Weather overcast. Rain 5mm.	7.88	37.5	24.37	103	74.1	16600	N	Water level high. Water flow low. Tide turning out. Water clear. No odour
CDS-SW-06	27/01/2017	12:00:00 PM	MM & CG	Overcast, light showers earlier in morning (<1mm), High tide @ 9:00, NE breeze, tiding going out.	8.02	7.9	27.1		10.46 mg/L	48800	N	Clear water, no visible rubbish, water not odourous, jet fuel detected
CDS-SW-07	27/01/2017	12:15:00 PM	MM & CG	Overcast, light showers earlier in morning (<1mm), High tide @ 9:00, NE breeze, tiding going out. ARN2 not discharging	7.73	8.9	23.05		15.27 mg/L	52800	N	Clear water, no odour, light breeze
CDS-SW-08	23/01/2017	10:30:00 AM	SB & HY	NIL								Extrememly low flow - no samples taken.
CDS-SW-09	23/01/2017	10:45:00 AM	SB & HY	Green colour, low flow								No sample taken due to the low flow
CDS-SW-10	23/01/2017	11:00:00 AM	SB & HY	Strong odour	7	3.9	26.5	0	12.3 mg/L	1440	Y	Strong odour, slightly off coloured, stagnant, rubbishy
CDS-SW-11	23/01/2017	11:30:00 AM	SB & HY	no rain	7.31	2.2	25.38	138	10.3 mg/L	1250	N	Flowing, ducks
CDS-SW-12	27/01/2017	11:30:00 AM	MM & CG	Overcast, light showers earlier in morning (<1mm), High tide @ 9:00, NE breeze, tiding going out.	8.22	9.2	24		21.12 mg/L	59100	N	Clear, no odour.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JANUARY 2017

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1701911-004	8.3	35	476	0.13	0.008	0.002	0.0001	0.001	0.013	0.001	0.002	0.106	0.00004	0.09	4.1	1.3	0.08
CDS-SW-02	ES1701911-001	7.88	17	16900	0.08	0.051	0.002	0.0001	0.001	0.004	0.001	0.001	0.067	0.00004	0.07	2.9	2.5	0.06
CDS-SW-03	ES1701911-003	7.95	32	434	0.08	0.01	0.003	0.0001	0.002	0.012	0.001	0.002	0.186	0.00004	0.06	1.7	1.1	0.13
CDS-SW-04	ES170246-004	7.7	5	39000	0.1	0.022	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00005	0.06	2.2	0.9	0.52
CDS-SW-05	ES1701911-002	8.25	8	39900	0.01	0.095	0.027	0.0035	0.014	0.018	0.012	0.014	0.05	0.00004	0.05	1.4	1.1	0.22
CDS-SW-06	ES1702046-001	7.82	5	48800	0.22	0.021	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.11
CDS-SW-07	ES1702046-003	7.95	5	52800	0.1	0.011	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00019	0.05	0.5	0.5	0.05
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1701561-001	7.64	8	1310	0.18	0.075	0.001	0.0003	0.001	0.003	0.001	0.001	0.01	0.00004	0.17	0.9	0.9	0.11
CDS-SW-11	ES1701561-002	7.47	5	1220	1.16	0.098	0.001	0.0004	0.001	0.006	0.002	0.003	0.066	0.00004	0.41	1.1	0.9	0.57
CDS-SW-12	ES1702046-002	7.92	5	51200	0.22	0.21	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00005	0.05	0.5	0.5	0.14

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JANUARY 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1701911-004	0.02	2.79	0.15	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to Project. Rainfall monitoring event.
CDS-SW-02	ES1701911-001	0.14	0.23	0.27	0.12	5	20	100	100	100	1	2	2	2	5	No CDSJV discharges. Upstream Zinc and Nitrogen above trigger limit. Non CDSJV works discharging between SW-01 and SW-02. Exceedences not related to Project. Rainfall monitoring event.
CDS-SW-03	ES1701911-003	0.02	0.6	0.2	0.05	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Non CDSJV works discharging between Campbell St works and monitoring location. Exceedences not related to Project. Rainfall monitoring event.
CDS-SW-04	ES170246-004	0.02	1.27	0.09	0.01	5	20	100	100	100	1	2	2	2	5	Outside of CDSJV catchment. Exceedences not related to Project.
CDS-SW-05	ES1701911-002	0.01	0.27	0.11	0.02	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Due to high salinity, limits of reporting were raised on dissolved metals. Exceedences not related to Project.
CDS-SW-06	ES1702046-001	0.01	0.07	0.1	0.04	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-07	ES1702046-003	0.01	0.07	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1701561-001	0.03	0.01	0.06	0.01	5	20	100	100	100	1	5	2	2	5	No exceedences.
CDS-SW-11	ES1701561-002	0.04	0.13	0.08	0.03	5	20	100	100	100	1	2	2	2	5	Non-CDSJV sources contributing to water body between SW-10 and SW-07. Exceedence not related to Project.
CDS-SW-12	ES1702046-002	0.01	0.07	0.06	0.02	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JANUARY 2017

Three Month Rolling Average

Oxy Redution potenital				
Location	Oct	Nov	Dec	Average
CDS-SW-01	158	128	119	135
CDS-SW-02	109	174	175	152.666667
CDS-SW-03	147	145		146
CDS-SW-04				#DIV/0!
CDS-SW-05		200		200
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08		248	280	264
CDS-SW-09	140		158	149
CDS-SW-10	198	230	179	202.333333
CDS-SW-11	217	195	170	194
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Oct	Nov	Dec	Average
CDS-SW-01	0.23	0.08		0.155
CDS-SW-02	0.55	0.5		0.525
CDS-SW-03	1.14	0.07		0.605
CDS-SW-04				#DIV/0!
CDS-SW-05	0.5	0.5		0.5
CDS-SW-06	0.05	0.1	0.1	0.083333333
CDS-SW-07	0.05	0.1	0.1	0.083333333
CDS-SW-08		0.304	0.249	0.2765
CDS-SW-09	0.31		0.01	0.16
CDS-SW-10	0.08	0.048	0.47	0.199333333
CDS-SW-11	0.41	0.141	1.19	0.580333333
CDS-SW-12		0.1	0.1	0.1

Reactive Phosphorus				
Location	Oct	Nov	Dec	Average
CDS-SW-01	0.06	0.04	0.2	0.12
CDS-SW-02	0.01	0.01	0.01	0.01
CDS-SW-03	0.02	0.01	0.01	0.01
CDS-SW-04				#DIV/0!
CDS-SW-05	0.01	0.02	0.01	0.015
CDS-SW-06			0.01	0.01
CDS-SW-07			0.01	0.01
CDS-SW-08		0.01	0.23	0.12
CDS-SW-09	0.01		0.02	0.02
CDS-SW-10	0.02	0.01	0.01	0.01
CDS-SW-11	0.01	0.11	0.05	0.08
CDS-SW-12			0.01	0.01

C6-10				
Location	Oct	Nov	Dec	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	40	20	20	26.66666667
CDS-SW-04				#DIV/0!
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08		20	20	20
CDS-SW-09	20		20	20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12		20	20	20

C10-C16				
Location	Oct	Nov	Dec	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	3040	100	100	1080
CDS-SW-04				#DIV/0!
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	120	100	100	106.666667
CDS-SW-12		100	100	100

C16-C34				
Location	Oct	Nov	Dec	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	210	100	100	136.6666667
CDS-SW-04				#DIV/0!
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12		100	100	100

C34-C40				
Location	Oct	Nov	Dec	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04				#DIV/0!
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12		100	100	100

Benzene				
Location	Oct	Nov	Dec	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04				#DIV/0!
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08		1	1	1
CDS-SW-09	1		1	1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12		1	1	1

Toulene				
Location	Oct	Nov	Dec	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09	2		2	2
CDS-SW-10	2	2	5	3
CDS-SW-11	2	2	2	2
CDS-SW-12		2	2	2

Ethlybenzene				
Location	Oct	Nov	Dec	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09	2		2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12		2	2	2

Xylene				
Location	Oct	Nov	Dec	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04				#DIV/0!
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09	2		2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12		2	2	2

Naphthalene				
Location	Oct	Nov	Dec	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04				#DIV/0!
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08		5	5	5
CDS-SW-09	5		5	5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12		5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

FEBRUARY 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	28/02/2017	11:35:00 AM	DL & PS	Non-CDS-JV works occuring adjacent to the creek. 26/02 - 27/02 40mm rain.	8.04	19.1	23.44	182	5.5 mg/L	479	N	Recent rain. water level medium. Medium velocity. Water clear.
CDS-SW-02	28/02/2017	11:05:00 AM	DL& PS	26/02 - 27/02 40mm rain. Water level high. Medium velocity. Water turbid.	7.68	16	23.89	207	67.2	12400	N	Recent rain. Water level high. Medium velocity. Water turbid.
CDS-SW-03	28/02/2017	12:15:00 PM	DL & PS	26/02 - 27/02 40mm rain.Water level high. Medium velocity. Water turbid.	7.25	262	26.27	163	6.29 mg/L	212	N	Recent rain. Water level medium, velocity medium. Very turbid.
CDS-SW-04	28/02/2017		MM & CG	No flow, hazardous entry								
CDS-SW-05	28/02/2017	12:35:00 PM	DL& PS	26/02 - 27/02 40mm rain. Water level high. Medium velocity. Water lightly turbid	8.02	12.1	24.72	169	6.75 mg/L	29900	N	Recent rain. Water level high. Medium velocity. Water lightly turbid
CDS-SW-06	28/02/2017	2:30:00 AM	MM & CG	Fine, rainfall past 5 days: 44mm	7.17	17.6	25.62		5.45 mg/L	30300	N	Low tide, approaching at 4:45, murky, debris, fishmen
CDS-SW-07	28/02/2017	2:59:00 AM	MM & CG	Fine, rainfall over past 5 days: 44mm	7.72	4.2	24.46		25.02 mg/L	24100	N	Low Tide, some debris in water, fishmen, Clear but bitsy, no odour
CDS-SW-08	14/02/2017	9:30:00 AM	SB & HY	Pouring rain	5.41	123	22.57	272	27.38 mg/L	231	N	Dirty, rain, heavy flow, rain for at least 15 mins hard and constant
CDS-SW-09	14/02/2017	3:50:00 PM	SB & HY	Huge rain fall throughout the day	8.57	68.1	25.31	142	6.38 mg/L	359	N	Drain flowing, green floor of channel
CDS-SW-10	14/02/2017	2:50:00 PM	SB & HY	Slight flow in creek, higher water level then usual. Rain has been contant all day	7.17	49.8	22.95	193	14.25 mg/L	203	N	Slightly yellow
CDS-SW-11	14/02/2017	2:15:00 PM	SB & HY	heavy rain all day	6.63	29.9	21.46	200	14.47 mg/L	164	N	Slightly yellow, heavy flow
CDS-SW-12	28/02/2017	11:30:00 AM	MM & CG	Fine, rainfall over past 5 days - 44mm	7.74	4.7	24.46		25.02 mg/L	24100	N	Low tide, exposed banks, slow flow, ARN2 not discharging

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

FEBRUARY 2017

Lab Test																	
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1704667-002	7.47	5	378	0.05	0.029	0.002	0.0001	0.001	0.009	0.001	0.002	0.054	0.00004	0.05	4.3	2.2	1.29
CDS-SW-02	ES1704667-001	7.4	5	12600	0.05	0.027	0.002	0.0001	0.001	0.005	0.001	0.001	0.058	0.00004	0.05	1.2	0.8	0.21
CDS-SW-03	ES1704667-003	7.23	63	203	0.05	0.009	0.003	0.0001	0.001	0.011	0.001	0.001	0.031	0.00004	0.05	2.2	1.5	0.24
CDS-SW-04																		
CDS-SW-05	ES1704667-004	7.73	5	34400	0.05	0.017	0.003	0.0001	0.001	0.001	0.001	0.001	0.016	0.00004	0.05	0.2	0.2	0.22
CDS-SW-06	ES1704807-003	7.66	20	29100	0.05	0.016	0.002	0.0001	0.001	0.003	0.001	0.001	0.018	0.00004	0.05	1.2	0.9	0.18
CDS-SW-07	ES1704807-005	7.73	18	34800	0.05	0.016	0.002	0..0001	0.001	0.002	0.001	0.001	0.016	0.00013	0.05	0.2	0.2	0.24
CDS-SW-08	ES1703555-003	7.04	75	104	0.053	0.0138	0.0006	0.0004	0.0007	0.0101	0.0023	0.0009	0.02	0.00004	0.05	1.3	0.8	0.21
CDS-SW-09	ES1703555-004	7.97	28	358	1.28	0.0226	0.0018	0.0029	0.0014	0.0141	0.0035	0.0018	0.044	0.0004	0.3	2.4	1.4	0.02
CDS-SW-10	ES1703555-001	7.35	26	204	0.864	0.0239	0.0012	0.0025	0.0013	0.012	0.0079	0.0012	0.051	0.00004	0.13	1.5	0.6	0.04
CDS-SW-11	ES1703555-002	6.71	18	164	0.734	0.0243	0.001	0.001	0.0009	0.0095	0.0047	0.0014	0.05	0.00004	0.18	1.5	0.8	0.21
CDS-SW-12	ES1704807-004	7.68	9	28400	0.05	0.016	0.002	0.0001	0.001	0.004	0.001	0.001	0.022	0.00004	0.05	0.3	0.2	0.19

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

FEBRUARY 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1704667-002	0.1	1.99	0.18	0.12	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Recent rainfall. Exceedences not related to Project.
CDS-SW-02	ES1704667-001	0.02	0.39	0.11	0.02	5	20	100	100	100	1	2	2	2	5	Exceedances detected upstream. Non-CDS-JV discharges between upstream. No CDS-JV discharges. Exceedences not related to Project.
CDS-SW-03	ES1704667-003	0.04	0.62	0.21	0.02	5	20	100	100	100	1	2	2	2	5	Recent rainfall. Inspections demonstrate all Campbell St erosion and sediment controls in-place and compliant. Non-CDS-JV discharges between CDS-JV work sites and monitoring location. Exceedences not related to Project.
CDS-SW-04																
CDS-SW-05	ES1704667-004	0.01	0.24	0.38	0.04	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Exceedences not related to Project.
CDS-SW-06	ES1704807-003	0.02	0.3	0.11	0.02	5	20	100	100	100	1	2	2	2	5	No exceedences detected.
CDS-SW-07	ES1704807-005	0.02	0.23	0.02	0.01	5	20	100	100	100	1	2	2	2	5	No exceedences detected.
CDS-SW-08	ES1703555-003	0.04	0.47	0.15	0.03	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Exceedences not related to Project. Rainfall monitoring event.
CDS-SW-09	ES1703555-004	0.02	0.97	4.7	0.03	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Rainfall monitoring event, non-CDSJV areas contributing to water sample. Exceedences not related to Project.
CDS-SW-10	ES1703555-001	0.02	0.84	0.1	0.06	5	20	100	100	100	1	2	2	2	5	Low conductivity levels due to rainfall event.
CDS-SW-11	ES1703555-002	0.02	0.64	0.12	0.05	5	20	100	100	100	1	2	2	2	5	Low conductivity and pH levels due to rainfall event.
CDS-SW-12	ES1704807-004	0.02	0.29	0.02	0.03	5	20	100	100	100	1	2	2	2	5	No exceedences detected.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

FEBRUARY 2017

Three Month Rolling Average

Oxy Redution potenital				
Location	Nov	Dec	Jan	Average
CDS-SW-01	128	119	186	144.333333
CDS-SW-02	174	175	177	175.333333
CDS-SW-03	145		126	135.5
CDS-SW-04				#DIV/0!
CDS-SW-05	200		103	151.5
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08	248	280		264
CDS-SW-09		158		158
CDS-SW-10	230	179	0	136.333333
CDS-SW-11	195	170	138	167.666667
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Nov	Dec	Jan	Average
CDS-SW-01	0.08		0.13	0.105
CDS-SW-02	0.5		0.08	0.29
CDS-SW-03	0.07		0.08	0.075
CDS-SW-04			0.1	0.1
CDS-SW-05	0.5		0.01	0.255
CDS-SW-06	0.1	0.1	0.22	0.14
CDS-SW-07	0.1	0.1	0.1	0.1
CDS-SW-08	0.304	0.249		0.2765
CDS-SW-09		0.01		0.01
CDS-SW-10	0.048	0.47	0.18	0.23266667
CDS-SW-11	0.141	1.19	1.16	0.83033333
CDS-SW-12	0.1	0.1	0.22	0.14

Reactive Phosphorus				
Location	Nov	Dec	Jan	Average
CDS-SW-01	0.04	0.2	0.01	0.105
CDS-SW-02	0.01	0.01	0.12	0.065
CDS-SW-03	0.01	0.01	0.05	0.03
CDS-SW-04			0.01	0.01
CDS-SW-05	0.02	0.01	0.02	0.015
CDS-SW-06		0.01	0.04	0.025
CDS-SW-07		0.01	0.01	0.01
CDS-SW-08	0.01	0.23		0.23
CDS-SW-09		0.02		0.02
CDS-SW-10	0.01	0.01	0.01	0.01
CDS-SW-11	0.11	0.05	0.03	0.04
CDS-SW-12		0.01	0.02	0.015

C6-10				
Location	Nov	Dec	Jan	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04			20	20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08	20	20		20
CDS-SW-09		20		20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Nov	Dec	Jan	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09		100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Nov	Dec	Jan	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09		100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Nov	Dec	Jan	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09		100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Nov	Dec	Jan	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04			1	1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08	1	1		1
CDS-SW-09		1		1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Nov	Dec	Jan	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09		2		2
CDS-SW-10	2	5	5	4
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Nov	Dec	Jan	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09		2		2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Nov	Dec	Jan	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09		2		2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Nov	Dec	Jan	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04			5	5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08	5	5		5
CDS-SW-09		5		5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

MARCH 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	17/03/2017	1:00:00 PM	PS & RB	Non-CDS-JV works occuring adjacent to the creek. 16/03 33mm rain.	7.42	25	21.85	221	69.6	174	N	Fast flow, raining water murky, grey skys
CDS-SW-02	17/03/2017	3:36:00 PM	PS & RB	Rain event sample, high water level, top of the tide, raining, overcast, no odour. 16/03 33mm rain.	7.07	0	22.69	207	66.1	15900	N	Raining, overcast, sample, high water level, top of the tide, raining, overcast, no odour.
CDS-SW-03	17/03/2017	1:00:00 PM	PS & RB	Rain event; Sediment coming in from other sources,oil and grease visable 16/03 33mm rain.	7.68	104	22.43	202	87.3	130	Y	Raining, no odour, medium velocity,
CDS-SW-04	30/03/2017	2:30:00 PM	MM & CG	High winds, rain ongoing since morning (12mm so far), high tide @ 11:04,	6.65	32.2	21.65		27.15 mg/L	9100	N	No odour, brown tinge, flowing water
CDS-SW-05	17/03/2017	3:36:00 PM	PS & RB	Rain Event sample, raing, overcast, high tide, 16/03 33mm rain.	7.18		22.76	199	54.2	11700	N	Raining, medium flow, no odour, high tide
CDS-SW-06	30/03/2017	2:00:00 PM	MM & CG	High winds, rain ongoing since morning (12mm so far), high tide @ 11:04, tide going out	7.78	13.1	23.91		22.4 mg/L	35200	N	Murky (Yellow/Brown), low tide, tide going out, debris, sample collected on rowers club floating dock.
CDS-SW-07	30/03/2017	2:45:00 PM	MM & CG	High winds, rain ongoing since morning (12mm so far), high tide @ 11:04, tide going out	7.74	13	23.38		24.3 mg/L	41800	N	New monitoring location as usual spot blocked off by water - also unsafe. Sample take off jetty, murky brown, no odour, tide flow out, very windy.
CDS-SW-08	30/03/2017	10:30:00 AM	TM & HY	Raining and Drizzling	6.32	5.1	23.43	257	50	2070	Y	browny
CDS-SW-09	30/03/2017	10:30:00 AM	TM & HY	Raining	6.53	2.51	2.32	241	17.35 mg/L	1710	N	flowing and clean
CDS-SW-10	30/03/2017	10:30:00 AM	TM & HY	Heavy raining during Inspection	7.16	38.6	22.18	193	12.64 mg/L	660	N	flowing and browny
CDS-SW-11	30/03/2017	10:30:00 AM	TM & HY	Heavy raining during Inspection	6.34	5.33	22.5	254	15.08 mg/L	235	N	flowing and browny
CDS-SW-12	30/03/2017	2:15:00 PM	MM & CG	High winds, rain ongoing since morning (12mm so far), high tide @ 11:04, tide going out	7.87	53.6	22.52		24.3 mg/L	36700	N	Low tide, exposed banks, very windy causing waves to break on shore line (leading to turbid water). Sample taken from bank, not from Jetty. It was observed that ARN-2 was discharging at the time. A small layflat hose was observed discharing stormwater point - unsure of who was responsible for this. VBA discharge point into channel has changed - increased disturbance.

