Surface Water Quality and Monitoring Program: 2017 – 2018 Annual Report

Project Name: WestConnex New M5

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Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
00	08/04/2019	[redacted]	[redacted]	[redacted]	For review
01	24/06/2019	[redacted]	[redacted]	[redacted]	Final
Signature:					

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	Final inclusive of M5 AT and RMS comments

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 (WQP&MP: 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 second year of the construction phase (August 2017 – July 2018). 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 separate reports (M5N-GOL-TER-100-200-GT-1517 and M5N-GOL-TER-100-200-GT-1518). 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 and M5N-GOL-TER-100-200-GT-1518)
		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 second year of the construction phase of the project (August 2017 – July 2018: 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 Reports (M5N-GOL-TER-100-200-GT-1517 and M5N-GOL-TER-100-200-GT-1518).

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 2017 and July 2018, the WestConnex New M5 Project continued with 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 2017 – 2018

Construction Compound	Construction Milestones (August 2017 – July 2018)
C1 – 3 **Western Surface Works** **Kingsgrove Tunnels**	• Pile break back • Concrete works • Tunnelling and tunnel support from C1 and C3 tunnel sites • Piling and excavation of east bound and west bound cut and cover structures • Widening of existing M5 including fill placement and installation of retaining walls and noise walls • Kindalin underpass-bridge works. • Pavement works including permanent and temporary works to enable traffic switching and access • Retaining walls and commence installation of MOC1 and associated facilities
C4 - 6 **Bexley Tunnels**	• Tunnelling and tunnel support from C4 and C5 tunnel sites. • Decommissioning of tunnelling activities and structures at C5 to commence MOC2 works • Concrete works
C7 **Arncliffe Tunnels**	• Testing and treatment of acid sulfate soils • Tunnelling and tunnel support from temporary shaft and decline including excavation with road headers, rock hammers, profilers and from blasting • Permanent shaft excavation and commencement of piling for MOC3 facilities

Construction Compound	Construction Milestones (August 2017 – July 2018)
C8 - 11 **St Peters Interchange** **St Peters Tunnels**	• Piling, pavement and general earthworks • Application of soil binder across stockpiles and access routes • Commissioning and operation of leachate treatment plant • Concrete works • MOC4 works and cut and cover structure • Commencement of MOC5 works • Odour monitoring and management activities • Installation of gas and leachate collection networks • Operation of crushing and screening plant • Tunnelling and spoil removal
St Peters Local Roads	• Hazmat investigations and removal works where required • Service investigations and relocations • Archival recording • Demolition • Geotechnical and pavement investigations • Materials classification • Vegetation clearing • Temporary barrier relocations • Stripping of fill materials 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 2017 – 2018

Monthly rainfall totals (mm) for reporting period		
Month	**Sydney Airport AMO #66037**	**Canterbury Racecourse AWS #066194**
Aug-17	27.2 (76.0)	22.6 (62.2)
Sep-17	0.2 (59.8)	0.2 (46.0)
Oct-17	59.6 (70.6)	52.6 (64.3)
Nov-17	38.4 (80.6)	37.4 (76.9)
Dec-17	52.0 (73.6)	60.4 (65.8)
Jan-18	27.6 (94.6)	24.6 (80.8)
Feb-18	92.2 (111.4)	121.4 (103.1)
Mar-18	108.8 (117.0)	-[1] (74.6)
Apr-18	23.4 (107.8)	12.4 (104.9)
May-18	17.8 (96.0)	13.4 (75.1)
Jun-18	162.8 (124.9)	112.4 (108.4)
Jul-18	16.0 (69.0)	6.0 (54.6)
Total	626.0 (1081.3)	463.4 (916.7)

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

1 – Monthly total data unavailable due to data gap in Bureau of Meteorology's climate statistics.