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

MARCH 2017

Lab Test																	
Surface WQ ID	Lab Sample ID + Work Order #	pH	TSS (mg/L)	Conductivity (µS/cm)	Fe (µ/L)	Mn (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Mercury (mg/L)	Ferrous Iron (mg/L)	Total Nitrogen as N (mg/L)	TKN (mg/L)	Ammonia (mg/L)
CDS-SW-01	ES1706438-002	7.36	22	216	0.06	0.01	0.001	0.0001	0.001	0.007	0.003	0.001	0.078	0.00004	0.07	1.2	0.5	0.07
CDS-SW-02	ES1706438-001	7.58	5	22200	0.05	0.023	0.002	0.0001	0.001	0.002	0.001	0.001	0.047	0.00049	0.05	1	0.7	0.34
CDS-SW-03	ES1706438-003	7.21	52	157	0.07	0.006	0.001	0.0001	0.001	0.006	0.003	0.001	0.05	0.00004	0.07	1.1	0.8	0.22
CDS-SW-04	ES1707755-014	7.51	6	9280	0.16	0.023	0.001	0.0001	0.001	0.004	0.001	0.001	0.04	0.00021	0.2	2.3	2	0.68
CDS-SW-05	ES1706438-004	7.46	5	15500	0.07	0.016	0.001	0.0001	0.001	0.002	0.001	0.001	0.026	0.00004	0.05	1	0.6	0.33
CDS-SW-06	ES1707755-011	7.68	10	36200	0.1	0.027	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	1.4	1.3	0.33
CDS-SW-07	ES1707755-013	7.68	12	42400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	1.9	1.4	0.33
CDS-SW-08	ES1707621-004	7.9	13	1870	0.35	0.267	0.0022	0.0004	0.0005	0.0086	0.0005	0.0025	0.012	0.00033	0.48	2.5	2	0.23
CDS-SW-09	ES1707621-003	8.33	24	1550	0.05	0.0371	0.0014	0.0008	0.0069	0.0179	0.0026	0.0025	0.17	0.00007	0.05	6.2	4.6	0.25
CDS-SW-10	ES1707621-001	7.48	131	512	0.05	0.147	0.0013	0.002	0.0098	0.0368	0.0237	0.0024	0.25	0.00007	0.8	2.7	2.1	0.27
CDS-SW-11	ES1707621-002	7.72	5	729	1.15	0.175	0.0019	0.0003	0.0005	0.0047	0.0012	0.0036	0.028	0.00004	0.07	5.1	4.6	3.09
CDS-SW-12	ES1707755-012	7.67	75	38000	0.1	0.055	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	1.6	1.5	0.36

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

MARCH 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1706438-002	0.03	0.7	0.11	0.07	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Rainfall monitoring event. Exceedences not related to Project.
CDS-SW-02	ES1706438-001	0.02	0.25	0.44	0.48	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Non-CDS-JV sources contributing to water body between worksite and monitoring location. No CDS-JV discharges from site. Exceedences not related to Project.
CDS-SW-03	ES1706438-003	0.02	0.3	0.16	0.05	5	20	100	100	100	1	2	2	2	5	Recent rainfall. Inspections demonstrate all Campbell St erosion and sediment controls in-place and compliant. Non-CDS-JV contributory sources between CDS-JV work sites and SW-03.
CDS-SW-04	ES1707755-014	0.02	0.31	0.14	0.06	5	20	100	100	100	1	2	2	2	5	Muddy Creek catchment includes water running off community garden, West Botany Road and Wetlands. Outside of CDSJV catchment, exceedences not related to Project.
CDS-SW-05	ES1706438-004	0.34	0.02	0.1	0.07	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Exceedences not related to Project.
CDS-SW-06	ES1707755-011	0.02	0.09	0.08	0.05	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-07	ES1707755-013	0.01	0.45	0.07	0.04	5	20	100	100	100	1	2	2	2	5	Exceedences recorded at upstream monitoring locations. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Non-CDSJV sources contributing to water body between SW-12 and SW-07. Exceedences not related to project.
CDS-SW-08	ES1707621-004	0.01	0.48	0.58	0.29	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Monitoring location upstream of CDSJV worksite. Exceedences not related to Project.
CDS-SW-09	ES1707621-003	0.03	1.56	0.28	0.02	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Inspection confirmed erosion and sediment controls in place and effective. Exceedences not related to Project.
CDS-SW-10	ES1707621-001	0.04	0.6	0.29	0.01	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Monitoring location upstream of CDSJV worksite. Exceedences not related to Project.
CDS-SW-11	ES1707621-002	0.08	0.38	0.01	0.01	5	20	100	100	100	1	2	2	2	5	Rainfall monitoring event. Non-CDSJV sources contributing to water body. Exceedences not related to Project.
CDS-SW-12	ES1707755-012	0.04	0.09	0.14	0.01	5	20	100	100	100	1	2	2	2	5	Exceedences recorded upstream. ARN2 not discharging at time and exposed banks led to sediment collected in sample. High wind speeds further exaserbated the water turbidity. Mg exceedence not related to Project. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection. Exceedences not related to project.

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater	Above 3-month Average	

MARCH 2017

Three Month Rolling Average

Oxy Redution potenital				
Location	Dec	Jan	Feb	Average
CDS-SW-01	119	186	182	162.3333333
CDS-SW-02	175	177	207	186.3333333
CDS-SW-03		126	163	144.5
CDS-SW-04				#DIV/0!
CDS-SW-05		103	169	136
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08	280		272	276
CDS-SW-09	158		142	150
CDS-SW-10	179	0	193	124
CDS-SW-11	170	138	200	169.3333333
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Dec	Jan	Feb	Average
CDS-SW-01		0.13	0.05	0.09
CDS-SW-02		0.08	0.05	0.065
CDS-SW-03		0.08	0.05	0.065
CDS-SW-04		0.1		0.1
CDS-SW-05		0.01	0.05	0.03
CDS-SW-06	0.1	0.22	0.05	0.123333333
CDS-SW-07	0.1	0.1	0.05	0.083333333
CDS-SW-08	0.249		0.053	0.151
CDS-SW-09	0.01		1.28	0.645
CDS-SW-10	0.47	0.18	0.864	0.504666667
CDS-SW-11	1.19	1.16	0.734	1.028
CDS-SW-12	0.1	0.22	0.05	0.123333333

Reactive Phosphorus				
Location	Dec	Jan	Feb	Average
CDS-SW-01	0.2	0.01	0.12	0.065
CDS-SW-02	0.01	0.12	0.02	0.07
CDS-SW-03	0.01	0.05	0.02	0.035
CDS-SW-04		0.01		0.01
CDS-SW-05	0.01	0.02	0.04	0.03
CDS-SW-06	0.01	0.04	0.02	0.03
CDS-SW-07	0.01	0.01	0.01	0.01
CDS-SW-08	0.23		0.03	0.03
CDS-SW-09	0.02		0.03	0.03
CDS-SW-10	0.01	0.01	0.06	0.035
CDS-SW-11	0.05	0.03	0.05	0.04
CDS-SW-12	0.01	0.02	0.03	0.025

C6-10				
Location	Dec	Jan	Feb	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04		20		20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08	20		20	20
CDS-SW-09	20		20	20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Dec	Jan	Feb	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100		100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Dec	Jan	Feb	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100		100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Dec	Jan	Feb	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100		100	100
CDS-SW-09	100		100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Dec	Jan	Feb	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04		1		1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08	1		1	1
CDS-SW-09	1		1	1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Dec	Jan	Feb	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2		2	2
CDS-SW-09	2		2	2
CDS-SW-10	5	5	2	4
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Dec	Jan	Feb	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2		2	2
CDS-SW-09	2		2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Dec	Jan	Feb	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2		2	2
CDS-SW-09	2		2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Dec	Jan	Feb	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04		5		5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08	5		5	5
CDS-SW-09	5		5	5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

APRIL 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	27/04/2017	9:30:00 AM	DL & PS	17 degrees. 35km/h winds SSW. Clear skies.	7.04	0	18.46	180	82.5	459	N	High tide, falling.
CDS-SW-02	27/04/2017	9:45:00 AM	DL & PS	17 degrees. 35km/h winds SSW. Clear skies.	6.91	0	19.06	192	38.1	35500	N	High tide, falling.
CDS-SW-03	27/04/2017	10:40:00 AM	DL & PS	17 degrees. 35km/h winds SSW. Clear skies.	8.38	0	19.09	141	112.1	918	N	High tide, falling. Algae present.
CDS-SW-04												Not accessible, no flow.
CDS-SW-05	27/04/2017	11:00:00 AM	DL & PS	17 degrees. 35km/h winds SSW. Clear skies.	5.54	0	20.16	300	61.3	37700	N	High tide, falling.
CDS-SW-06	24/04/2017	10:30:00 AM	MM & CG	Fine, no rain, high tide at 6:15am, low tide 12:30pm.	7.68	8.8	23.11		11.02 mg/L	44600	N	Low tide, exposed banks, waves from boats.
CDS-SW-07	24/04/2017	10:00:00 AM	MM & CG	Fine, no rain, high tide at 6:15am, low tide 12:30pm.	7.51	8.5	23.21		6.29 mg/L	47700	N	Clear, no odour, low flow, no rubbish visible.
CDS-SW-08	26/04/2017	10:00:00 AM	HY &TM	Fine and sunny	Horiba Ph probe not calibrating	4	20.31	294	13.87 mg/L	3400	Y	Low flow, rubbish and slight oil sheen
CDS-SW-09											N	Not enough flow to grab sample
CDS-SW-10	26/04/2017	10:00:00 AM	HY &TM	Fine and sunny	Horiba Ph probe not calibrating	2.7	19.5	175	9.72 mg/L	3500	N	Rubbish and dead leaves. Low flow
CDS-SW-11	26/04/2017	10:00:00 AM	HY &TM	Fine and sunny	Horiba Ph probe not calibrating	2.2	19.48	239	3.7 mg/L	370	N	Medium Flow. Dead leaves
CDS-SW-12	24/04/2017	10:45:00 AM	MM & CG	Fine, no rain, high tide at 6:15am, low tide 12:30pm.	7.68	16.5	23.64		7.45 mg/L	46900	N	Low tide, exposed banks, waves from boats. ARN-2 discharging at time of sample. ARN-2 commenced discharging at end of monitoring session: clear, no discolouration or bubbles.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

APRIL 2017

Lab Test																	
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1709945-002	7.89	10	539	0.07	0.03	0.002	0.0001	0.001	0.007	0.001	0.002	0.059	0.00004	0.05	5.7	2.2	0.33
CDS-SW-02	ES1709945-001	7.75	12	47100	0.10	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.09	1	0.9	0.25
CDS-SW-03	ES1709945-003	8.34	18	1110	0.05	0.014	0.003	0.0001	0.001	0.008	0.001	0.004	0.02	0.00004	0.05	14.4	12.9	7.42
CDS-SW-04																		
CDS-SW-05	ES1709945-004	7.93	8	50200	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	2.2	2.1	0.18
CDS-SW-06	ES1710098-001	7.71	5	46100	0.05	0.024	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.5
CDS-SW-07	ES1710098-002	7.9	16	48800	0.5	0.098	0.01	0.001	0.01	0.01	0.01	0.01	0.051	0.00004	0.05	0.6	0.5	0.5
CDS-SW-08	ES1709818-004	8.1	28	3720	0.2	0.616	0.002	0.0038	0.001	0.002	0.001	0.002	0.025	0.00257	0.13	1.5	1.5	0.4
CDS-SW-09																		
CDS-SW-10	ES1709818-002	8.55	23	2940	0.06	0.034	0.001	0.0004	0.005	0.004	0.001	0.003	0.015	0.00004	0.05	0.03	1.3	0.09
CDS-SW-11	ES1709818-003	7.63	8	964	0.05	0.293	0.003	0.0004	0.001	0.001	0.002	0.001	0.011	0.00004	0.05	0.05	5.6	4.64
CDS-SW-12	ES1710098-003	7.89	18	48600	0.5	0.015	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

APRIL 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1709945-002	0.23	3.24	0.45	0.3	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Non-CDSJV works occurring adjacent to monitoring location. Exceedences not related to Project.
CDS-SW-02	ES1709945-001	0.01	0.09	0.05	0.02	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters triggered were below limits of detection.
CDS-SW-03	ES1709945-003	0.78	0.72	0.08	0.03	5	20	100	100	100	1	2	2	2	5	CDSJV not discharging at time of sampling. Non-CDSJV sources contributing to water body.
CDS-SW-04																
CDS-SW-05	ES1709945-004	0.01	0.05	0.05	0.04	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters triggered were below limits of detection. Non-CDSJV sources contributing to water body.
CDS-SW-06	ES1710098-001	0.01	0.06	0.05	0.03	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters triggered were below limits of detection.
CDS-SW-07	ES1710098-002	0.01	0.06	0.07	0.02	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for dissolved metals due to laboratory processes. Parameters triggered were below limits of detection. Mg and Zn was not triggered adjacent to CDSJV worksite, downstream exceedence not related to the Project.
CDS-SW-08	ES1709818-004	0.01	0.02	0.8	0.08	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite.
CDS-SW-09																
CDS-SW-10	ES1709818-002	0.03	0.3	1.64	0.01	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Exceedence not related to Project.
CDS-SW-11	ES1709818-003	0.05	0.35	0.1	0.01	5	20	100	100	100	1	2	2	2	5	Non-CDSJV sources contributing to water body between SW-10 and SW-07. Exceedence not related to Project.
CDS-SW-12	ES1710098-003	0.01	0.1	0.05	0.03	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Limit of detection were raised for dissolved metals due to laboratory processes. Parameters triggered were below limits of detection.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

APRIL 2017

Three Month Rolling Average

Oxy Redution potenital				
Location	Jan	Feb	Mar	Average
CDS-SW-01	186	182	221	196.333333
CDS-SW-02	177	207	207	197
CDS-SW-03	126	163	202	163.666667
CDS-SW-04				#DIV/0!
CDS-SW-05	103	169	199	157
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08		272	257	264.5
CDS-SW-09		142	241	191.5
CDS-SW-10	0	193	193	128.666667
CDS-SW-11	138	200	254	197.333333
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Jan	Feb	Mar	Average
CDS-SW-01	0.13	0.05	0.06	0.08
CDS-SW-02	0.08	0.05	0.05	0.06
CDS-SW-03	0.08	0.05	0.07	0.06666667
CDS-SW-04	0.1		0.16	0.13
CDS-SW-05	0.01	0.05	0.07	0.04333333
CDS-SW-06	0.22	0.05	0.1	0.12333333
CDS-SW-07	0.1	0.05	0.1	0.08333333
CDS-SW-08		0.053	0.35	0.2015
CDS-SW-09		1.28	0.05	0.665
CDS-SW-10	0.18	0.864	0.05	0.36466667
CDS-SW-11	1.16	0.734	1.15	1.01466667
CDS-SW-12	0.22	0.05	0.1	0.12333333

Reactive Phosphorus				
Location	Jan	Feb	Mar	Average
CDS-SW-01	0.01	0.12	0.07	0.095
CDS-SW-02	0.12	0.02	0.48	0.25
CDS-SW-03	0.05	0.02	0.05	0.035
CDS-SW-04	0.01		0.06	0.06
CDS-SW-05	0.02	0.04	0.07	0.055
CDS-SW-06	0.04	0.02	0.05	0.035
CDS-SW-07	0.01	0.01	0.04	0.025
CDS-SW-08		0.03	0.29	0.16
CDS-SW-09		0.03	0.02	0.025
CDS-SW-10	0.01	0.06	0.01	0.035
CDS-SW-11	0.03	0.05	0.01	0.03
CDS-SW-12	0.02	0.03	0.01	0.02

C6-10				
Location	Jan	Feb	Mar	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04	20		20	20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08		20	20	20
CDS-SW-09		20	20	20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Jan	Feb	Mar	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100		100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09		100	100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Jan	Feb	Mar	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100		100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09		100	100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Jan	Feb	Mar	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100		100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08		100	100	100
CDS-SW-09		100	100	100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Jan	Feb	Mar	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04	1		1	1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08		1	1	1
CDS-SW-09		1	1	1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Jan	Feb	Mar	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2		2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09		2	2	2
CDS-SW-10	5	2	2	3
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Jan	Feb	Mar	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2		2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09		2	2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Jan	Feb	Mar	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2		2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08		2	2	2
CDS-SW-09		2	2	2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Jan	Feb	Mar	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04	5		5	5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08		5	5	5
CDS-SW-09		5	5	5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

MAY 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	26/05/2017	3:24:00 PM	DL & RB	Non-CDS-JV works occuring adjacent to monitoring location	4.79	5	19.6	340	97	686	N	Low tide, rising. 21 Deg. Construction works nearby (non site).
CDS-SW-02	26/05/2017	3:52:00 PM	DL & RB	Weather Fine. No discharges from CDS-JV	6.63	32	19.59	256	90.4	3100	N	Low tide, rising. 21 Deg. Canal bed shoing.
CDS-SW-03	26/05/2017	4:33:00 PM	DL & RB	Weather Fine. No discharges from CDS-JV	4.67	65	17.23	363	90.1	766	N	Low tide, rising. 21 Deg.
CDS-SW-04	30/05/2017	2:00:00 PM	CG & MM									Low Flow, no access.
CDS-SW-05	26/05/2017	4:58:00 PM	DL & RB	Weather Fine.	7.27	12.5	18.23	231	87.7	34700	N	Low tide, rising. 21 Deg.
CDS-SW-06	30/05/2017	2:45:00 PM	CG & MM	Fine weather, light breeze, high tide at 12:32pm.	7.92	8.1	17.96	232	21.3 mg/L	50500	N	Taken from Jetty, high tide at 12:32pm, clear, no visible rubbish, no odour.
CDS-SW-07	30/05/2017	2:10:00 PM	CG & MM	Fine weather, light breeze, high tide at 12:32pm.	7.9	3.1	17.36	216	25.03 mg/L	51100	N	Taken from Jetty, high tide at 12:32pm, clear, high level, no odour, no rubbish visible.
CDS-SW-08	29/05/2017	12:00:00 PM	CG & TM									Not enough flow to grab sample
CDS-SW-09	29/05/2017	11:30:00 AM	CG & TM									Not enough flow to grab sample
CDS-SW-10	29/05/2017	10:45:00 AM	CG & TM	Sunny, Clear and Windy	8.1	13.5	13.1	203	28.53 mg/L	3500	N	Clear water with dead leaves
CDS-SW-11	29/05/2017	10:00:00 AM	CG & TM	Sunny, Clear and Windy	7.03	15.85	14.2	112	10.35 mg/L	3200	N	Clear water with dead leaves
CDS-SW-12	30/05/2017	2:35:00 PM	CG & MM	Fine weather, light breeze, high tide at 12:32pm.	7.87	7.9	17.09	231	21.65 mg/L	50700	N	Taken from bank, not discharging, grouting activities onging at rowers club, upgrade of outlet underway, high tide at 12:32pm. Clear, tide receeding, no odour no rubbish visible.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

MAY 2017

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1712914-002	7.9	20	533	0.18	0.051	0.002	0.0001	0.001	0.016	0.003	0.002	0.08	0.00004	0.05	6.3	4.9	3.2
CDS-SW-02	ES1712914-001	7.64	33	39600	0.22	0.036	0.01	0.001	0.01	0.01	0.01	0.01	0.148	0.00004	0.05	1.4	1.3	0.27
CDS-SW-03	ES1712914-003	8.34	46	924	0.05	0.012	0.002	0.0001	0.001	0.009	0.001	0.003	0.117	0.00004	0.05	18	14.8	10.6
CDS-SW-04																		
CDS-SW-05	ES1712914-004	7.9	10	44500	0.01	0.024	0.01	0.001	0.01	0.01	0.01	0.01	0.061	0.00004	0.05	2.4	2.3	0.16
CDS-SW-06	ES1713292-001	7.98	2.9	50400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.05
CDS-SW-07	ES1713292-002	8.06	1.9	49500	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.9	0.8	0.19
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1713052-002	7.63	28	3250	0.15	0.028	0.001	0.0015	0.008	0.009	0.001	0.002	0.072	0.00012	0.08	2	1.4	0.17
CDS-SW-11	ES1713052-001	7.42	5	8130	0.29	0.264	0.001	0.0015	0.001	0.001	0.001	0.002	0.024	0.00004	0.2	4.5	4.2	3.42
CDS-SW-12	ES17131292-003	7.64	5	35400	0.05	0.606	0.001	0.0001	0.001	0.002	0.001	0.003	0.02	0.00004	0.05	3.8	3.7	1.46

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

MAY 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1712914-002	0.12	1.26	0.5	0.3	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Non-CDS-JV works occurring adjacent to monitoring location. Exceedences not related to the Project.
CDS-SW-02	ES1712914-001	0.02	0.13	0.14	0.01	5	20	100	100	100	1	2	2	2	5	No CDS-JV discharges. Non-CDS contributory sources between SW-01 and SW-02. Exceedences not related to the Project. Limit of detection were raised for some dissolved metals due to laboratory processes. Copper triggered were below limits of detection.
CDS-SW-03	ES1712914-003	0.95	2.27	0.12	0.06	5	20	100	100	100	1	2	2	2	5	No discharges from CDS-JV worksites. Exceedences not related to Project. ERSED controls inspected and appropriate.
CDS-SW-04																
CDS-SW-05	ES1712914-004	0.02	0.05	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDS-JV worksites. Exceedences not related to Project.
CDS-SW-06	ES1713292-001	0.01	0.03	0.13	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. Zn, Cu and As triggered were below limits of detection.
CDS-SW-07	ES1713292-002	0.01	0.13	0.13	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. Zn, Cu and As triggered were below limits of detection.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1713052-002	0.04	0.52	0.11	0.01	5	20	100	100	100	1	2	2	2	5	
CDS-SW-11	ES1713052-001	0.03	0.24	0.04	0.01	5	20	100	100	100	1	2	2	2	5	
CDS-SW-12	ES17131292-003	0.04	0.11	0.12	0.01	5	20	100	100	100	1	2	2	2	5	No discharges from CDS-JV worksite. Exceedences not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

Three Month Rolling Average

Oxy Redution potenital				
Location	Feb	Mar	Apr	Average
CDS-SW-01	182	221	180	194.333333
CDS-SW-02	207	207	192	202
CDS-SW-03	163	202	141	168.666667
CDS-SW-04				#DIV/0!
CDS-SW-05	169	199	300	222.666667
CDS-SW-06				#DIV/0!
CDS-SW-07				#DIV/0!
CDS-SW-08	272	257	294	274.333333
CDS-SW-09	142	241		191.5
CDS-SW-10	193	193	175	187
CDS-SW-11	200	254	239	231
CDS-SW-12				#DIV/0!

Iron (mg/L)				
Location	Feb	Mar	Apr	Average
CDS-SW-01	0.05	0.06	0.07	0.06
CDS-SW-02	0.05	0.05	0.10	0.05
CDS-SW-03	0.05	0.07	0.05	0.05666667
CDS-SW-04		0.16		0.16
CDS-SW-05	0.05	0.07	0.1	0.07333333
CDS-SW-06	0.05	0.1	0.05	0.06666667
CDS-SW-07	0.05	0.1	0.5	0.21666667
CDS-SW-08	0.053	0.35	0.2	0.201
CDS-SW-09	1.28	0.05		0.665
CDS-SW-10	0.864	0.05	0.06	0.32466667
CDS-SW-11	0.734	1.15	0.05	0.64466667
CDS-SW-12	0.05	0.1	0.5	0.21666667

Reactive Phosphorus				
Location	Feb	Mar	Apr	Average
CDS-SW-01	0.12	0.07	0.3	0.185
CDS-SW-02	0.02	0.48	0.02	0.25
CDS-SW-03	0.02	0.05	0.03	0.04
CDS-SW-04		0.06		0.06
CDS-SW-05	0.04	0.07	0.04	0.055
CDS-SW-06	0.02	0.05	0.03	0.04
CDS-SW-07	0.01	0.04	0.02	0.03
CDS-SW-08	0.03	0.29	0.08	0.185
CDS-SW-09	0.03	0.02		0.02
CDS-SW-10	0.06	0.01	0.01	0.01
CDS-SW-11	0.05	0.01	0.01	0.01
CDS-SW-12	0.03	0.01	0.03	0.02

C6-10				
Location	Feb	Mar	Apr	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04		20		20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08	20	20	20	20
CDS-SW-09	20	20		20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Feb	Mar	Apr	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100	100	100
CDS-SW-09	100	100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Feb	Mar	Apr	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100	100	100
CDS-SW-09	100	100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Feb	Mar	Apr	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04		100		100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100	100	100
CDS-SW-09	100	100		100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Feb	Mar	Apr	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04		1		1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08	1	1	1	1
CDS-SW-09	1	1		1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Feb	Mar	Apr	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2	2	2
CDS-SW-09	2	2		2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Feb	Mar	Apr	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2	2	2
CDS-SW-09	2	2		2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Feb	Mar	Apr	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04		2		2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2	2	2
CDS-SW-09	2	2		2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Feb	Mar	Apr	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04		5		5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08	5	5	5	5
CDS-SW-09	5	5		5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

JUNE 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	27/06/2017	10:35:00 AM	RB & PL	overcast, cool, fine. Non-CDS-JV works occurring adjacent to monitoring location.	5.79	10	16.45	311	8.71 mg/L	587	N	Water level medium. Water flow fast. Water clear. No odour.
CDS-SW-02	27/06/2017	12:30:00 PM	RB & PL	overcast, cool, fine. No CDS-JV discharges	7.05	2.9	16.05	264	4.3 mg/L	45300	N	Water level high. Tide turning out. Water clear. No odour.
CDS-SW-03	27/06/2017	11:10:00 AM	RB & PL	overcast, cool, fine. No CDS-JV discharges	7.19	21.6	13.5	251	11.7 mg/L	762	N	Water level low. Flow low. Water clear and no odour.
CDS-SW-04	27/06/2017	11:15:00 AM	CG & PL	overcast, cool, fine	7.51	6.6	15.8		11.3 mg/L	33900	N	Clear water, low flow, no odour. Medium flow, water clear no visible Oil or Grease
CDS-SW-05	27/06/2017	11:35:00 AM	RB & PL	overcast, cool, fine	7.25	23.2	15.58	255	4.16 mg/L	50300	N	Water level high. Tide turning out. Water clear. No odour.
CDS-SW-06	27/06/2017	11:35:00 AM	CG & PL	overcast, cool, fine/ 11am was high tide	7.78	5.1	15.81		2.7 mg/L	44900	N	Flowing reasonably fast, scum and debris on surface. Sample taken from jetty, no odour.
CDS-SW-07	27/06/2017	2:00:00 PM	CG & PL	overcast, cool, fine/ 11am was high tide	7.95	2.1	16.74		4.04 mg/L	47000	N	Small debris, biological scum on top of surface of water, flowing. Sample taken from jetty. No odour.
CDS-SW-08	28/06/2017		CG & PL	overcast, cool, fine								Inadequate flow in channel to take grab sample.
CDS-SW-09	28/06/2017		CG & PL	overcast, cool, fine								Inadequate flow in channel to take grab sample.
CDS-SW-10	28/06/2017	12:40:00 PM	CG & PL	overcast, cool, fine	8.88	5.5	14.9	107	7.3 mg/L	28100	N	Flowing, low flow, Clear colour, no odour
CDS-SW-11	28/06/2017	1:00:00 PM	CG & PL	overcast, cool, fine	7.49	20.1	13.89	98	5.98 mg/L	80300	N	
CDS-SW-12	27/06/2017	1:45:00 PM	CG & PL	overcast, cool, fine/ 11am was high tide	7.87	18.9	16.99		18.07 mg/L	46400	N	No colour, no odour, sample collected from exposed bank (due to low tide). As a result, some sediment was collected with the sample.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JUNE 2017

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1715892-001	7.96	8	522	0.08	0.028	0.001	0.0001	0.001	0.006	0.001	0.001	0.037	0.00004	0.05	3.8	1	0.2
CDS-SW-02	ES1715892-002	7.81	5	42800	0.11	0.027	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.7	0.5	0.27
CDS-SW-03	ES1715892-003	8.29	11	746	0.34	0.036	0.002	0.0001	0.001	0.008	0.005	0.002	0.042	0.00004	0.05	3.8	1	0.2
CDS-SW-04	ES1715892-008	7.79	7	36000	0.24	0.037	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00016	0.05	2.9	1.4	0.76
CDS-SW-05	ES1715892-004	7.82	5	45000	0.12	0.016	0.01	0.001	0.01	0.01	0.01	0.01	0.059	0.00004	0.05	0.5	0.5	0.19
CDS-SW-06	ES1715892-006	7.85	8	47400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.2
CDS-SW-07	ES1715892-007	7.96	5	50400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.5	0.5	0.16
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1716176-001	7.6	5	2890	0.05	0.032	0.001	0.0001	0.002	0.004	0.001	0.003	0.015	0.00004	0.05	1.4	0.9	0.1
CDS-SW-11	ES1716176-002	7.51	9	10600	0.11	0.212	0.001	0.0001	0.001	0.002	0.001	0.002	0.03	0.00004	0.1	5.2	4.8	3.2
CDS-SW-12	ES1715892-005	7.75	28	49100	0.24	0.072	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.6	0.5	0.28

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JUNE 2017

Lab Test																
Surface WQ ID	**Lab Sample ID + Work Order #**	**Nitrite (mg/L)**	**Nitrate (mg/L)**	**Total Phosphorus as P (mg/L)**	**Reactive Phosphorus**	**Oil and Grease**	**C6-C10 (µg/L)**	**C10-C16 (µg/L)**	**C16-C34 (µg/L)**	**C34-C40 (µg/L)**	**Benzene (µg/L)**	**Toulene (µg/L)**	**Ethlybenzene (µg/L)**	**Xylene (µg/L)**	**Naphthalene (µg/L)**	**Comments**
CDS-SW-01	ES1715892-001	0.19	2.65	0.06	0.02	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Non-CDSJV works occurring adjacent to monitoring location. Exceedence not related to the Project
CDS-SW-02	ES1715892-002	0.02	0.19	0.05	0.01	5	20	100	100	100	1	2	2	2	5	No CDSJV discharges. Non-CDS contributory sources between SW-01 and SW-02. Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection. Exceedences not related to the Project.
CDS-SW-03	ES1715892-003	0.19	2.65	0.06	0.02	5	20	100	100	100	1	2	2	2	5	Weather fine. No discharges from CDSJV worksites. ERSED controls inspected and appropriate. Exceedence not related to the Project.
CDS-SW-04	ES1715892-008	0.03	1.49	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Outside of CDSJV catchment, exeedences not related to Project.
CDS-SW-05	ES1715892-004	0.02	0.16	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection. Exceedences not related to Project.
CDS-SW-06	ES1715892-006	0.01	0.11	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection.
CDS-SW-07	ES1715892-007	0.13	0.12	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection.
CDS-SW-08																Inadequate flow in channel. Some staining/ slick on surface-philic likely small amount of hydrocarbon
CDS-SW-09																Inadequate flow in channel, 1cm at the deepest point, alae on bottom, no other staining, water that was present looked clear
CDS-SW-10	ES1716176-001	0.06	0.42	0.04	0.01	5	20	100	100	100	1	2	2	2	5	Sampling location upstream of CDSJV worksite. Exceedence not related to Project.
CDS-SW-11	ES1716176-002	0.03	0.38	0.1	0.01	5	20	100	100	100	1	2	2	2	5	High tide influence exceedence in conductivity. Non-CDSJV sources between upstream and sampling location. Exceedences not related to Project.
CDS-SW-12	ES1715892-005	0.02	0.08	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection. ARN2 not discharging at time and exposed banks led to sediment collected in sample. Mg exceedence not related to Project.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

Three Month Rolling Average

Oxy Redution potenital				
Location	Mar	Apr	May	Average
CDS-SW-01	221	180	340	247
CDS-SW-02	207	192	256	218.333333
CDS-SW-03	202	141	363	235.333333
CDS-SW-04				#DIV/0!
CDS-SW-05	199	300	231	243.333333
CDS-SW-06			232	232
CDS-SW-07			216	216
CDS-SW-08	257	294		275.5
CDS-SW-09	241			241
CDS-SW-10	193	175	203	190.333333
CDS-SW-11	254	239	112	201.666667
CDS-SW-12			231	231

Iron (mg/L)				
Location	Mar	Apr	May	Average
CDS-SW-01	0.06	0.07	0.18	0.10333333
CDS-SW-02	0.05	0.10	0.22	0.135
CDS-SW-03	0.07	0.05	0.05	0.05666667
CDS-SW-04	0.16			0.16
CDS-SW-05	0.07	0.1	0.01	0.06
CDS-SW-06	0.1	0.05	0.1	0.08333333
CDS-SW-07	0.1	0.5	0.1	0.23333333
CDS-SW-08	0.35	0.2		0.275
CDS-SW-09	0.05			0.05
CDS-SW-10	0.05	0.06	0.15	0.08666667
CDS-SW-11	1.15	0.05	0.29	0.49666667
CDS-SW-12	0.1	0.5	0.05	0.21666667

Reactive Phosphorus				
Location	Mar	Apr	May	Average
CDS-SW-01	0.07	0.3	0.3	0.3
CDS-SW-02	0.48	0.02	0.01	0.015
CDS-SW-03	0.05	0.03	0.06	0.045
CDS-SW-04	0.06			#DIV/0!
CDS-SW-05	0.07	0.04	0.01	0.025
CDS-SW-06	0.05	0.03	0.01	0.02
CDS-SW-07	0.04	0.02	0.01	0.015
CDS-SW-08	0.29	0.08		0.08
CDS-SW-09	0.02			#DIV/0!
CDS-SW-10	0.01	0.01	0.01	0.01
CDS-SW-11	0.01	0.01	0.01	0.01
CDS-SW-12	0.01	0.03	0.01	0.02

C6-10				
Location	Mar	Apr	May	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04	20			20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08	20	20		20
CDS-SW-09	20			20
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Mar	Apr	May	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100			100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09	100			100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Mar	Apr	May	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100			100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09	100			100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Mar	Apr	May	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04	100			100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100	100		100
CDS-SW-09	100			100
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Mar	Apr	May	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04	1			1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08	1	1		1
CDS-SW-09	1			1
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Mar	Apr	May	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2			2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09	2			2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Mar	Apr	May	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2			2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09	2			2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Mar	Apr	May	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04	2			2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2	2		2
CDS-SW-09	2			2
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Mar	Apr	May	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04	5			5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08	5	5		5
CDS-SW-09	5			5
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

JULY 2017

Field Test												
Surface WQ ID	**Date**	**Time**	**Name**	**Recent influencing conditions (weather events, exposed ground, activities occuring in close proximity to monitoring point)**	**pH**	**Turbidity (NTU)**	**Temp (°C)**	**Oxy Redution potenital**	**DO (% sat)**	**Conductivity (µS/cm)**	**Visible Oil and Grease (Y/N)**	**Field observations (water level, velocity, colour, odour, flora)**
CDS-SW-01	14/07/2017	12:15:00 PM	PS & PL	Works downstream from samples taken. Non-CDS-JV works occurring adjacent to monitoring location. Rain 13/07 16mm.	8.11	8.8	16.33	171	310.3mg/L	736	N	Water Flowing well
CDS-SW-02	14/07/2017	11:45:00 AM	PS & PL	Weather fine. No CDS-JV discharges. Rain 13/07 16mm.	7.48	4.8	16.97	163	339.6mg/L	37700	N	Some scum on the surfac, tide running out
CDS-SW-03	14/07/2017	12:45:00 PM	PS & PL	Weather fine. No CDS-JV discharges. Rain 13/07 16mm.	8.25	228	16.7	234	260mg/L	835	Y	Little to no flow, brown colour, level low,
CDS-SW-04	13/07/2017	1:50:00 PM	MM & PL	Sunny, 13/07 16mm	6.73	11.5	17.73	228	77.4	7150	N	High Tide at 11:32
CDS-SW-05	14/07/2017	1:15:00 AM	PS & PL	Weather fine. Rain 13/07 16mm.	7.8	2.3	14.57	248	190.4mg/L	47600	N	Tide on the run out. Water clear
CDS-SW-06	13/07/2017	2:50:00 PM	MM & PL	Sunny, 13/07 16mm	7.68	5.4	14.37	241	44.6	45500	N	High Tide at 11:32, Tide on way out.
CDS-SW-07	13/07/2017	2:15:00 PM	MM & PL	Sunny, 13/07 16mm	7.69	5.6	15.21	288	51.7	45500	N	High Tide at 11:32
CDS-SW-08	25/07/2017	11:00:00 AM	HY & PB	Sunny and fine								No Flow. Dry channel
CDS-SW-09	25/07/2017	11:00:00 AM	HY & PB	Sunny and fine								No Flow. Dry channel
CDS-SW-10	25/07/2017	11:00:00 AM	HY & PB	Sunny and fine	6.28	3.7	10.8	233	32.45	3600	N	very low flow
CDS-SW-11	25/07/2017	11:00:00 AM	HY & PB	Sunny and fine	6.77	19.4	12.9	277	49.5 mg/L	4430	N	Low flow
CDS-SW-12	13/07/2017	2:30:00 PM	MM & PL	Sunny, 13/07 16mm	7.78	6.8	14.97	253	47.6	46900	N	High Tide at 11:32