3. Water discharged from construction compounds

3.1 Licenced Discharge Points

The Project has several 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 22, 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)	<50 mg/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)	<50 mg/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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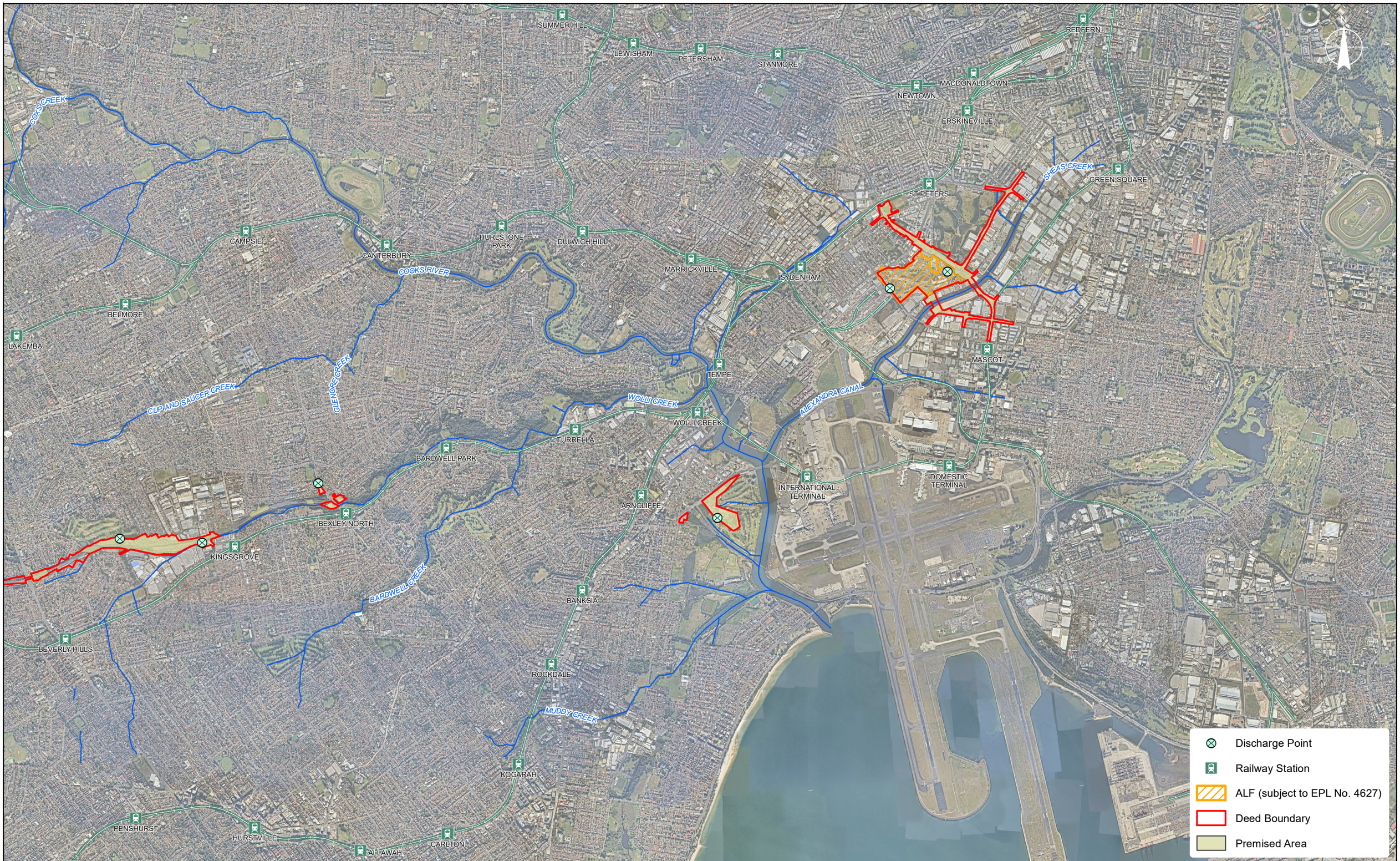
Figure 1: Locations for licenced discharge points



Rev	Description	Date	Approved
V	Modified Premised Area modification	13/03/2019	
U	Premised Area boundary modification	17/01/2019	
T	Added Discharge Point	08/01/2019	
S	Modified premised area boundary	13/11/2018	
R	Premised Area boundary modification	04/10/2018	
Q	ALF and Premised Area boundary modification	04/09/2018	
P	Modified Premise Area Boundary	12/07/2018	

Scales

0 1,200 m

1:36000

Client

WestConnex

Status

For Information Only - NOT FOR CONSTRUCTION

Original Size	A3	Drawn	[redacted]
Coordinate System	MGA ZONE 56	Requested by	[redacted]
Height Datum	AHD	Date Printed	10/04/2019
Filename:	Premise_Overview_revV.mxd		