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JULY 2017

Lab Test																		
Surface WQ ID	**Lab Sample ID + Work Order #**	**pH**	**TSS (mg/L)**	**Conductivity (µS/cm)**	**Fe (µ/L)**	**Mn (mg/L)**	**Arsenic (mg/L)**	**Cadmium (mg/L)**	**Chromium (mg/L)**	**Copper (mg/L)**	**Lead (mg/L)**	**Nickel (mg/L)**	**Zinc (mg/L)**	**Mercury (mg/L)**	**Ferrous Iron (mg/L)**	**Total Nitrogen as N (mg/L)**	**TKN (mg/L)**	**Ammonia (mg/L)**
CDS-SW-01	ES1717482-002	7.21	9	543	0.11	2.52	0.001	0.0001	0.001	0.009	0.002	0.013	0.276	0.00004	0.05	3.3	0.8	0.3
CDS-SW-02	ES1717482-001	7.72	5	40100	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.074	0.00004	0.05	1.3	1.1	0.33
CDS-SW-03	ES1717482-003	8.34	57	877	1.29	0.044	0.004	0.0001	0.001	0.021	0.015	0.004	0.068	0.00004	0.06	14	11.7	11.2
CDS-SW-04	ES1717456-004	7.89	12	11000	0.09	0.026	0.001	0.0001	0.001	0.005	0.001	0.001	0.026	0.00004	0.05	7.4	3.7	3.2
CDS-SW-05	ES1717482-004	7.97	5	46600	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	2	0.9	0.17
CDS-SW-06	ES1717456-001	7.85	10	43800	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.05	0.00004	0.05	0.8	0.7	0.34
CDS-SW-07	ES1717456-002	7.96	22	44100	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.09	0.00004	0.05	1.1	1	0.31
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1718372-002	8.01	17	3530	0.05	0.02	0.001	0.0011	0.006	0.005	0.001	0.003	0.018	0.00079	0.05	1.5	0.8	0.17
CDS-SW-11	ES1718372-001	7.53	18	4250	0.05	0.154	0.001	0.0004	0.001	0.001	0.001	0.002	0.019	0.00004	0.1	5.7	5	3.73
CDS-SW-12	ES1717456-003	8.01	9	46400	0.1	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.5	0.00004	0.05	0.5	0.5	0.15

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

JULY 2017

Surface WQ ID	Lab Sample ID + Work Order #	Nitrite (mg/L)	Nitrate (mg/L)	Total Phosphorus as P (mg/L)	Reactive Phosphorus	Oil and Grease	C6-C10 (µg/L)	C10-C16 (µg/L)	C16-C34 (µg/L)	C34-C40 (µg/L)	Benzene (µg/L)	Toulene (µg/L)	Ethlybenzene (µg/L)	Xylene (µg/L)	Naphthalene (µg/L)	Comments
CDS-SW-01	ES1717482-002	2.54	2.54	0.04	0.02	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites. Non-CDSJV works occurring adjacent to monitoring location. Exceedences not related to Project.
CDS-SW-02	ES1717482-001	0.18	0.18	0.02	0.01	5	20	100	100	100	1	2	2	2	5	Non-CDSJV contributory sources between SW-01 and SW-02. Exceedence in Zn upstream and not related to Project. Limit of detection were raised for some dissolved metals due to laboratory processes. As and Cu triggered were below limits of detection.
CDS-SW-03	ES1717482-003	2.26	2.26	0.21	0.05	5	20	100	100	100	1	2	2	2	5	No discharges from CDSJV worksites. Exceedences not related to Project.
CDS-SW-04	ES1717456-004	3.75	3.66	0.17	0.08	5	20	100	100	100	1	2	2	2	5	Outside of CDSJV catchment, exeedences not related to Project.
CDS-SW-05	ES1717482-004	1.05	1.05	0.03	0.01	5	20	100	100	100	1	2	2	2	5	Location upstream of CDSJV worksites.
CDS-SW-06	ES1717456-001	0.14	0.12	0.05	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection.
CDS-SW-07	ES1717456-002	0.12	0.11	0.11	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. As and Cu triggered were below limits of detection. Non-CDSJV sources contributing to water body between SW-12 and SW-07. Exceedene in Zn not related to Project.
CDS-SW-08																No samples collected due to no flow
CDS-SW-09																No samples collected due to no flow
CDS-SW-10	ES1718372-002	0.05	0.62	0.01	0.01	5	20	100	100	100	1	2	2	2	5	Monitoring location upstream of CDSJV worksite. Exceedence not related to Project.
CDS-SW-11	ES1718372-001	0.05	0.65	0.02	0.01	5	20	100	100	100	1	2	2	2	5	Non-CDSJV sources contributing to water body between SW-10 and SW-07. Exceedence not related to Project.
CDS-SW-12	ES1717456-003	0.13	0.12	0.06	0.01	5	20	100	100	100	1	2	2	2	5	Limit of detection were raised for some dissolved metals due to laboratory processes. As, Zn and Cu triggered were below limits of detection.

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average
Above trigger level

Three Month Rolling Average

Oxy Redution potenital				
Location	Apr	May	Jun	Average
CDS-SW-01	180	340	311	277
CDS-SW-02	192	256	264	237.333333
CDS-SW-03	141	363	251	251.666667
CDS-SW-04				#DIV/0!
CDS-SW-05	300	231	255	262
CDS-SW-06		232		232
CDS-SW-07		216		216
CDS-SW-08	294			294
CDS-SW-09				#DIV/0!
CDS-SW-10	175	203	107	161.666667
CDS-SW-11	239	112	98	149.666667
CDS-SW-12		231		231

Iron (mg/L)				
Location	Apr	May	Jun	Average
CDS-SW-01	0.07	0.18	0.08	0.11
CDS-SW-02	0.10	0.22	0.11	0.165
CDS-SW-03	0.05	0.05	0.34	0.14666667
CDS-SW-04			0.24	0.24
CDS-SW-05	0.1	0.01	0.12	0.07666667
CDS-SW-06	0.05	0.1	0.1	0.08333333
CDS-SW-07	0.5	0.1	0.1	0.23333333
CDS-SW-08	0.2			0.2
CDS-SW-09				#DIV/0!
CDS-SW-10	0.06	0.15	0.05	0.08666667
CDS-SW-11	0.05	0.29	0.11	0.15
CDS-SW-12	0.5	0.05	0.24	0.26333333

Reactive Phosphorus				
Location	Apr	May	Jun	Average
CDS-SW-01	0.3	0.3	0.02	0.16
CDS-SW-02	0.02	0.01	0.01	0.01
CDS-SW-03	0.03	0.06	0.02	0.04
CDS-SW-04			0.01	0.01
CDS-SW-05	0.04	0.01	0.01	0.01
CDS-SW-06	0.03	0.01	0.01	0.01
CDS-SW-07	0.02	0.01	0.01	0.01
CDS-SW-08	0.08			#DIV/0!
CDS-SW-09				#DIV/0!
CDS-SW-10	0.01	0.01	0.01	0.01
CDS-SW-11	0.01	0.01	0.01	0.01
CDS-SW-12	0.03	0.01	0.01	0.01

C6-10				
Location	Apr	May	Jun	Average
CDS-SW-01	20	20	20	20
CDS-SW-02	20	20	20	20
CDS-SW-03	20	20	20	20
CDS-SW-04			20	20
CDS-SW-05	20	20	20	20
CDS-SW-06	20	20	20	20
CDS-SW-07	20	20	20	20
CDS-SW-08	20			20
CDS-SW-09				#DIV/0!
CDS-SW-10	20	20	20	20
CDS-SW-11	20	20	20	20
CDS-SW-12	20	20	20	20

C10-C16				
Location	Apr	May	June	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100			100
CDS-SW-09				#DIV/0!
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C16-C34				
Location	Apr	May	Jun	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100			100
CDS-SW-09				#DIV/0!
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

C34-C40				
Location	Apr	May	Jun	Average
CDS-SW-01	100	100	100	100
CDS-SW-02	100	100	100	100
CDS-SW-03	100	100	100	100
CDS-SW-04			100	100
CDS-SW-05	100	100	100	100
CDS-SW-06	100	100	100	100
CDS-SW-07	100	100	100	100
CDS-SW-08	100			100
CDS-SW-09				#DIV/0!
CDS-SW-10	100	100	100	100
CDS-SW-11	100	100	100	100
CDS-SW-12	100	100	100	100

Benzene				
Location	Apr	May	Jun	Average
CDS-SW-01	1	1	1	1
CDS-SW-02	1	1	1	1
CDS-SW-03	1	1	1	1
CDS-SW-04			1	1
CDS-SW-05	1	1	1	1
CDS-SW-06	1	1	1	1
CDS-SW-07	1	1	1	1
CDS-SW-08	1			1
CDS-SW-09				#DIV/0!
CDS-SW-10	1	1	1	1
CDS-SW-11	1	1	1	1
CDS-SW-12	1	1	1	1

Toulene				
Location	Apr	May	Jun	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2			2
CDS-SW-09				#DIV/0!
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Ethlybenzene				
Location	Apr	May	Jun	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2			2
CDS-SW-09				#DIV/0!
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Xylene				
Location	Apr	May	Jun	Average
CDS-SW-01	2	2	2	2
CDS-SW-02	2	2	2	2
CDS-SW-03	2	2	2	2
CDS-SW-04			2	2
CDS-SW-05	2	2	2	2
CDS-SW-06	2	2	2	2
CDS-SW-07	2	2	2	2
CDS-SW-08	2			2
CDS-SW-09				#DIV/0!
CDS-SW-10	2	2	2	2
CDS-SW-11	2	2	2	2
CDS-SW-12	2	2	2	2

Naphthalene				
Location	Apr	May	Jun	Average
CDS-SW-01	5	5	5	5
CDS-SW-02	5	5	5	5
CDS-SW-03	5	5	5	5
CDS-SW-04			5	5
CDS-SW-05	5	5	5	5
CDS-SW-06	5	5	5	5
CDS-SW-07	5	5	5	5
CDS-SW-08	5			5
CDS-SW-09				#DIV/0!
CDS-SW-10	5	5	5	5
CDS-SW-11	5	5	5	5
CDS-SW-12	5	5	5	5

Water monitoring not undertaken
Freshwater
Estuarine
Above 3-month Average

Appendix C: Australian Laboratory Services Certificate of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020: LOR's has been raised for samples ID ES1618526 - #003 - #005 due to matrix interference. (High Total Dissolved Solids)
- EK061G:/EK067G: LOR raised for TKN and Total P on sample No 3 & 5 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	160822-11	160822-09	160822-06	160822-04	160822-07
			Client sampling date / time	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]
Compound	CAS Number	LOR	Unit	ES1618523-001	ES1618523-002	ES1618523-003	ES1618523-004	ES1618523-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.31	9.30	8.00	7.69	8.13
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1050	1400	49600	31000	51700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	7	<5	5
EA045: Turbidity								
Turbidity	----	0.1	NTU	7.8	2.9	3.8	3.2	3.4
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	0.002	0.003	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	0.002	0.001	<0.010	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.026	<0.005	<0.050	<0.050	<0.050
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	0.122	0.006	<0.010	0.028	<0.010
Iron	7439-89-6	0.05	mg/L	1.02	0.26	0.25	0.28	0.19
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	0.00007	0.00036
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	4.60	0.02	0.13	1.82	0.03
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.04	<0.01	0.08	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.65	0.77	0.08	2.01	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.70	0.81	0.08	2.09	0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.0	0.8	<0.5	2.2	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.7	1.6	<0.5	4.3	<0.5
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	160822-11	160822-09	160822-06	160822-04	160822-07
				Client sampling date / time	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]	[22-Aug-2016]
Compound	CAS Number	LOR	Unit		ES1618523-001	ES1618523-002	ES1618523-003	ES1618523-004	ES1618523-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		**0.04**	**0.06**	**0.07**	**0.09**	<0.05
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**111**	**111**	**108**	**108**	**118**
Toluene-D8	2037-26-5	2	%		**106**	**103**	**90.0**	**97.1**	**99.9**
4-Bromofluorobenzene	460-00-4	2	%		**92.2**	**92.5**	**84.0**	**87.1**	**89.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	160822-08	160822-10	----	----	----
			Client sampling date / time	[22-Aug-2016]	[22-Aug-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1618523-006	ES1618523-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.56**	**8.66**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2980**	**1330**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.4**	**3.1**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.004**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.003**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.015**	----	----	----
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	**0.391**	**0.033**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.46**	**0.50**	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.21**	**0.04**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.08**	**0.07**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.27**	**0.67**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.35**	**0.74**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**0.7**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**1.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	160822-08	160822-10	----	----	----
			Client sampling date / time	[22-Aug-2016]	[22-Aug-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1618523-006	ES1618523-007	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued								
Total Phosphorus as P	----	0.01	mg/L	**0.27**	**0.04**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**103**	**115**	----	----	----
Toluene-D8	2037-26-5	2	%	**85.8**	**106**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**80.7**	**93.3**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

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Signatories

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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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.

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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.
~ = Indicates an estimated value.

- EG020/ED093: LOR's have been raised for sample ID ES1624509 - #003 & 004 due to matrix interference. (High Total Dissolved Solids)
- EK067G: LOR raised for Total P on sample 4 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	AC	CR	----
			Client sampling date / time	28-Oct-2016 13:00	28-Oct-2016 11:00	28-Oct-2016 11:30	28-Oct-2016 12:00	----
Compound	CAS Number	LOR	Unit	ES1624509-001	ES1624509-002	ES1624509-003	ES1624509-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.05**	**8.50**	**8.06**	**7.88**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**481**	**686**	**31500**	**42800**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**20**	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.5**	**41.6**	**5.4**	**4.0**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.001**	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.004**	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L	**0.009**	**0.022**	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.002**	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.001**	<0.010	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.081**	**0.269**	**0.068**	**0.114**	----
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	**0.006**	**0.025**	**0.026**	**0.021**	----
Iron	7439-89-6	0.05	mg/L	**0.23**	**1.14**	**0.55**	<0.50	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.09**	**2.77**	**0.06**	**0.06**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.07**	**0.31**	**0.02**	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**3.04**	**1.36**	**0.29**	**0.07**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.11**	**1.67**	**0.31**	**0.07**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.2**	**5.4**	**0.8**	**0.5**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	AC	CR	----
				Client sampling date / time	28-Oct-2016 13:00	28-Oct-2016 11:00	28-Oct-2016 11:30	28-Oct-2016 12:00	----
Compound	CAS Number	LOR	Unit		ES1624509-001	ES1624509-002	ES1624509-003	ES1624509-004	--------
					Result	Result	Result	Result	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ **Total Nitrogen as N**	----	0.1	mg/L		**4.3**	**7.1**	**1.1**	**0.6**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.06**	**0.09**	**0.04**	<0.05	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.06**	**0.02**	<0.01	**0.01**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	**30**	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	**3100**	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	**210**	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	**3310**	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	**40**	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	**40**	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	**3040**	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	**210**	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	**3250**	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	**3040**	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**102**	**97.6**	**95.6**	**101**	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**SC**	**EC**	**AC**	**CR**	**----**
				Client sampling date / time	28-Oct-2016 13:00	28-Oct-2016 11:00	28-Oct-2016 11:30	28-Oct-2016 12:00	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1624509-001**	**ES1624509-002**	**ES1624509-003**	**ES1624509-004**	**--------**
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**104**	**108**	**96.2**	**103**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**116**	**115**	**106**	**112**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1624189# 2 due to high matrix interference. Confirmed by re-analysis
- EG020: Poor matrix spike recovery was obtained for most elements on sample ES1624189 - #001 due to matrix interference. Confirmed by reanalysis.
- EK067G: LOR raised for Total P on sample No 1 & 2 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161025_RC	161025_AP	----	----	----
			Client sampling date / time	[25-Oct-2016]	[25-Oct-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1624242-001	ES1624242-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.76**	**7.84**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**43500**	**45200**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	<5	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.5**	**1.4**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	**0.001**	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	**0.0005**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.014**	**0.012**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.024**	**0.019**	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.12**	**0.28**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.01**	**0.01**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.10**	**0.17**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.11**	**0.18**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**1.0**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161025_RC	161025_AP	----	----	----
			Client sampling date / time	[25-Oct-2016]	[25-Oct-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1624242-001	ES1624242-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.05	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**114**	**107**	----	----	----
Toluene-D8	2037-26-5	2	%	**105**	**99.5**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**112**	**106**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis on sample ES1624524 - 002.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	281016 - 09	281016 - 10	----	----	----
			Client sampling date / time	[28-Oct-2016]	[28-Oct-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1624524-001	ES1624524-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.96**	**9.28**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1180**	**1040**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**12**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**10.6**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	**0.0007**	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.020**	**0.001**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.007**	**0.036**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.001**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.037**	**0.020**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.074**	**0.004**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.31**	**0.08**	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	**0.00088**	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.30**	**0.05**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.03**	**0.07**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	**0.04**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.09**	**0.44**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.09**	**0.48**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**1.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**2.0**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	281016 - 09	281016 - 10	----	----	----
			Client sampling date / time	[28-Oct-2016]	[28-Oct-2016]	----	----	----
Compound	CAS Number	LOR	Unit	ES1624524-001	ES1624524-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.05**	**0.10**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	**0.02**	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**95.9**	**94.1**	----	----	----
Toluene-D8	2037-26-5	2	%	**96.4**	**90.8**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**106**	**99.9**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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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.

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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.
~ = Indicates an estimated value.

- EG020/ED093: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EG020: Iron results for samples ES1624975-#004 confirmed by reanalysis.
- EK061G/EK062G:: LOR raised for TKN and TN on sample No 6 & 7 due to sample matrix.
- EK055G: LOR raised for Ammonia on sample 6,7,8 due to sample matrix.
- Amendment (10/11/2016): This report has been amended and re-released to allow the reporting of additional analytical data.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WTP_COL	WTP_COL	WTP_COL	COOKS RIVER	WTP_DECLINE
			Client sampling date / time	[27-Oct-2016]	[01-Nov-2016]	[02-Nov-2016]	[02-Nov-2016]	[02-Nov-2016]
Compound	CAS Number	LOR	Unit	ES1624975-001	ES1624975-002	ES1624975-003	ES1624975-004	ES1624975-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	6.22	7.16	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	37	18	24	22	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	198	48.6	139	94.5	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.010	0.002
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.010	0.002
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.010	<0.001
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.010	<0.001
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.050	1.64
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.152	0.237
Iron	7439-89-6	0.05	mg/L	----	----	----	7.47	69.0
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	<0.0001	<0.0001
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	----	----	10.1	83.1
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WTP_COL	WTP_COL	WTP_COL	COOKS RIVER	WTP_DECLINE
				Client sampling date / time	[27-Oct-2016]	[01-Nov-2016]	[02-Nov-2016]	[02-Nov-2016]	[02-Nov-2016]
Compound	CAS Number	LOR	Unit		ES1624975-001	ES1624975-002	ES1624975-003	ES1624975-004	ES1624975-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		----	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		----	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		----	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		----	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	----	----	----	----
Toluene	108-88-3	2	µg/L		----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		----	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L		----	----	----	----	----
^ Sum of BTEX	----	1	µg/L		----	----	----	----	----
Naphthalene	91-20-3	5	µg/L		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	----	----	----	----
Toluene-D8	2037-26-5	2	%		----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	UP_ARN	AD_ARN	DW_ARN	----	----
			Client sampling date / time	[03-Nov-2016]	[03-Nov-2016]	[03-Nov-2016]	----	----
Compound	CAS Number	LOR	Unit	ES1624975-006	ES1624975-007	ES1624975-008	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.91**	**8.08**	**8.10**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51200**	**51800**	**52000**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**4.2**	**2.8**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	----	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Iron	7439-89-6	0.05	mg/L	<0.10	**0.22**	<0.10	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.05	<0.05	<0.05	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.06**	**0.05**	**0.04**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.06**	**0.05**	**0.04**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	**0.6**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	**0.6**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	UP_ARN	AD_ARN	DW_ARN	----	----
				Client sampling date / time	[03-Nov-2016]	[03-Nov-2016]	[03-Nov-2016]	----	----
Compound	CAS Number	LOR	Unit		ES1624975-006	ES1624975-007	ES1624975-008	--------	--------
					Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.38**	**0.25**	**0.26**	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**129**	**126**	**122**	----	----
Toluene-D8	2037-26-5	2	%		**102**	**95.2**	**93.8**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**110**	**103**	**100**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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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.
~ = Indicates an estimated value.

- EG020: LOR's have been raised for sample ID ES1625720 - #004 due to matrix interference. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161108_ARN2	161109_ARN2	WTP2	COOKS R	----
			Client sampling date / time	[08-Nov-2016]	[09-Nov-2016]	[10-Nov-2016]	[10-Nov-2016]	----
Compound	CAS Number	LOR	Unit	ES1625720-001	ES1625720-002	ES1625720-003	ES1625720-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.69**	----	**7.72**	**7.90**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**242**	----	**19500**	**31100**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**4.0**	**0.7**	**1.2**	**1.2**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	**0.001**	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	**0.0001**	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	**0.005**	<0.010	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	**0.004**	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	**0.002**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	<0.001	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	----	**0.027**	**0.054**	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	----	**0.161**	**0.087**	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	<0.05	<0.50	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	<0.0001	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	----	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.16**	----	**0.77**	**1.47**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	----	**0.09**	**0.04**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.21**	----	**0.08**	**0.19**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.26**	----	**0.17**	**0.23**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.3**	----	**1.5**	**1.9**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	----	**1.7**	**2.1**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161108_ARN2	161109_ARN2	WTP2	COOKS R	----
				Client sampling date / time	[08-Nov-2016]	[09-Nov-2016]	[10-Nov-2016]	[10-Nov-2016]	----
Compound	CAS Number	LOR	Unit		ES1625720-001	ES1625720-002	ES1625720-003	ES1625720-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	----	**0.04**	**0.04**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	**70**	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	----	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	----	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	----	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	**70**	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	**70**	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	----	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	----	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	----	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	----	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**125**	----	**126**	**123**	----
Toluene-D8	2037-26-5	2	%		**94.7**	----	**96.8**	**125**	----
4-Bromofluorobenzene	460-00-4	2	%		**87.5**	----	**88.9**	**107**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

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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.
~ = Indicates an estimated value.

- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EG020: Filtered Iron results for samples ES1625992-#003 confirmed by reanalysis.
- EK055G: LOR raised for Ammonia on sample 4 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	SD DUP	EC	AC	CR
			Client sampling date / time	14-Nov-2016 10:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 10:30	14-Nov-2016 10:45
Compound	CAS Number	LOR	Unit	ES1625992-001	ES1625992-002	ES1625992-003	ES1625992-004	ES1625992-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.99	7.99	7.79	7.86	7.97
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	433	425	619	45200	50200
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	30	<5	15	<5	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	1.6	1.7	27.1	2.6	2.6
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.002	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.002	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	0.008	0.010	0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.001	0.003	0.004	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.118	0.310	0.301	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	0.004	0.006	0.006	<0.010	0.011
Iron	7439-89-6	0.05	mg/L	0.08	0.09	0.07	<0.50	<0.50
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.42	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.18	0.17	1.37	<0.05	0.10
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.10	0.10	0.20	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.39	2.34	0.88	0.03	0.03
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.49	2.44	1.08	0.03	0.03
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.4	2.5	0.8	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	4.1	3.8	3.6	0.8	0.9

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	SD DUP	EC	AC	CR
				Client sampling date / time	14-Nov-2016 10:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 10:30	14-Nov-2016 10:45
Compound	CAS Number	LOR	Unit		ES1625992-001	ES1625992-002	ES1625992-003	ES1625992-004	ES1625992-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.08**	**0.07**	**0.05**	**0.48**	**0.14**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.05**	<0.01	<0.01	**0.02**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		**----**	**----**	**----**	<5	**----**
Oil & Grease	----	5	mg/L		<5	<5	<5	**----**	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**110**	**110**	**117**	**114**	**110**
Toluene-D8	2037-26-5	2	%		**101**	**102**	**107**	**108**	**95.7**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	SC	SD DUP	EC	AC	CR
				Client sampling date / time	14-Nov-2016 10:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 10:30	14-Nov-2016 10:45
Compound	CAS Number	LOR	Unit		ES1625992-001	ES1625992-002	ES1625992-003	ES1625992-004	ES1625992-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	2	%		**99.2**	**99.5**	**102**	**103**	**92.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BASIN 1 09:00	BASIN 1 10:00	BASIN 1 11:00	B1	----
			Client sampling date / time	14-Nov-2016 09:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 08:00	----
Compound	CAS Number	LOR	Unit	ES1625992-006	ES1625992-007	ES1625992-008	ES1625992-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	11	5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	7.4	6.9	6.9	7.7	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BASIN 1 09:00	BASIN 1 10:00	BASIN 1 11:00	B1	----
				Client sampling date / time	14-Nov-2016 09:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 08:00	----
Compound	CAS Number	LOR	Unit		ES1625992-006	ES1625992-007	ES1625992-008	ES1625992-009	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		----	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		----	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	----	----	----
Oil & Grease	----	5	mg/L		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		----	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		----	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		----	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	----	----	----	----
Toluene	108-88-3	2	µg/L		----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		----	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L		----	----	----	----	----
^ Sum of BTEX	----	1	µg/L		----	----	----	----	----
Naphthalene	91-20-3	5	µg/L		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	----	----	----	----
Toluene-D8	2037-26-5	2	%		----	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**BASIN 1 09:00**	**BASIN 1 10:00**	**BASIN 1 11:00**	**B1**	**----**
				Client sampling date / time	14-Nov-2016 09:00	14-Nov-2016 10:00	14-Nov-2016 11:00	14-Nov-2016 08:00	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1625992-006**	**ES1625992-007**	**ES1625992-008**	**ES1625992-009**	**--------**
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	2	%		**----**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

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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.
~ = Indicates an estimated value.

- EG020/ED093: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK055G: LOR raised for Ammonia on sample 3 due to sample matrix.
- EK061G/EK067G/EK062G: LOR raised for TKN, Total P and TN on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161118_ARN2	161117_ARN2	161118_CR UP	161118_CR DS	161111_ARN2
			Client sampling date / time	[18-Nov-2016]	[17-Nov-2016]	[18-Nov-2016]	[18-Nov-2016]	[11-Nov-2016]
Compound	CAS Number	LOR	Unit	ES1626388-001	ES1626388-002	ES1626388-003	ES1626388-004	ES1626388-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.72	----	7.97	8.07	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	32700	----	45500	48300	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	9	8	12	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	0.5	1.2	1.9	1.3	1.1
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	<0.0010	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	0.001	----	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L	0.002	----	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	<0.010	<0.010	----
Manganese	7439-96-5	0.001	mg/L	0.166	----	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L	0.002	----	<0.010	<0.010	----
Zinc	7440-66-6	0.005	mg/L	0.014	----	<0.050	<0.050	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	<0.10	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	<0.0001	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	----	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	2.28	----	<0.05	<0.05	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.03	----	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.02	----	<0.01	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	----	<0.01	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.1	----	0.8	<0.5	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.2	----	0.8	<0.5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161118_ARN2	161117_ARN2	161118_CR UP	161118_CR DS	161111_ARN2
				Client sampling date / time	[18-Nov-2016]	[17-Nov-2016]	[18-Nov-2016]	[18-Nov-2016]	[11-Nov-2016]
Compound	CAS Number	LOR	Unit		ES1626388-001	ES1626388-002	ES1626388-003	ES1626388-004	ES1626388-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.02	----	<0.05	<0.05	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	----	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	----	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	----	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	----	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	----	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	----	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	----	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**103**	----	**107**	**111**	----
Toluene-D8	2037-26-5	2	%		**103**	----	**97.0**	**101**	----
4-Bromofluorobenzene	460-00-4	2	%		**98.3**	----	**99.9**	**101**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161114_ARN2	161115_ARN2	161116_ARN2	161118_CR AJ	----
			Client sampling date / time	[14-Nov-2016]	[15-Nov-2016]	[16-Nov-2016]	[18-Nov-2016]	----
Compound	CAS Number	LOR	Unit	ES1626388-006	ES1626388-007	ES1626388-008	ES1626388-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	**8.07**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	**46400**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.3**	**0.4**	**1.1**	**1.6**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.010	----
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.010	----
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.010	----
Manganese	7439-96-5	0.001	mg/L	----	----	----	<0.010	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.010	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.050	----
Iron	7439-89-6	0.05	mg/L	----	----	----	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	<0.0001	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	----	----	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	**0.17**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	**0.02**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	**0.02**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	<0.5	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161114_ARN2	161115_ARN2	161116_ARN2	161118_CR AJ	----
				Client sampling date / time	[14-Nov-2016]	[15-Nov-2016]	[16-Nov-2016]	[18-Nov-2016]	----
Compound	CAS Number	LOR	Unit		ES1626388-006	ES1626388-007	ES1626388-008	ES1626388-009	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		----	----	----	<0.05	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	----	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	----	----	<20	----
C10 - C14 Fraction	----	50	µg/L		----	----	----	<50	----
C15 - C28 Fraction	----	100	µg/L		----	----	----	<100	----
C29 - C36 Fraction	----	50	µg/L		----	----	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	----	----	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		----	----	----	<20	----
>C10 - C16 Fraction	----	100	µg/L		----	----	----	<100	----
>C16 - C34 Fraction	----	100	µg/L		----	----	----	<100	----
>C34 - C40 Fraction	----	100	µg/L		----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	----	----	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	----	----	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	----	----	<1	----
Toluene	108-88-3	2	µg/L		----	----	----	<2	----
Ethylbenzene	100-41-4	2	µg/L		----	----	----	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	----	----	<2	----
ortho-Xylene	95-47-6	2	µg/L		----	----	----	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		----	----	----	<2	----
^ Sum of BTEX	----	1	µg/L		----	----	----	<1	----
Naphthalene	91-20-3	5	µg/L		----	----	----	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	----	----	**115**	----
Toluene-D8	2037-26-5	2	%		----	----	----	**101**	----
4-Bromofluorobenzene	460-00-4	2	%		----	----	----	**105**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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.

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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.
~ = Indicates an estimated value.

- EG051G: Poor matrix spike recovery for Ferrous Iron due to sample matrix. Confirmed by re-analysis.
- It has been noted that Nitrite is greater than NOx for sample 2, however this difference is within the limits of experimental variation.
- It has been noted that Reactive P is greater than Total P for sample 3, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161121-08	162232-10	161121-11	----	----
			Client sampling date / time	[21-Nov-2016]	[21-Nov-2016]	[21-Nov-2016]	----	----
Compound	CAS Number	LOR	Unit	ES1626480-001	ES1626480-002	ES1626480-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.12**	**8.60**	**8.38**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1560**	**9620**	**3360**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**23**	**17**	**12**	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.7**	**4.5**	**1.7**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.004**	**0.001**	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0096**	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.006**	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	**0.002**	**0.001**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.024**	**0.008**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.304**	**0.048**	**0.141**	----	----
Iron	7439-89-6	0.05	mg/L	**0.11**	**0.36**	**0.10**	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.10**	**0.33**	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.44**	**0.41**	**1.57**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	**0.09**	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.02**	<0.01	**0.37**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.02**	**0.07**	**0.37**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.8**	**2.4**	**2.6**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.8**	**2.5**	**3.0**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161121-08	162232-10	161121-11	----	----
			Client sampling date / time	[21-Nov-2016]	[21-Nov-2016]	[21-Nov-2016]	----	----
Compound	CAS Number	LOR	Unit	ES1626480-001	ES1626480-002	ES1626480-003	--------	--------
				Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.16**	**0.11**	**0.09**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	**0.11**	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	**90**	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**90**	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	**110**	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**110**	<100	<100	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	**110**	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	<2	<2	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**118**	**99.5**	**114**	----	----
Toluene-D8	2037-26-5	2	%	**121**	**101**	**110**	----	----
4-Bromofluorobenzene	460-00-4	2	%	**111**	**95.7**	**106**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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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.

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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.
~ = Indicates an estimated value.

- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	AC	CR	----
			Client sampling date / time	29-Nov-2016 14:15	29-Nov-2016 15:15	29-Nov-2016 14:45	29-Nov-2016 15:45	----
Compound	CAS Number	LOR	Unit	ES1627432-001	ES1627432-002	ES1627432-003	ES1627432-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.27**	**9.50**	**8.16**	**8.01**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**483**	**722**	**39400**	**38800**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**10**	**14**	**28**	**13**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**6.1**	**4.5**	**4.5**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.003**	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.002**	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L	**0.012**	**0.016**	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.003**	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.002**	<0.010	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.064**	**0.032**	**0.072**	**0.079**	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.003**	**0.021**	**0.018**	----
Iron	7439-89-6	0.05	mg/L	**0.06**	**0.10**	<0.50	<0.50	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00147**	**0.00020**	**0.00035**	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.15**	**0.06**	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.06**	**0.12**	**0.16**	**0.06**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	**0.04**	**0.01**	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.88**	**1.29**	**0.11**	**1.23**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.91**	**1.33**	**0.12**	**1.23**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.9**	**2.0**	**0.9**	**0.7**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.8**	**3.3**	**1.0**	**1.9**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	AC	CR	----
				Client sampling date / time	29-Nov-2016 14:15	29-Nov-2016 15:15	29-Nov-2016 14:45	29-Nov-2016 15:45	----
Compound	CAS Number	LOR	Unit		ES1627432-001	ES1627432-002	ES1627432-003	ES1627432-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.41**	**0.13**	**0.14**	**0.12**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.22**	<0.01	**0.04**	**0.03**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	**200**	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	**200**	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	**220**	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	**220**	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	**220**	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**105**	**117**	**124**	**123**	----
Toluene-D8	2037-26-5	2	%		**88.1**	**110**	**129**	**118**	----
4-Bromofluorobenzene	460-00-4	2	%		**83.7**	**92.4**	**99.6**	**96.7**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis.
- EG020: Filtered Iron Results for ES1628390-#003 have been confirmed by reanalysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161209-08	161209-09	161209-10	161209-11	----
			Client sampling date / time	09-Dec-2016 07:30	09-Dec-2016 07:50	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit	ES1628390-001	ES1628390-002	ES1628390-003	ES1628390-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.98**	**8.53**	**8.13**	**7.59**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1800**	**1160**	**1180**	**329**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**15**	**11**	**24**	**10**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**8.8**	**9.0**	**17.1**	**6.1**	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**109**	**50.3**	**70.7**	**104**	----
pH Redox	----	0.01	pH Unit	**7.85**	**8.73**	**8.17**	**7.23**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	<0.001	**0.003**	**0.001**	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0003**	**0.0026**	**0.0018**	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	**0.001**	**0.007**	----
Copper	7440-50-8	0.001	mg/L	**0.005**	**0.007**	**0.005**	**0.004**	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	**0.001**	**0.001**	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.001**	**0.002**	----
Zinc	7440-66-6	0.005	mg/L	**0.008**	**0.018**	**0.014**	**0.019**	----
Manganese	7439-96-5	0.001	mg/L	**0.249**	**0.010**	**0.105**	**0.064**	----
Iron	7439-89-6	0.05	mg/L	**0.32**	**0.32**	**0.47**	**1.19**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00199**	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.38**	**0.14**	**0.79**	**1.12**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.16**	**0.04**	**0.24**	**0.28**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.04**	**0.02**	<0.01	**0.02**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.18**	**0.01**	**0.04**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.04**	**0.20**	**0.01**	**0.06**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161209-08	161209-09	161209-10	161209-11	----
				Client sampling date / time	09-Dec-2016 07:30	09-Dec-2016 07:50	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit		ES1628390-001	ES1628390-002	ES1628390-003	ES1628390-004	--------
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.3	0.7	2.3	0.9	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.3	0.9	2.3	1.0	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.26	0.06	0.23	0.15	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.23	0.02	0.01	0.08	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	11	<5	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		6.8	10.1	6.9	5.4	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	180	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	180	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	170	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	170	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	5	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161209-08	161209-09	161209-10	161209-11	----
				Client sampling date / time	09-Dec-2016 07:30	09-Dec-2016 07:50	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit		ES1628390-001	ES1628390-002	ES1628390-003	ES1628390-004	--------
					Result	Result	Result	Result	----
EP080: BTEXN - Continued									
^ Sum of BTEX	----	1	µg/L		<1	<1	5	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		108	110	99.6	108	----
Toluene-D8	2037-26-5	2	%		109	102	91.0	103	----
4-Bromofluorobenzene	460-00-4	2	%		107	101	91.3	103	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

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Signatories

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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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.
~ = Indicates an estimated value.

- EG020 : Some samples for ES1628395 were diluted and rerun due to salinity and LOR's have been raised accordingly.
- EG035: Positive Hg results have been confirmed by reanalysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161208_UP	161208_AJ	161208_DS	161205_ARN2	161206_ARN2
			Client sampling date / time	08-Dec-2016 00:00	08-Dec-2016 00:00	08-Dec-2016 00:00	05-Dec-2016 00:00	06-Dec-2016 00:00
Compound	CAS Number	LOR	Unit	ES1628395-001	ES1628395-002	ES1628395-003	ES1628395-005	ES1628395-006
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.97	7.98	8.04	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	45000	40300	50000	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	----	----	<5	24
EA045: Turbidity								
Turbidity	----	0.1	NTU	2.8	2.3	1.8	4.2	31.4
EA075: Redox Potential								
Redox Potential	----	0.1	mV	74.6	71.0	70.0	----	----
pH Redox	----	0.01	pH Unit	7.60	7.63	7.79	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	----	----
Manganese	7439-96-5	0.001	mg/L	0.013	0.021	<0.010	----	----
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.00007	0.00008	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.02	<0.01	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161208_UP	161208_AJ	161208_DS	161205_ARN2	161206_ARN2
			Client sampling date / time	08-Dec-2016 00:00	08-Dec-2016 00:00	08-Dec-2016 00:00	05-Dec-2016 00:00	06-Dec-2016 00:00
Compound	CAS Number	LOR	Unit	ES1628395-001	ES1628395-002	ES1628395-003	ES1628395-005	ES1628395-006
				Result	Result	Result	Result	Result
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.07**	**0.05**	**0.07**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.07**	**0.07**	**0.07**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**1.0**	**0.4**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.5**	**1.1**	**0.5**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	**0.04**	**0.05**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	**6.8**	**7.3**	**8.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	**130**	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	**150**	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	**280**	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	**130**	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	**130**	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161208_UP	161208_AJ	161208_DS	161205_ARN2	161206_ARN2
				Client sampling date / time	08-Dec-2016 00:00	08-Dec-2016 00:00	08-Dec-2016 00:00	05-Dec-2016 00:00	06-Dec-2016 00:00
Compound	CAS Number	LOR	Unit		ES1628395-001	ES1628395-002	ES1628395-003	ES1628395-005	ES1628395-006
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**117**	**108**	**112**	----	----
Toluene-D8	2037-26-5	2	%		**106**	**95.5**	**103**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**95.8**	**101**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161207_ARN2	191208_ARN2	191209_ARN2	161209_Decline	----
			Client sampling date / time	07-Dec-2016 00:00	08-Dec-2016 00:00	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit	ES1628395-007	ES1628395-008	ES1628395-009	ES1628395-010	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	7.21	----	8.10	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	20300	----	6580	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	9	----	14	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.1	3.4	2.6	19.8	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	74.3	----	38.5	----
pH Redox	----	0.01	pH Unit	----	7.43	----	8.39	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	285	----
Magnesium	7439-95-4	1	mg/L	----	----	----	344	----
Sodium	7440-23-5	1	mg/L	----	----	----	2350	----
Potassium	7440-09-7	1	mg/L	----	----	----	36	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	----	----	----	2130	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	0.001	----	0.002	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	----	0.013	----	0.016	----
Copper	7440-50-8	0.001	mg/L	----	0.003	----	0.002	----
Nickel	7440-02-0	0.001	mg/L	----	0.003	----	0.004	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	<0.001	----
Zinc	7440-66-6	0.005	mg/L	----	0.076	----	<0.005	----
Manganese	7439-96-5	0.001	mg/L	----	0.104	----	0.051	----
Iron	7439-89-6	0.05	mg/L	----	<0.05	----	0.06	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	----	<0.00004	----	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	<0.05	----	<0.05	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	0.39	----	0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	161207_ARN2	191208_ARN2	191209_ARN2	161209_Decline	----
			Client sampling date / time	07-Dec-2016 00:00	08-Dec-2016 00:00	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit	ES1628395-007	ES1628395-008	ES1628395-009	ES1628395-010	--------
				Result	Result	Result	Result	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.21**	----	**0.01**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	**0.60**	----	**0.03**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**3.1**	----	**3.0**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**3.7**	----	**3.0**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	<0.01	----	**0.02**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	<0.01	----	<0.01	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	----	**8.0**	----	**7.0**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	<20	----	<20	----
C10 - C14 Fraction	----	50	µg/L	----	**440**	----	**1020**	----
C15 - C28 Fraction	----	100	µg/L	----	**320**	----	**560**	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	**760**	----	**1580**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	----	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	----	<20	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	----	**290**	----	**510**	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	**290**	----	**510**	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	----	<1	----	<1	----
Toluene	108-88-3	2	µg/L	----	<2	----	<2	----
Ethylbenzene	100-41-4	2	µg/L	----	<2	----	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	----	<2	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	161207_ARN2	191208_ARN2	191209_ARN2	161209_Decline	----
				Client sampling date / time	07-Dec-2016 00:00	08-Dec-2016 00:00	09-Dec-2016 00:00	09-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit		ES1628395-007	ES1628395-008	ES1628395-009	ES1628395-010	--------
					Result	Result	Result	Result	----
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	2	µg/L		----	<2	----	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		----	<2	----	<2	----
^ **Sum of BTEX**	----	1	µg/L		----	<1	----	<1	----
Naphthalene	91-20-3	5	µg/L		----	<5	----	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	**108**	----	**105**	----
Toluene-D8	2037-26-5	2	%		----	**103**	----	**101**	----
4-Bromofluorobenzene	460-00-4	2	%		----	**103**	----	**95.9**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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.

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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.
~ = Indicates an estimated value.

- EG020: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK067G: LOR raised for Total P on sample No 3 & 4 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	AC	CR	DUP
			Client sampling date / time	14-Dec-2016 11:50	14-Dec-2016 13:00	14-Dec-2016 12:00	14-Dec-2016 12:40	14-Dec-2016 13:00
Compound	CAS Number	LOR	Unit	ES1628847-001	ES1628847-002	ES1628847-003	ES1628847-004	ES1628847-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.50**	**8.57**	**7.75**	**7.94**	**8.82**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**471**	**722**	**44100**	**49600**	**731**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**26**	**20**	**12**	**22**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**17.9**	**5.7**	**4.4**	**17.9**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.003**	<0.010	<0.010	**0.001**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0010	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.002**	<0.010	<0.010	**0.002**
Copper	7440-50-8	0.001	mg/L	**0.013**	**0.015**	<0.010	<0.010	**0.014**
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.003**	<0.010	<0.010	**0.002**
Lead	7439-92-1	0.001	mg/L	<0.001	**0.006**	<0.010	<0.010	**0.006**
Zinc	7440-66-6	0.005	mg/L	**0.111**	**0.213**	**0.105**	**0.051**	**0.181**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**2.06**	**1.17**	**0.08**	**0.14**	**1.18**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.22**	**0.17**	**0.02**	<0.01	**0.17**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.16**	**0.65**	**0.05**	**0.02**	**0.70**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.38**	**0.82**	**0.07**	**0.02**	**0.87**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**3.7**	**3.0**	**0.5**	**0.8**	**3.1**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**6.1**	**3.8**	**0.6**	**0.8**	**4.0**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.24**	**0.10**	<0.05	<0.05	**0.10**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.20**	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	AC	CR	DUP
				Client sampling date / time	14-Dec-2016 11:50	14-Dec-2016 13:00	14-Dec-2016 12:00	14-Dec-2016 12:40	14-Dec-2016 13:00
Compound	CAS Number	LOR	Unit		ES1628847-001	ES1628847-002	ES1628847-003	ES1628847-004	ES1628847-005
					Result	Result	Result	Result	Result
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**97.4**	**92.5**	**105**	**102**	**102**
Toluene-D8	2037-26-5	2	%		**102**	**109**	**98.2**	**98.6**	**106**
4-Bromofluorobenzene	460-00-4	2	%		**86.0**	**82.6**	**82.7**	**79.7**	**82.6**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020 : Sample ES1701911-002 was diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	CR	EC	SC	DUP
			Client sampling date / time	25-Jan-2017 15:40	25-Jan-2017 16:32	25-Jan-2017 17:00	25-Jan-2017 17:30	25-Jan-2017 15:40
Compound	CAS Number	LOR	Unit	ES1701911-001	ES1701911-002	ES1701911-003	ES1701911-004	ES1701911-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.88**	**8.24**	**7.95**	**8.30**	**7.92**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**16900**	**39900**	**434**	**476**	**17000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**17**	**8**	**32**	**35**	**16**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**14.5**	**4.7**	**90.0**	**26.9**	**13.4**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.027**	**0.003**	**0.002**	**0.002**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0035**	<0.0001	**0.0001**	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.014**	**0.002**	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.018**	**0.012**	**0.013**	**0.005**
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.014**	**0.002**	**0.002**	**0.002**
Lead	7439-92-1	0.001	mg/L	**0.001**	**0.012**	**0.001**	<0.001	**0.002**
Zinc	7440-66-6	0.005	mg/L	**0.067**	<0.050	**0.186**	**0.106**	**0.282**
Manganese	7439-96-5	0.001	mg/L	**0.051**	**0.095**	**0.010**	**0.008**	**0.051**
Iron	7439-89-6	0.05	mg/L	**0.08**	<0.10	**0.08**	**0.13**	**0.09**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.07**	<0.05	**0.06**	**0.09**	**0.09**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.06**	**0.22**	**0.13**	**0.08**	**0.06**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.14**	**0.01**	**0.02**	**0.02**	**0.04**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.23**	**0.27**	**0.60**	**2.79**	**0.34**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.37**	**0.28**	**0.62**	**2.81**	**0.38**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.5**	**1.1**	**1.1**	**1.3**	**2.2**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.9**	**1.4**	**1.7**	**4.1**	**2.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	CR	EC	SC	DUP
				Client sampling date / time	25-Jan-2017 15:40	25-Jan-2017 16:32	25-Jan-2017 17:00	25-Jan-2017 17:30	25-Jan-2017 15:40
Compound	CAS Number	LOR	Unit		ES1701911-001	ES1701911-002	ES1701911-003	ES1701911-004	ES1701911-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.27**	**0.11**	**0.20**	**0.15**	**0.26**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.12**	**0.02**	**0.05**	**0.01**	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**111**	**111**	**110**	**111**	**119**
Toluene-D8	2037-26-5	2	%		**114**	**114**	**111**	**114**	**126**
4-Bromofluorobenzene	460-00-4	2	%		**111**	**110**	**108**	**111**	**116**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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.

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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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK055G: LOR raised for Ammonia on sample 3 due to sample matrix.
- EK061G: LOR raised for TKN on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170127_US	170127_AS	170127_DS	170127_MS 170127_MC	----
			Client sampling date / time	27-Jan-2017 00:00	27-Jan-2017 00:00	27-Jan-2017 00:00	27-Jan-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1702046-001	ES1702046-002	ES1702046-003	ES1702046-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.82**	**7.92**	**7.95**	**7.70**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**48600**	**51200**	**52800**	**39000**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.6**	**2.4**	**2.5**	**3.5**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	<0.050	----
Manganese	7439-96-5	0.001	mg/L	**0.021**	**0.045**	**0.011**	**0.022**	----
Iron	7439-89-6	0.05	mg/L	**0.22**	<0.10	<0.10	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	**0.00019**	**0.00005**	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	**0.06**	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.11**	**0.14**	<0.05	**0.52**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	**0.02**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.07**	**0.07**	**0.07**	**1.27**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.07**	**0.07**	**0.07**	**1.29**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	<0.5	**0.9**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	<0.5	**2.2**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170127_US	170127_AS	170127_DS	170127_MS 170127_MC	----
				Client sampling date / time	27-Jan-2017 00:00	27-Jan-2017 00:00	27-Jan-2017 00:00	27-Jan-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1702046-001	ES1702046-002	ES1702046-003	ES1702046-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.10**	**0.06**	**0.05**	**0.09**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.02**	**0.01**	**0.01**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**121**	**110**	**110**	**115**	----
Toluene-D8	2037-26-5	2	%		**129**	**115**	**113**	**122**	----
4-Bromofluorobenzene	460-00-4	2	%		**121**	**111**	**108**	**115**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
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ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis.
- EG093: Samples ES1703555-001 - 004 were run on EG094 method due to low TDS content.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BEXLEY	TURRELLA	8	9	WTP-170210
			Client sampling date / time	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	10-Feb-2017 00:00
Compound	CAS Number	LOR	Unit	ES1703555-001	ES1703555-002	ES1703555-003	ES1703555-004	ES1703555-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.35	6.71	7.04	7.97	7.81
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	204	164	104	358	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	26	18	75	28	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	30.8	14.2	55.1	52.2	1.2
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	0.13	0.18	0.05	0.30	----
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Selenium	7782-49-2	2	µg/L	<2	<2	<2	<2	----
Antimony	7440-36-0	0.5	µg/L	0.9	0.7	0.8	1.0	----
Iron	7439-89-6	5	µg/L	864	734	53	1280	----
Arsenic	7440-38-2	0.5	µg/L	1.2	1.0	0.6	1.8	----
Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Boron	7440-42-8	100	µg/L	<105	<105	<105	<105	----
Cadmium	7440-43-9	0.2	µg/L	2.5	1.0	0.4	2.9	----
Chromium	7440-47-3	0.5	µg/L	1.3	0.9	0.7	1.4	----
Lead	7439-92-1	0.2	µg/L	7.9	4.7	2.3	3.5	----
Manganese	7439-96-5	0.5	µg/L	23.9	24.3	13.8	22.6	----
Molybdenum	7439-98-7	0.1	µg/L	1.2	0.8	3.4	1.6	----
Nickel	7440-02-0	0.5	µg/L	1.2	1.4	0.9	1.8	----
Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Tin	7440-31-5	5	µg/L	<5	<5	<5	<5	----
Zinc	7440-66-6	5	µg/L	51	50	20	44	----
EG093T_LL: Total Metals in Saline Water by ORC-ICPMS								
Cobalt	7440-48-4	0.05	µg/L	0.47	0.35	0.20	0.62	----
Copper	7440-50-8	0.2	µg/L	12.0	9.5	10.1	14.1	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.21	0.21	0.02	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.04	0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BEXLEY	TURRELLA	8	9	WTP-170210
				Client sampling date / time	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	10-Feb-2017 00:00
Compound	CAS Number	LOR	Unit		ES1703555-001	ES1703555-002	ES1703555-003	ES1703555-004	ES1703555-005
					Result	Result	Result	Result	Result
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.84	0.64	0.47	0.97	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.86	0.66	0.51	0.99	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	0.8	0.8	1.4	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.5	1.5	1.3	2.4	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.10	0.12	0.15	4.70	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.06	0.05	0.03	0.03	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BEXLEY	TURRELLA	8	9	WTP-170210
				Client sampling date / time	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	14-Feb-2017 00:00	10-Feb-2017 00:00
Compound	CAS Number	LOR	Unit		ES1703555-001	ES1703555-002	ES1703555-003	ES1703555-004	ES1703555-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**99.8**	**93.6**	**98.9**	**98.4**	----
Toluene-D8	2037-26-5	2	%		**103**	**96.8**	**105**	**99.4**	----
4-Bromofluorobenzene	460-00-4	2	%		**102**	**102**	**102**	**95.9**	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**DIS-170215**	----	----	----	----
				Client sampling date / time	15-Feb-2017 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1703555-006**	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.24**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**18**	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		**10.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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.

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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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK061G: LOR raised for TKN on sample 4 due to sample matrix.
- EK055G: It has been noted that Ammonia is greater than TKN for sample 4, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	----
			Client sampling date / time	28-Feb-2017 11:05	28-Feb-2017 11:35	28-Feb-2017 12:15	28-Feb-2017 12:35	----
Compound	CAS Number	LOR	Unit	ES1704667-001	ES1704667-002	ES1704667-003	ES1704667-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.40**	**7.47**	**7.23**	**7.73**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**12600**	**378**	**203**	**34400**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**63**	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**9.0**	**9.4**	**164**	**6.5**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.002**	**0.003**	**0.003**	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	**0.005**	**0.009**	**0.011**	**0.001**	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.002**	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.001**	**0.001**	----
Zinc	7440-66-6	0.005	mg/L	**0.058**	**0.054**	**0.031**	**0.016**	----
Manganese	7439-96-5	0.001	mg/L	**0.027**	**0.029**	**0.009**	**0.017**	----
Iron	7439-89-6	0.05	mg/L	<0.05	**0.08**	**0.05**	<0.05	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.21**	**1.29**	**0.24**	**0.22**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.10**	**0.04**	**0.01**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.39**	**1.99**	**0.62**	**0.24**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.41**	**2.09**	**0.66**	**0.25**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	**2.2**	**1.5**	<0.2	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.2**	**4.3**	**2.2**	**0.2**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	----
				Client sampling date / time	28-Feb-2017 11:05	28-Feb-2017 11:35	28-Feb-2017 12:15	28-Feb-2017 12:35	----
Compound	CAS Number	LOR	Unit		ES1704667-001	ES1704667-002	ES1704667-003	ES1704667-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.11**	**0.18**	**0.21**	**0.38**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.12**	**0.02**	**0.04**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**126**	**135**	**129**	**134**	----
Toluene-D8	2037-26-5	2	%		**122**	**122**	**122**	**120**	----
4-Bromofluorobenzene	460-00-4	2	%		**89.8**	**93.3**	**91.5**	**92.1**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK061G/EK067G: LOR raised for TKN and Total P on samples 4 and 5 due to sample matrix.
- EK055G: It has been noted that Ammonia is greater than TKN for sample 5, however this difference is within the limits of experimental variation.
- EK071G: It has been noted that Reactive P is greater than Total P on sample 4, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WTP-170227	SED.BASIN 170228	170228_US	170228_AS	170228_DS
			Client sampling date / time	27-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00
Compound	CAS Number	LOR	Unit	ES1704807-001	ES1704807-002	ES1704807-003	ES1704807-004	ES1704807-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.66	7.69	7.70	7.68	7.73
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	29100	28400	34800
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	15	24	20	9	18
EA045: Turbidity								
Turbidity	----	0.1	NTU	14.9	23.0	9.5	8.0	6.9
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	0.002	0.002	0.002
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	----	----	0.003	0.004	0.002
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	----	----	0.018	0.022	0.016
Manganese	7439-96-5	0.001	mg/L	----	----	0.016	0.016	0.016
Iron	7439-89-6	0.05	mg/L	----	----	<0.05	<0.05	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	----	----	<0.00004	<0.00004	0.00013
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	----	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.18	0.19	0.24
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	0.02	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	0.30	0.29	0.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.32	0.31	0.25
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	0.9	<0.2	<0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	1.2	0.3	0.2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WTP-170227	SED.BASIN 170228	170228_US	170228_AS	170228_DS
				Client sampling date / time	27-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00	28-Feb-2017 00:00
Compound	CAS Number	LOR	Unit		ES1704807-001	ES1704807-002	ES1704807-003	ES1704807-004	ES1704807-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		----	----	**0.11**	**0.02**	**0.02**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		----	----	**0.02**	**0.03**	**0.01**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		----	----	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		----	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		----	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		----	----	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	----	<1	<1	<1
Toluene	108-88-3	2	µg/L		----	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		----	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		----	----	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		----	----	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		----	----	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		----	----	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	----	**119**	**103**	**112**
Toluene-D8	2037-26-5	2	%		----	----	**126**	**131**	**115**
4-Bromofluorobenzene	460-00-4	2	%		----	----	**101**	**98.8**	**91.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170228_ARN2	170228_BED	170227_BED	170225_ARN2	----
			Client sampling date / time	28-Feb-2017 00:00	28-Feb-2017 00:00	27-Feb-2017 00:00	25-Feb-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1704807-006	ES1704807-007	ES1704807-008	ES1704807-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.06**	**7.71**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	**6**	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.5**	**0.4**	**0.3**	**4.8**	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**160**	**162**	----	----	----
pH Redox	----	0.01	pH Unit	**7.25**	**7.79**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.002**	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.021**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.003**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.001**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.051**	**0.068**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.679**	**0.002**	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.23**	**0.22**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.23**	**0.25**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.46**	**0.47**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.7**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.4**	**1.2**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.02	<0.01	----	----	----
EP020: Oil and Grease (O&G)								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170228_ARN2**	**170228_BED**	**170227_BED**	**170225_ARN2**	**----**
				Client sampling date / time	28-Feb-2017 00:00	28-Feb-2017 00:00	27-Feb-2017 00:00	25-Feb-2017 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1704807-006**	**ES1704807-007**	**ES1704807-008**	**ES1704807-009**	**--------**
					Result	Result	Result	Result	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	<5	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

[redacted]

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- Surrogate Control Limits

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Signatories

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW

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

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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.
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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis
- EK071G: It has been noted that Reactive P is greater than Total P for sample No 1, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	----
			Client sampling date / time	17-Mar-2017 11:10	17-Mar-2017 13:30	17-Mar-2017 13:00	17-Mar-2017 12:00	----
Compound	CAS Number	LOR	Unit	ES1706438-001	ES1706438-002	ES1706438-003	ES1706438-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.58**	**7.36**	**7.21**	**7.46**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**22200**	**216**	**157**	**15500**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**22**	**52**	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**9.8**	**27.0**	**69.3**	**8.5**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.001**	**0.001**	**0.001**	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.007**	**0.006**	**0.002**	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.003**	**0.003**	<0.001	----
Zinc	7440-66-6	0.005	mg/L	**0.047**	**0.078**	**0.050**	**0.026**	----
Manganese	7439-96-5	0.001	mg/L	**0.023**	**0.010**	**0.006**	**0.016**	----
Iron	7439-89-6	0.05	mg/L	<0.05	**0.06**	**0.07**	**0.07**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00049**	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.07**	**0.07**	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.34**	**0.07**	**0.22**	**0.33**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.03**	**0.02**	**0.02**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.25**	**0.70**	**0.30**	**0.34**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.27**	**0.73**	**0.32**	**0.36**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**0.5**	**0.8**	**0.6**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**1.2**	**1.1**	**1.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	----
				Client sampling date / time	17-Mar-2017 11:10	17-Mar-2017 13:30	17-Mar-2017 13:00	17-Mar-2017 12:00	----
Compound	CAS Number	LOR	Unit		ES1706438-001	ES1706438-002	ES1706438-003	ES1706438-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.44**	**0.11**	**0.16**	**0.10**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.48**	**0.07**	**0.05**	**0.07**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**99.5**	**98.3**	**106**	**99.7**	----
Toluene-D8	2037-26-5	2	%		**109**	**106**	**110**	**102**	----
4-Bromofluorobenzene	460-00-4	2	%		**111**	**102**	**107**	**100**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	DUP
			Client sampling date / time	30-Mar-2017 08:45	30-Mar-2017 09:10	30-Mar-2017 09:30	30-Mar-2017 10:00	30-Mar-2017 10:00
Compound	CAS Number	LOR	Unit	ES1707615-001	ES1707615-002	ES1707615-003	ES1707615-004	ES1707615-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.88	7.93	8.24	8.06	7.68
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	41700	570	819	48500	48400
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	9	26	26	6	6
EA045: Turbidity								
Turbidity	----	0.1	NTU	4.4	28.5	36.3	4.0	4.3
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	0.002	0.002	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0001	<0.0001	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.010	0.001	<0.001	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	<0.010	0.007	0.005	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.010	0.001	0.002	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.065	0.091	0.026	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	<0.010	0.036	0.064	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L	<0.10	0.06	<0.05	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.29	0.36	5.18	0.21	0.23
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.19	0.81	<0.01	0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.31	2.24	0.99	0.08	0.17
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.33	2.43	1.80	0.08	0.18
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	1.9	6.5	0.7	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.8	4.3	8.3	0.8	1.1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	DUP
				Client sampling date / time	30-Mar-2017 08:45	30-Mar-2017 09:10	30-Mar-2017 09:30	30-Mar-2017 10:00	30-Mar-2017 10:00
Compound	CAS Number	LOR	Unit		ES1707615-001	ES1707615-002	ES1707615-003	ES1707615-004	ES1707615-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.26**	**0.22**	**0.14**	**0.06**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.20**	**0.03**	**0.04**	**0.04**	**0.03**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**102**	**113**	**113**	**126**	**122**
Toluene-D8	2037-26-5	2	%		**119**	**106**	**107**	**120**	**116**
4-Bromofluorobenzene	460-00-4	2	%		**120**	**103**	**101**	**109**	**108**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020: Filtered Iron results for ES1707621-#001 have been confirmed by reanalysis.
- EG093: Samples ES1707621 #001-005 were run on EG094 method due to low TDS content.
- EG093_LL: Results were transferred from EG094 method.
- LOR raised for sample 5 due to sample matrix for Total P

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turrella	Kooreela	Kooemba	WTP KGT
			Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	CAS Number	LOR	Unit	ES1707621-001	ES1707621-002	ES1707621-003	ES1707621-004	ES1707621-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.48**	**7.72**	**8.33**	**7.90**	**8.09**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**512**	**729**	**1550**	**1870**	**12700**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**131**	<5	**24**	**13**	**7**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**55.9**	**8.3**	**14.5**	**8.3**	**2.2**
EG020F: Dissolved Metals by ICP-MS								
Iron	7439-89-6	0.05	mg/L	<0.05	**1.15**	<0.05	**0.35**	<0.05
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00007**	<0.00004	**0.00007**	**0.00033**	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.80**	**0.07**	**0.05**	**0.48**	<0.05
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Selenium	7782-49-2	2	µg/L	<2	<2	<2	<2	<2
Antimony	7440-36-0	0.5	µg/L	**2.2**	<0.5	**0.7**	**0.6**	**1.7**
Arsenic	7440-38-2	0.5	µg/L	**1.9**	**1.3**	**1.4**	**2.2**	**1.8**
Beryllium	7440-41-7	0.1	µg/L	**0.1**	<0.1	<0.1	<0.1	<0.1
Boron	7440-42-8	100	µg/L	<105	**174**	<105	<105	<105
Cadmium	7440-43-9	0.2	µg/L	**2.0**	**0.3**	**0.8**	**0.4**	<0.2
Chromium	7440-47-3	0.5	µg/L	**9.8**	<0.5	**6.9**	<0.5	**0.8**
Lead	7439-92-1	0.2	µg/L	**23.7**	**1.2**	**2.6**	**0.5**	**0.6**
Manganese	7439-96-5	0.5	µg/L	**147**	**175**	**37.1**	**267**	**342**
Molybdenum	7439-98-7	0.1	µg/L	**2.0**	**1.6**	**3.0**	**5.9**	**17.0**
Nickel	7440-02-0	0.5	µg/L	**3.6**	**2.4**	**2.5**	**2.5**	**7.3**
Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	**0.2**
Tin	7440-31-5	5	µg/L	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	µg/L	**250**	**28**	**170**	**12**	**44**
EG093T_LL: Total Metals in Saline Water by ORC-ICPMS								
Cobalt	7440-48-4	0.05	µg/L	**2.11**	**1.00**	**0.94**	**0.92**	**6.30**
Copper	7440-50-8	0.2	µg/L	**36.8**	**4.7**	**17.9**	**8.6**	**1.6**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.27**	**3.09**	**0.25**	**0.23**	**1.23**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	Kooreela	Kooemba	WTP KGT
				Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	CAS Number	LOR	Unit		ES1707621-001	ES1707621-002	ES1707621-003	ES1707621-004	ES1707621-005
					Result	Result	Result	Result	Result
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.04**	**0.08**	**0.03**	**0.01**	**0.04**
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.60**	**0.38**	**1.56**	**0.48**	**0.10**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.64**	**0.46**	**1.59**	**0.49**	**0.14**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**2.1**	**4.6**	**4.6**	**2.0**	**3.6**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**2.7**	**5.1**	**6.2**	**2.5**	**3.7**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.29**	**0.01**	**0.28**	**0.58**	<0.02
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	**0.01**	**0.02**	**0.29**	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		**220**	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		**210**	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		**430**	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		**340**	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		**100**	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		**440**	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	Kooreela	Kooemba	WTP KGT
				Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	CAS Number	LOR	Unit		ES1707621-001	ES1707621-002	ES1707621-003	ES1707621-004	ES1707621-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**112**	**111**	**109**	**91.4**	**98.9**
Toluene-D8	2037-26-5	2	%		**102**	**106**	**96.3**	**112**	**103**
4-Bromofluorobenzene	460-00-4	2	%		**98.5**	**99.0**	**83.8**	**104**	**104**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**WTP-170322**	**WTP-170321**	**----**	**----**	**----**
			Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES1707621-006**	**ES1707621-007**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.06**	**7.55**	**----**	**----**	**----**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**----**	**----**	**----**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.2**	**1.7**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EG035: Positive Hg results have been confirmed by reanalysis

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170316_ARN2	170318_BED1	170318_ARN2	170319_ARN2	170320_BED1
				Client sampling date / time	16-Mar-2017 00:00	18-Mar-2017 00:00	18-Mar-2017 00:00	19-Mar-2017 00:00	20-Mar-2017 00:00
Compound	CAS Number	LOR	Unit		ES1707755-001	ES1707755-002	ES1707755-003	ES1707755-004	ES1707755-005
					Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**6**	<5	<5	**7**	<5
EA045: Turbidity									
Turbidity	----	0.1	NTU		**7.3**	**0.2**	**0.2**	**10.9**	**0.3**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170320_ARN2	170321_BED1	170321_ARN2	170322_BED1	170323_ARN2
				Client sampling date / time	20-Mar-2017 00:00	21-Mar-2017 00:00	21-Mar-2017 00:00	22-Mar-2017 00:00	23-Mar-2017 00:00
Compound	CAS Number	LOR	Unit		ES1707755-006	ES1707755-007	ES1707755-008	ES1707755-009	ES1707755-010
					Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**14**	<5	**7**	<5	<5
EA045: Turbidity									
Turbidity	----	0.1	NTU		**12.6**	**0.3**	**9.6**	**0.1**	**2.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170330_US	170330_AS	170330_DS	170330_MC	170330_BED1
			Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	CAS Number	LOR	Unit	ES1707755-011	ES1707755-012	ES1707755-013	ES1707755-014	ES1707755-015
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.68	7.67	7.68	7.51	7.22
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	36200	38000	42400	9280	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	10	75	12	6	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	7.7	46.3	5.2	9.5	0.5
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	----	243
pH Redox	----	0.01	pH Unit	----	----	----	----	6.61
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	0.001	0.007
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	0.030
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	0.004	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	0.002
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	0.040	<0.005
Manganese	7439-96-5	0.001	mg/L	0.027	0.055	<0.010	0.023	0.041
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	0.16	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	0.00021	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	0.20	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.33	0.36	0.33	0.68	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.04	0.01	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.09	0.09	0.45	0.31	0.05
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.11	0.13	0.46	0.33	0.07
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170330_US	170330_AS	170330_DS	170330_MC	170330_BED1
				Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	CAS Number	LOR	Unit		ES1707755-011	ES1707755-012	ES1707755-013	ES1707755-014	ES1707755-015
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.3	1.5	1.4	2.0	2.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.4	1.6	1.9	2.3	2.7
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.08	0.14	0.07	0.14	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.05	0.01	0.04	0.06	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170330_US	170330_AS	170330_DS	170330_MC	170330_BED1
				Client sampling date / time	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00	30-Mar-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES1707755-011**	**ES1707755-012**	**ES1707755-013**	**ES1707755-014**	**ES1707755-015**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**87.1**	**89.6**	**92.0**	**91.4**	**----**
Toluene-D8	2037-26-5	2	%		**109**	**106**	**103**	**105**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**108**	**111**	**109**	**108**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170331_ARN2	----	----	----	----
			Client sampling date / time	31-Mar-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1707755-016	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.29**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.4**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**244**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.77**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.004**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.032**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**1.27**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.12**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.20**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.12**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.32**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.5**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.02	----	----	----	----
EP020: Oil and Grease (O&G)								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170331_ARN2**	**----**	**----**	**----**	**----**
				Client sampling date / time	31-Mar-2017 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1707755-016**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

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- General Comments
- Analytical Results
- Surrogate Control Limits

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Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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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.
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ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis
- EK067G: LOR raised for Total P on sample No 1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WTP-170426-KGT	BEXLEY	TURRELLA	KOOEMBA	WSW-SED-DAM-170420
			Client sampling date / time	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	20-Apr-2017 00:00
Compound	CAS Number	LOR	Unit	ES1709818-001	ES1709818-002	ES1709818-003	ES1709818-004	ES1709818-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.03	8.55	7.63	8.10	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	2940	964	3720	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	9	23	8	26	46
EA045: Turbidity								
Turbidity	----	0.1	NTU	8.6	4.0	4.6	8.7	41.6
EA075: Redox Potential								
Redox Potential	----	0.1	mV	112	----	----	----	----
pH Redox	----	0.01	pH Unit	7.54	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.003	0.002	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0004	0.0004	0.0038	----
Chromium	7440-47-3	0.001	mg/L	<0.001	0.005	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	0.004	0.001	0.002	----
Nickel	7440-02-0	0.001	mg/L	0.022	0.003	0.002	0.002	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	0.011	0.015	0.011	0.025	----
Manganese	7439-96-5	0.001	mg/L	0.912	0.034	0.293	0.616	----
Iron	7439-89-6	0.05	mg/L	<0.05	0.06	<0.05	0.20	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	0.00257	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	<0.05	<0.05	0.13	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	0.09	4.64	0.40	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.03	0.05	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	1.02	0.30	0.35	0.02	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	1.02	0.33	0.40	0.02	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WTP-170426-KGT	BEXLEY	TURRELLA	KOOEMBA	WSW-SED-DAM-170420
				Client sampling date / time	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	20-Apr-2017 00:00
Compound	CAS Number	LOR	Unit		ES1709818-001	ES1709818-002	ES1709818-003	ES1709818-004	ES1709818-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.0	1.3	5.6	1.5	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		4.0	1.6	6.0	1.5	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.02	1.64	0.10	0.80	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		----	<0.01	<0.01	0.08	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		----	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		----	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		----	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		----	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		----	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		----	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		----	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		----	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		----	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		----	<5	<5	<5	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	WTP-170426-KGT	BEXLEY	TURRELLA	KOOEMBA	WSW-SED-DAM-170420
				Client sampling date / time	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	26-Apr-2017 00:00	20-Apr-2017 00:00
					ES1709818-001	ES1709818-002	ES1709818-003	ES1709818-004	ES1709818-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**----**	**104**	**97.6**	**99.5**	**----**
Toluene-D8	2037-26-5	2	%		**----**	**105**	**94.5**	**107**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**----**	**112**	**98.4**	**104**	**----**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	**WTP-170405-KGT**	**WTP-170407-KGT**	**WTP-170413-KGT**	**WTP-170418-KGT**	**----**
			Client sampling date / time	05-Apr-2017 00:00	07-Apr-2017 00:00	13-Apr-2017 00:00	18-Apr-2017 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES1709818-006**	**ES1709818-007**	**ES1709818-008**	**ES1709818-009**	**--------**
				Result	Result	Result	Result	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	<5	<5	<5	**----**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**10.5**	**2.8**	**3.5**	**2.1**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW

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- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK067G: LOR raised for Total P on sample No 1 & 4 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	----
			Client sampling date / time	27-Apr-2017 09:45	27-Apr-2017 09:30	27-Apr-2017 10:40	27-Apr-2017 11:00	----
Compound	CAS Number	LOR	Unit	ES1709945-001	ES1709945-002	ES1709945-003	ES1709945-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.75**	**7.89**	**8.34**	**7.93**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**47100**	**539**	**1110**	**50200**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**12**	**10**	**18**	**8**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.1**	**2.8**	**13.6**	**2.4**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	**0.002**	**0.003**	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0001	<0.0001	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	**0.007**	**0.008**	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.010	**0.002**	**0.004**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	**0.001**	<0.001	<0.010	----
Zinc	7440-66-6	0.005	mg/L	<0.050	**0.059**	**0.020**	<0.050	----
Manganese	7439-96-5	0.001	mg/L	<0.010	**0.030**	**0.014**	<0.010	----
Iron	7439-89-6	0.05	mg/L	<0.10	**0.07**	<0.05	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.09**	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.25**	**0.33**	**7.42**	**0.18**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.01**	**0.23**	**0.78**	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.09**	**3.24**	**0.72**	**0.05**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.10**	**3.47**	**1.50**	**0.05**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**2.2**	**12.9**	**2.1**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.0**	**5.7**	**14.4**	**2.2**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	----
				Client sampling date / time	27-Apr-2017 09:45	27-Apr-2017 09:30	27-Apr-2017 10:40	27-Apr-2017 11:00	----
Compound	CAS Number	LOR	Unit		ES1709945-001	ES1709945-002	ES1709945-003	ES1709945-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	**0.45**	**0.08**	<0.05	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.30**	**0.03**	**0.04**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	**5**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**102**	**104**	**95.4**	**106**	----
Toluene-D8	2037-26-5	2	%		**109**	**110**	**111**	**109**	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**109**	**104**	**109**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

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	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
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- EG020 : LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EK061G/EK067G/EK062G: LOR raised for TKN, Total P and TN on various samples due to sample matrix.
- EK055G: LOR raised for Ammonia on sample 1,2,3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170424_US	170424_DS	170424_AS	170428_ARN2	----
			Client sampling date / time	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1710098-001	ES1710098-002	ES1710098-003	ES1710098-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.71**	**7.90**	**7.89**	**7.58**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**46100**	**48800**	**48600**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**16**	**18**	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.5**	**3.0**	**9.8**	**0.7**	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	**107**	----
pH Redox	----	0.01	pH Unit	----	----	----	**6.71**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	**0.002**	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Zinc	7440-66-6	0.005	mg/L	<0.050	**0.051**	<0.050	**0.498**	----
Manganese	7439-96-5	0.001	mg/L	**0.024**	**0.098**	**0.015**	**0.403**	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.50	<0.50	<0.05	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.50	<0.50	<0.50	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	**0.07**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.06**	**0.06**	**0.10**	**2.98**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.06**	**0.06**	**0.10**	**3.05**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170424_US	170424_DS	170424_AS	170428_ARN2	----
				Client sampling date / time	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1710098-001	ES1710098-002	ES1710098-003	ES1710098-004	--------
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.5	**0.5**	<0.5	**2.5**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.5	**0.6**	<0.5	**5.6**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	**0.07**	<0.05	<0.05	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.03**	**0.02**	**0.03**	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170424_US**	**170424_DS**	**170424_AS**	**170428_ARN2**	**----**
				Client sampling date / time	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	24-Apr-2017 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1710098-001**	**ES1710098-002**	**ES1710098-003**	**ES1710098-004**	**--------**
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**122**	**107**	**117**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**123**	**106**	**117**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**110**	**95.5**	**107**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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.

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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.
~ = Indicates an estimated value.

- Metals LOR for particular sample(s) raised due to high TDS content.
- EK067G: LOR raised for Total P on sample No 4 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	----
			Client sampling date / time	26-May-2017 00:00	26-May-2017 00:00	26-May-2017 00:00	26-May-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1712914-001	ES1712914-002	ES1712914-003	ES1712914-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.68**	**7.90**	**8.34**	**7.90**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**39600**	**533**	**924**	**44500**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**33**	**20**	**46**	**10**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**19.3**	**7.7**	**102**	**8.0**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	**0.002**	**0.002**	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0001	<0.0001	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	**0.016**	**0.009**	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.010	**0.002**	**0.003**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	**0.003**	<0.001	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.148**	**0.080**	**0.117**	**0.061**	----
Manganese	7439-96-5	0.001	mg/L	**0.036**	**0.051**	**0.012**	**0.024**	----
Iron	7439-89-6	0.05	mg/L	**0.22**	**0.18**	<0.05	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.27**	**3.20**	**10.6**	**0.16**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.12**	**0.95**	**0.02**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.13**	**1.26**	**2.27**	**0.05**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.15**	**1.38**	**3.22**	**0.07**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	**4.9**	**14.8**	**2.3**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.4**	**6.3**	**18.0**	**2.4**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	----
				Client sampling date / time	26-May-2017 00:00	26-May-2017 00:00	26-May-2017 00:00	26-May-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1712914-001	ES1712914-002	ES1712914-003	ES1712914-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.14**	**0.50**	**0.12**	<0.05	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	**0.30**	**0.06**	<0.01	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**110**	**113**	**102**	**95.6**	----
Toluene-D8	2037-26-5	2	%		**107**	**112**	**104**	**86.1**	----
4-Bromofluorobenzene	460-00-4	2	%		**98.0**	**104**	**97.6**	**82.7**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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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.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170529 BEXLEY	170529 TURRELLA	170529 KGD WTP	170527 BEXLEY SOUTH	170529
			Client sampling date / time	29-May-2017 00:00	29-May-2017 00:00	29-May-2017 00:00	27-May-2017 00:00	29-May-2017 00:00
Compound	CAS Number	LOR	Unit	ES1713052-001	ES1713052-002	ES1713052-003	ES1713052-004	ES1713052-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.63	7.42	7.56	8.15	8.17
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3250	8130	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	28	<5	<5	73	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	9.7	22.5	1.8	44.8	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	215	----	----
pH Redox	----	0.01	pH Unit	----	----	6.94	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	326
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	326
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	----	----	----	----	1910
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0015	0.0015	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	0.008	<0.001	0.006	----	----
Copper	7440-50-8	0.001	mg/L	0.009	0.001	0.002	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.017	----	----
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.072	0.024	0.032	----	----
Manganese	7439-96-5	0.001	mg/L	0.028	0.264	0.307	----	----
Iron	7439-89-6	0.05	mg/L	0.15	0.29	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	0.00012	<0.00004	<0.00004	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	0.08	0.20	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.17	3.42	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170529 BEXLEY	170529 TURRELLA	170529 KGD WTP	170527 BEXLEY SOUTH	170529
			Client sampling date / time	29-May-2017 00:00	29-May-2017 00:00	29-May-2017 00:00	27-May-2017 00:00	29-May-2017 00:00
Compound	CAS Number	LOR	Unit	ES1713052-001	ES1713052-002	ES1713052-003	ES1713052-004	ES1713052-005
				Result	Result	Result	Result	Result
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.04**	**0.03**	**0.04**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.52**	**0.24**	**0.01**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.56**	**0.27**	**0.05**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.4**	**4.2**	**3.7**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.0**	**4.5**	**3.8**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.11**	**0.04**	**0.01**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170529 BEXLEY	170529 TURRELLA	170529 KGD WTP	170527 BEXLEY SOUTH	170529
				Client sampling date / time	29-May-2017 00:00	29-May-2017 00:00	29-May-2017 00:00	27-May-2017 00:00	29-May-2017 00:00
Compound	CAS Number	LOR	Unit		ES1713052-001	ES1713052-002	ES1713052-003	ES1713052-004	ES1713052-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**115**	**116**	----	----	----
Toluene-D8	2037-26-5	2	%		**108**	**108**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**101**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK055G: LOR raised for Ammonia on sample 1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170518_US	170518_DS	170518_AS	170518_ARN2	170511_BED1
			Client sampling date / time	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit	ES1713292-001	ES1713292-002	ES1713292-003	ES1713292-004	ES1713292-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.98	8.06	7.64	8.08	7.59
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	50400	49500	35400	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	5	<5	<5	<5	6
EA045: Turbidity								
Turbidity	----	0.1	NTU	2.9	1.9	3.0	2.9	2.2
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	173	114
pH Redox	----	0.01	pH Unit	----	----	----	7.72	7.20
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.001	<0.010	0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0001	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.001	<0.010	0.025
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.002	<0.010	0.002
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	0.003	<0.010	0.002
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.001	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	0.020	<0.050	<0.005
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	0.606	<0.010	0.018
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	0.07	<0.10	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.05	0.19	1.46	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.04	<0.01	0.07
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.03	0.13	0.11	0.08	0.70
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.13	0.15	0.08	0.77
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170518_US	170518_DS	170518_AS	170518_ARN2	170511_BED1
				Client sampling date / time	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	11-May-2017 00:00
Compound	CAS Number	LOR	Unit		ES1713292-001	ES1713292-002	ES1713292-003	ES1713292-004	ES1713292-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.5	**0.8**	**3.7**	<0.5	**0.9**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.5	**0.9**	**3.8**	<0.5	**1.7**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.13**	**0.13**	**0.12**	**0.14**	**0.02**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170518_US	170518_DS	170518_AS	170518_ARN2	170511_BED1
				Client sampling date / time	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	30-May-2017 00:00	11-May-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES1713292-001**	**ES1713292-002**	**ES1713292-003**	**ES1713292-004**	**ES1713292-005**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**119**	**111**	**107**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**101**	**105**	**97.0**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**99.4**	**100**	**82.7**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

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Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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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.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis.
- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK061G/EK067G/EK062G:: LOR raised for TKN, Total P and TN on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC 27617	EC 27617	CR 27617	AC 27617	170627 CR-A
			Client sampling date / time	27-Jun-2017 10:35	27-Jun-2017 11:10	27-Jun-2017 11:35	27-Jun-2017 12:30	27-Jun-2017 13:45
Compound	CAS Number	LOR	Unit	ES1715892-001	ES1715892-002	ES1715892-003	ES1715892-004	ES1715892-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.96	8.29	7.82	7.81	7.75
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	522	746	45000	42800	49100
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	11	<5	<5	28
EA045: Turbidity								
Turbidity	----	0.1	NTU	6.8	17.5	7.0	3.2	15.7
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	<0.010	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	0.006	0.008	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	<0.010	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	0.005	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.037	0.042	0.059	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	0.028	0.036	0.016	0.027	0.072
Iron	7439-89-6	0.05	mg/L	0.08	0.34	0.12	0.11	0.24
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	5.80	0.19	0.27	0.28
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.19	0.52	0.02	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.65	1.60	0.16	0.19	0.08
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.84	2.12	0.18	0.21	0.10
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	6.7	<0.5	0.5	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.8	8.8	<0.5	0.7	0.6

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC 27617	EC 27617	CR 27617	AC 27617	170627 CR-A
				Client sampling date / time	27-Jun-2017 10:35	27-Jun-2017 11:10	27-Jun-2017 11:35	27-Jun-2017 12:30	27-Jun-2017 13:45
Compound	CAS Number	LOR	Unit		ES1715892-001	ES1715892-002	ES1715892-003	ES1715892-004	ES1715892-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.06**	**0.06**	<0.05	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.02**	<0.01	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**105**	**109**	**112**	**108**	**114**
Toluene-D8	2037-26-5	2	%		**102**	**105**	**105**	**96.3**	**103**
4-Bromofluorobenzene	460-00-4	2	%		**99.2**	**103**	**100**	**95.2**	**98.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
			Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	CAS Number	LOR	Unit	ES1715892-006	ES1715892-007	ES1715892-008	ES1715892-009	ES1715892-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.85	7.96	7.79	7.64	7.53
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	47400	50400	36000	45200	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	<5	7	13	19
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.5	2.6	3.9	6.0	5.2
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	----	120
pH Redox	----	0.01	pH Unit	----	----	----	----	7.00
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	<0.001
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	<0.050	0.012
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	0.037	0.014	0.057
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	0.24	<0.10	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00016	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.16	0.76	0.21	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.03	0.02	0.06
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.11	0.12	1.49	0.18	0.07
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	0.13	1.52	0.20	0.13
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
				Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	CAS Number	LOR	Unit		ES1715892-006	ES1715892-007	ES1715892-008	ES1715892-009	ES1715892-010
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.5	<0.5	**1.4**	**1.9**	**3.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.5	<0.5	**2.9**	**2.1**	**3.5**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.01**	<0.01	<0.01	<0.01	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
				Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	*CAS Number*	*LOR*	*Unit*		**ES1715892-006**	**ES1715892-007**	**ES1715892-008**	**ES1715892-009**	**ES1715892-010**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**113**	**116**	**113**	**110**	**----**
Toluene-D8	2037-26-5	2	%		**102**	**108**	**105**	**97.2**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**101**	**101**	**101**	**93.7**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170622-BED 1	----	----	----	----
			Client sampling date / time	22-Jun-2017 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1715892-011	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.81**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**16**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.4**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**99.0**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.28**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.014**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.004**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.12**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.12**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EP020: Oil and Grease (O&G)								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170622-BED 1**	**----**	**----**	**----**	**----**
				Client sampling date / time	22-Jun-2017 11:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1715892-011**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis.
- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK061G/EK067G/EK062G:: LOR raised for TKN, Total P and TN on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC 27617	EC 27617	CR 27617	AC 27617	170627 CR-A
			Client sampling date / time	27-Jun-2017 10:35	27-Jun-2017 11:10	27-Jun-2017 11:35	27-Jun-2017 12:30	27-Jun-2017 13:45
Compound	CAS Number	LOR	Unit	ES1715892-001	ES1715892-002	ES1715892-003	ES1715892-004	ES1715892-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.96	8.29	7.82	7.81	7.75
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	522	746	45000	42800	49100
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	11	<5	<5	28
EA045: Turbidity								
Turbidity	----	0.1	NTU	6.8	17.5	7.0	3.2	15.7
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	<0.010	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	0.006	0.008	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	<0.010	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	0.005	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.037	0.042	0.059	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	0.028	0.036	0.016	0.027	0.072
Iron	7439-89-6	0.05	mg/L	0.08	0.34	0.12	0.11	0.24
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	5.80	0.19	0.27	0.28
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.19	0.52	0.02	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.65	1.60	0.16	0.19	0.08
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.84	2.12	0.18	0.21	0.10
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	6.7	<0.5	0.5	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.8	8.8	<0.5	0.7	0.6

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC 27617	EC 27617	CR 27617	AC 27617	170627 CR-A
				Client sampling date / time	27-Jun-2017 10:35	27-Jun-2017 11:10	27-Jun-2017 11:35	27-Jun-2017 12:30	27-Jun-2017 13:45
Compound	CAS Number	LOR	Unit		ES1715892-001	ES1715892-002	ES1715892-003	ES1715892-004	ES1715892-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.06**	**0.06**	<0.05	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.02**	<0.01	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**105**	**109**	**112**	**108**	**114**
Toluene-D8	2037-26-5	2	%		**102**	**105**	**105**	**96.3**	**103**
4-Bromofluorobenzene	460-00-4	2	%		**99.2**	**103**	**100**	**95.2**	**98.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
			Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	CAS Number	LOR	Unit	ES1715892-006	ES1715892-007	ES1715892-008	ES1715892-009	ES1715892-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.85	7.96	7.79	7.64	7.53
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	47400	50400	36000	45200	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	<5	7	13	19
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.5	2.6	3.9	6.0	5.2
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	----	120
pH Redox	----	0.01	pH Unit	----	----	----	----	7.00
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	<0.001
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	0.002
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	<0.050	0.012
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	0.037	0.014	0.057
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	0.24	<0.10	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00016	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.16	0.76	0.21	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.03	0.02	0.06
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.11	0.12	1.49	0.18	0.07
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.12	0.13	1.52	0.20	0.13
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
				Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	CAS Number	LOR	Unit		ES1715892-006	ES1715892-007	ES1715892-008	ES1715892-009	ES1715892-010
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.5	<0.5	**1.4**	**1.9**	**3.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.5	<0.5	**2.9**	**2.1**	**3.5**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.01**	<0.01	<0.01	<0.01	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	170627 CR-US	170627 CR-D	170627 MC	DUP	170627-ARN2
				Client sampling date / time	27-Jun-2017 11:35	27-Jun-2017 14:00	27-Jun-2017 14:00	26-Jun-2017 11:35	27-Jun-2017 11:35
Compound	*CAS Number*	*LOR*	*Unit*		**ES1715892-006**	**ES1715892-007**	**ES1715892-008**	**ES1715892-009**	**ES1715892-010**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**113**	**116**	**113**	**110**	**----**
Toluene-D8	2037-26-5	2	%		**102**	**108**	**105**	**97.2**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**101**	**101**	**101**	**93.7**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170622-BED 1	----	----	----	----
			Client sampling date / time	22-Jun-2017 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1715892-011	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.81**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**16**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.4**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**99.0**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.28**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.014**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.004**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.12**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.12**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----
EP020: Oil and Grease (O&G)								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170622-BED 1**	**----**	**----**	**----**	**----**
				Client sampling date / time	22-Jun-2017 11:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1715892-011**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170628WC BEX	170628 TURRELLA	170629 KGD WTP	----	----
			Client sampling date / time	28-Jun-2017 12:40	28-Jun-2017 13:00	28-Jun-2017 11:35	----	----
Compound	CAS Number	LOR	Unit	ES1716176-001	ES1716176-002	ES1716176-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.60**	**7.51**	**7.48**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2890**	**10600**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	**9**	<5	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.5**	**21.4**	**3.2**	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	**281**	----	----
pH Redox	----	0.01	pH Unit	----	----	**6.63**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	**0.005**	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	**0.002**	<0.001	**0.061**	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.002**	**0.003**	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	**0.002**	**0.006**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	**0.015**	**0.030**	**0.048**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.032**	**0.212**	**0.027**	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	**0.11**	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.10**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.10**	**3.20**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.06**	**0.03**	**0.06**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.42**	**0.38**	**0.12**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.48**	**0.41**	**0.18**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170628WC BEX	170628 TURRELLA	170629 KGD WTP	----	----
				Client sampling date / time	28-Jun-2017 12:40	28-Jun-2017 13:00	28-Jun-2017 11:35	----	----
Compound	CAS Number	LOR	Unit		ES1716176-001	ES1716176-002	ES1716176-003	--------	--------
					Result	Result	Result	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.9**	**4.8**	**4.8**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.4**	**5.2**	**5.0**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.04**	**0.10**	**0.01**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**170628WC BEX**	**170628 TURRELLA**	**170629 KGD WTP**	**----**	**----**
				Client sampling date / time	28-Jun-2017 12:40	28-Jun-2017 13:00	28-Jun-2017 11:35	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1716176-001**	**ES1716176-002**	**ES1716176-003**	**--------**	**--------**
					Result	Result	Result	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**87.9**	**90.0**	**----**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**93.8**	**92.7**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**92.6**	**92.6**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

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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.
~ = Indicates an estimated value.

- EG020: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK061G/EK067G/EK062G: LOR raised for TKN, Total P and TN on samples 1 and 3 due to sample matrix.
- Amendment (02/08/2017): This report has been amended and re-released to allow the reporting of additional analytical data.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170713_US	170713_DS	170713_AS	170713_MC	----
			Client sampling date / time	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1717456-001	ES1717456-002	ES1717456-003	ES1717456-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.85**	**7.96**	**8.01**	**7.89**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**43800**	**44100**	**46400**	**11000**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**10**	**22**	**12**	**9**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.8**	**2.2**	**2.2**	**4.0**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	**0.005**	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	----
Zinc	7440-66-6	0.005	mg/L	<0.050	**0.090**	<0.050	**0.026**	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	**0.026**	----
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	**0.09**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.34**	**0.31**	**0.15**	**3.20**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.01**	**0.01**	**0.09**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.12**	**0.11**	**0.12**	**3.66**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.14**	**0.12**	**0.13**	**3.75**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**1.0**	<0.5	**3.7**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.8**	**1.1**	<0.5	**7.4**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170713_US	170713_DS	170713_AS	170713_MC	----
				Client sampling date / time	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1717456-001	ES1717456-002	ES1717456-003	ES1717456-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	**0.11**	**0.06**	**0.17**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	**0.01**	<0.01	**0.08**	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**121**	**132**	**126**	**104**	----
Toluene-D8	2037-26-5	2	%		**92.5**	**100**	**94.0**	**110**	----
4-Bromofluorobenzene	460-00-4	2	%		**88.0**	**96.3**	**91.4**	**107**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

[redacted]

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG035: Positive Hg results have been confirmed by reanalysis

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	----	----	----
			Client sampling date / time	25-Jul-2017 11:00	25-Jul-2017 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1718372-001	ES1718372-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.53**	**8.01**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**4250**	**3530**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**18**	**17**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**16.5**	**3.1**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0004**	**0.0011**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.006**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.005**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.003**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.019**	**0.018**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.154**	**0.020**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.05**	<0.05	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	**0.00079**	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.10**	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**3.73**	**0.17**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	**0.05**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.65**	**0.62**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.70**	**0.67**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**5.0**	**0.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**5.7**	**1.5**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	----	----	----
			Client sampling date / time	25-Jul-2017 11:00	25-Jul-2017 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1718372-001	ES1718372-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	<0.01	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L	<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**115**	**119**	----	----	----
Toluene-D8	2037-26-5	2	%	**110**	**116**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**103**	**108**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK055G: It has been noted that Ammonia is greater than TKN for sample No 4, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	----
			Client sampling date / time	14-Jul-2017 00:00	14-Jul-2017 00:00	14-Jul-2017 00:00	14-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1717482-001	ES1717482-002	ES1717482-003	ES1717482-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.72**	**7.21**	**8.34**	**7.97**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**40100**	**543**	**877**	**46600**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**9**	**57**	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.0**	**5.7**	**158**	<0.1	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.001	**0.004**	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	**0.0001**	<0.0001	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.001	**0.001**	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	**0.009**	**0.021**	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.010	**0.013**	**0.004**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	**0.002**	**0.015**	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.074**	**0.276**	**0.068**	<0.050	----
Manganese	7439-96-5	0.001	mg/L	<0.010	**2.52**	**0.044**	<0.010	----
Iron	7439-89-6	0.05	mg/L	<0.10	**0.11**	**1.29**	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	**0.06**	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.33**	**0.30**	**11.2**	**0.17**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.18**	**2.54**	**2.26**	**1.05**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	**0.8**	**11.7**	**0.9**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.3**	**3.3**	**14.0**	**2.0**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	**0.04**	**0.21**	**0.03**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	**0.02**	**0.05**	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	----
				Client sampling date / time	14-Jul-2017 00:00	14-Jul-2017 00:00	14-Jul-2017 00:00	14-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1717482-001	ES1717482-002	ES1717482-003	ES1717482-004	--------
					Result	Result	Result	Result	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**104**	**105**	**108**	**110**	----
Toluene-D8	2037-26-5	2	%		**103**	**108**	**111**	**105**	----
4-Bromofluorobenzene	460-00-4	2	%		**105**	**107**	**109**	**106**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128