WestConnex New M5

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WESTCONNEX New M5

Premise Map Overview

DOCUMENT NUMBER

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-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	Kyeemagh Reserve, access via Mutch Avenue, Kyeemagh.	330120	6242327	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 Road bridge, near Bexley North Station	325577	6243239	Freshwater
CDS-SW-11	Downstream	Wolli Creek	Upstream of Henderson Street	327910	6244087	Freshwater

Site ID	Location relative to site compounds	Watercourse name	Sampling Address	Eastings	Northings	Freshwater or estuarine / marine
			footbridge, near 5-9 Henderson Street			
CDS-SW-12	Adjacent	Cooks River	Rockwell Avenue	329991	6243607	Estuarine / marine

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**

Figure 2: Locations for surface water quality monitoring

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-05
LDS-SW-06
LDS-SW-08
LDS-SW-09
LDS-SW-10
LDS-SW-11
LDS-SF-1
LDS-SF-2
CDS-SW-07
CDS-SW-12

Rev	Description	Date	Approved
4	Draft for Comment	09/04/2019	
3	Draft for Comment	03/08/2017	
2	Draft for Comment	29/11/2016	
1	Draft for Comment	13/10/2016	
0	Draft for Comment	18/11/2015	PF

Scale: 0 500 1,000 1,500 m

Imagery © Nearmap 2019

Client: WestConnex

Status: For Information Only - NOT FOR CONSTRUCTION

Original Size	A3	Drawn	
Coordinate System	MGA ZONE 56	Requested by	
Height Datum	AHD	Date Printed	9/04/2019
Filename:	Surface_Water_Sample.mxd		

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WESTCONNEX New M5

Surfacewater Monitoring Locations

DOCUMENT NUMBER

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. Survey data indicated tunnelling works were within approximately 240 m north of the streambed fracture monitoring location at Hillcrest Avenue, Bardwell Park NSW on 17 April 2018. Tunnel excavation of the eastbound alignment continued towards St Peters with the alignment passing directly beneath the Bardwell Park Stream Bed Fracture location. Photos were collected monthly at both photo-points in Bardwell Park while daily inspections were completed at the Cooks River in conjunction with Project wide water sampling program. During the monitoring period between August 2017 – July 2018, CDSJV did not observe any change to the streambed conditions indicative of fracturing.

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. 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 2017

Prior to sampling, approximately 12 mm of rain was measured overnight and was noted to impact sample locations in and around Mascot, Sydenham and Tempe. Within the Alexandra Canal and Eastern Channel catchments, turbidity and dissolved oxygen (DO) were recorded outside the acceptable criteria upstream of the Project at CDS-SW-01. Manganese, total nitrogen and nitrate were detected above the trigger value for CDS-SW-02. Elevated levels of turbidity, TSS, copper, lead, zinc, total nitrogen, ammonia and total phosphorus were detected in the Eastern Channel at CDS-SW-03, but there were no project related works near this sample location. Samples collected on the run-out tide from CDS-SW-05 (up-stream Cooks River) revealed elevated levels manganese to be present. It is noted that the LOR for ammonia was raised by the laboratory for two samples (ES1719389-003, ES1719389-004) during analysis due to the sample matrix. For the purposes of this report, values are reported as the LOR of the laboratory. Quarterly discharge results revealed one minor exceedance for total nitrogen while all daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in August.

Samples collected from catchments in the western end of the Project (Arncliffe – Bexley) were undertaken ten days after the previously mentioned samples. As a result, no rainfall was observed or considered to impact the catchments sampled. No exceedances were detected in any samples collected near the Arncliffe Tunnelling compound (CDS-SW-06, CDS-SW-07, CDS-SW-12). All quarterly and daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in August.

Samples collected from the Wolli Creek catchment downstream from Bexley Tunnel compound recorded elevated values assigned for DO, conductivity and pH. Further downstream at Turrella, several exceedances were detected for dissolved oxygen, total nitrogen and ammonia in samples collected from CDS-SW-11. It was noted that the LOR for Total Kjeldahl Nitrogen (TKN) total phosphorus and total nitrogen were raised by the laboratory for some samples during analysis due to the sample matrix. Additionally, some samples were diluted and re-run due to salinity levels resulting in high TDS. For the purposes of this report, values are reported as the LOR of the laboratory. Quarterly discharge results revealed one minor exceedance for total nitrogen at KGD-1 while BED-1 was compliant. All daily discharges from the Water Treatment Plants (KGD-1, BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in August.

No samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel.

b. September 2017

Sampling completed within the Alexandra Canal and Eastern Channel catchments were undertaken during fine conditions with no rainfall noted in the week leading up to sampling. Samples collected upstream of the Project worksite recorded exceedances for DO and total nitrogen outside the trigger values assigned for CDS-SW-01. This exceedance for DO was also detected at the downstream location of St Peters Interchange at CDS-SW-02. Several exceedances for turbidity, copper, lead, zinc, total nitrogen, ammonia and total phosphorus were detected at CDS-SW-03 (Eastern Channel). It was noted that all exceedances noted from CDS-SW-03 were generally consistent with the month of August and are not associated with project activities (no work in location). Samples collected on the run-out tide from CDS-SW-05 presented elevated levels of TSS (upstream of works). It is noted samples analysed for TDS were diluted and re-run due to matrix interference. The results were subsequently reported with a raised LOR. Additionally, the LOR was raised for TKN, total nitrogen and total phosphorus in samples 4 & 5 due to the sample matrix. Furthermore, ammonia was observed to be greater than TKN for sample 2 however this difference is within the limits of experimental variation. All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in September.

No exceedances were observed at CDS-SW-07 and CDS-SW-12 however, exceedances of heavy metals (manganese and zinc) were detected from the upstream sampling location at CDS-SW-06. It is noted that samples analysed for TDS were diluted and re-run due to matrix interference. The results were then subsequently reported with a raised LOR. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in September.

Samples collected from the Wolli Creek catchment in the western end of the Project (Bexley – Turrella) were undertaken eight days following sampling in the eastern sites. As a result, light rainfall was noted at the time of sampling. Conductivity, total nitrogen and total phosphorus were above the trigger values for CDS-SW-10. An exceedance was detected for pH at CDS-SW-10 via field testing methods however the laboratory sample confirmed pH levels were within the normal/accepted range. Similar exceedances were noted further downstream at Turrella with conductivity, cadmium and total nitrogen all above the trigger values assigned for CDS-SW-11. These appear to be catchment related results, not associated with project activities. All discharges from the Water Treatment Plants within this catchment (KGD-1, BED-1) were compliant with the EPL criteria in September.

No samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel.

c. October 2017

Inadvertently, no sampling was undertaken in the eastern end of the Project (Alexandra Canal and Eastern Channel catchments) for the month of October. All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in October.

In the week prior to sampling in the Cooks River and Wolli Creek, approximately 30 mm of rain was measured and considered to impact sample locations in and around Arncliffe, Bexley and Turrella. Elevated levels of total nitrogen were detected upstream and adjacent to the discharge location of Arncliffe Tunnelling compound at CDS-SW-06 and CDS-SW-12 respectively however, samples collected downstream at CDS-SW-07 were within trigger values assigned for total nitrogen. Minor exceedances of manganese and zinc were noted adjacent to the Arncliffe Compound discharge location (CDS-SW-12) however sampling undertaken from ARN2 confirmed both analytes were compliant. As

such, exceedances were not attributed to Project related activities. Total nitrogen was also in exceedance at CDS-SW-12 however greater levels were detected at CDS-SW-06 upstream of the Project discharge point. This exceedance was no longer detected at the downstream sample location (CDS-SW-07) and was therefore considered to be affected by an external source upstream of the Project. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in October.

Samples collected from catchments in the western end of the Project (Bexley – Turrella) were undertaken six days after sampling at Arncliffe. As a result, rainfall was noted to have occurred within the week prior to sampling the Wolli Creek catchment. Levels detected for conductivity, total nitrogen and total phosphorus above the trigger values for CDS-SW-10. An exceedance was detected for pH at CDS-SW-10 via field testing methods however the laboratory sample confirmed pH levels were within the acceptable ranges. Similar exceedances were detected further downstream at Turrella with conductivity, cadmium and total nitrogen all above the trigger values assigned for CDS-SW-11. Similarly, to September, there is no evidence that these results are related to the project and are likely related to other catchment inputs. All daily discharges from the Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in October. Quarterly discharge samples collected from the Water Treatment Plan (BED-1) were compliant with the EPL criteria in October.

No samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel.

d. November 2017

In the week prior to sampling, 7.6 mm of rain was noted to impact sample locations in and around Mascot, Sydenham and Tempe. Within the Alexandra Canal and Eastern Channel catchments, no exceedances were identified above trigger levels assigned for CDS-SW-01 and CDS-SW-02 however it was noted that nitrate and nitrite were not analysed. Cadmium and copper were re-analysed due to matrix interference resulting in poor spike recovery however no detections were recorded before or after analysis. Turbidity and DO were slightly elevated at CDS-SW-03 (Eastern Channel), which is a concrete channel adjacent to Sydenham Railway Station. No project works were occurring in this location. Quarterly discharge results revealed elevated total nitrogen in one sample while all daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in November.

In the Cooks River catchment, elevated levels of total phosphorus were detected at all four locations (CDS-SW-05, CDS-SW-06, CDS-SW-07, CDS-SW-12) indicating catchment wide elevations not attributed to Project related activities. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in November.

Within the Wolli Creek catchment, exceedances were detected for conductivity and chromium at CDS-SW-10 however are not considered to be related to the Project as no discharges had taken place from the Bexley Tunnelling compound at the time of monitoring. No exceedances were detected further downstream at CDS-SW-11 in Turrella. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target, while all daily discharges from the Water Treatment Plant (KGD-1) were compliant with the EPL criteria in November. All discharges from the Water Treatment Plant (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in November.

No samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel.

e. December 2017

Within the Alexandra Canal and Eastern Channel catchments, turbidity was observed above trigger levels upstream of the CDSJV worksite at CDS-SW-01. Downstream of the Project, turbidity and manganese exceeded the trigger values at CDS-SW-02 while turbidity and elevated nutrient levels (total nitrogen and total phosphorus) were in exceedance at CDS-SW-03 however no project related activities were noted upstream of the sampling location. Elevated levels of turbidity and DO were recorded upstream of Arncliffe Tunnelling compound at CDS-SW-05. All quarterly and daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in December.

Within the lower Cooks River catchment, approximately 26.7 mm rain was recorded in the week prior to sampling. Exceedances were detected for total nitrogen at both upstream and adjacent to the Arncliffe discharge location at CDS-SW-06 and CDS-SW-12 respectively. No exceedances were detected

downstream at CDS-SW-07. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target, while all discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in December.

In the week prior to sampling, 42.5 mm of rain was noted to impact sample locations in and around the Wolli Creek catchment. Conductivity was detected above the trigger values at CDS-SW-10. It was noted that the exceedance for conductivity was detected via field testing, however laboratory analysis did not replicate this result and was below the adopted trigger value. Similarly, inconsistencies with the field pH values were measured at CDS-SW-11, but were also not replicated in laboratory analysis (within trigger values). All discharges from the Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in December.

f. January 2018

Within the Alexandra Canal and Eastern Channel catchments, sampling was conducted after approximately 16.2 mm of rainfall was detected in the week leading up to sampling. Elevated levels of DO, zinc was observed from samples collected from CDS-SW-01. Conductivity was also elevated during field testing however this was not replicated in laboratory analysis. At CDS-SW-02, similar elevated measurements were collected for: turbidity, manganese, zinc, total nitrogen and nitrate. Samples collected from CDS-SW-03 also revealed several exceedances including turbidity, DO, conductivity and total phosphorus. These elevated results are considered as catchment wide impacts from the rainfall and were not attributable to project works. At the upstream Cooks River (CDS-SW-05), turbidity, DO and manganese were all detected above the required trigger values, and are not related to project activities. All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in January.

Within the lower Cooks River catchment, elevated nitrate levels were identified adjacent to the discharge location at CDS-SW-07 however this elevation was not detected at either upstream or downstream sample locations. Additionally, both upstream and downstream locations were compliant for all parameters measured. All quarterly and daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in January.

No rainfall was recorded in the week leading up to sampling at the western end of the Project (Bexley – Turrella). Within the Wolli Creek catchment, exceedances were detected at CDS-SW-10 for pH, DO, conductivity and total phosphorus. Similar exceedances were observed at CDS-SW-11. All discharges from the Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in January.

No samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel.

g. February 2018

In the week prior to sampling, 47.6 mm of rain was noted to impact sample locations in and around Mascot, Sydenham and Tempe. Samples were not collected from CDS-SW-01 due to limited access to Sheas Creek, exacerbated by the Sydney Water works in this area. Within the Alexandra Canal and Eastern Channel catchments, pH and turbidity were observed above the trigger values for CDS-SW-02, CDS-SW-03 and CDS-SW-05 by field testing methods. Laboratory testing did not replicate these results and pH levels were within acceptable ranges for these locations. Manganese was detected above the trigger value at CDS-SW-02. It was also noted both nitrate and nitrite analysis was not completed for any samples collected from the Alexandra Canal and Eastern Channel catchments. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target, while all daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in February.

Within the lower Cooks River catchment, no water quality parameters were detected above the trigger values at CDS-SW-06 or CDS-SW-07. One exceedance for turbidity was detected at CDS-SW-12 however conditions at the time of sampling were noted to be very windy resulting in choppy surface conditions breaking on an unsealed river bank. Additionally, ARN-2 was not discharging at the time of sampling. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in February.

In the week prior to sampling, 73 mm of rain fell within the Wolli Creek catchment resulting in sufficient water levels to collect samples from Kooreela Street (CDS-SW-09). Exceedances were detected outside

the trigger values assigned for pH, turbidity, copper, total nitrogen, ammonia and total phosphorus (this site is located upstream of all project works). Downstream of the Project at CDS-SW-10, exceedances were consistent with those at CDS-SW-09. Laboratory testing for pH levels was not consistent with the field results and were within the trigger levels at both locations (CDS-SW-09, CDS-SW-10). Downstream at Turrella (CDS-SW-11), exceedances were limited to DO and zinc and are linked to the catchment wide impacts, with fewer exceedance linked to dilution further downstream. It was noted that the LOR's of various samples were raised for TKN, total nitrogen and total phosphorus due to the sample matrix. All quarterly and daily discharge results for Water Treatment Plants (KGD-1, BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in February.

h. March 2018

In the week prior to sampling, 36 mm of rain was noted to impact sample locations in and around Mascot, Sydenham and Tempe. Within the Alexandra Canal and Eastern Channel catchments, several physical parameters were above trigger values at multiple sites. DO and pH were noted to be below the trigger values assigned for CDS-SW-01. Alexandra Canal (CDS-SW-02) presented low pH levels while both Eastern Channel (CDS-SW-03) and the Cooks River (CDS-SW-05) also had low pH and high turbidity readings following field testing. Laboratory analysis, confirmed that the field measurements for pH were artificially low at all three sample locations. All discharges from the Water Treatment Plant (SPI-2) and Sediment Basin (SPI-3) were compliant with the EPL criteria of March.

Within the lower Cooks River catchment, no exceedances were detected upstream and adjacent to the discharge location of Arncliffe Tunnelling compound from CDS-SW-06 and CDS-SW-12 respectively. A slightly low pH value was detected downstream of Arncliffe at CDS-SW-07, however this was not consistent with the laboratory analysis which confirmed pH levels to be within acceptable ranges. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in March.

In the Wolli Creek catchment, elevated levels of pH, conductivity, cadmium and zinc were recorded at Bexley (CDS-SW-10) however, these exceedances were not identified further downstream at Turrella (CDS-SW-11). pH values from laboratory analysis demonstrated both locations were within the trigger values. All quarterly and daily discharges from Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in March.

i. April 2018

Within the Alexandra Canal catchment, elevated levels of conductivity and total phosphorus were noted upstream of the Project at CDS-SW-01. Fielding testing in the same location also indicate pH levels were outside the acceptable range however this was later confirmed to be acceptable via laboratory analysis. Downstream of the Project, total nitrogen was marginally above the acceptable range at CDS-SW-02. Several exceedances were detected within the Eastern Channel including turbidity, TSS, total nitrogen and total phosphorus in samples collected at CDS-SW-03. It was noted that fielding testing in the same location indicated conductivity levels were above the acceptable range however this was later confirmed to be acceptable via laboratory analysis. The Eastern Channel is a highly urbanised concrete channel and the elevated levels were not attributed to project works. No exceedances were detected for any analytes from CDS-SW-05 (in the Cooks River, at the confluence with the Eastern Channel). All quarterly and daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in April.

Within the Cooks River catchment, no exceedances were detected from any of the sample locations surrounding Arncliffe Tunnelling compound (CDS-SW-06, CDS-SW-07, CDS-SW-12). All quarterly and daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria of April.

In the Wolli Creek catchment, pH levels during field testing were below the accepted range at both Bexley and Turrella (CDS-SW-10, CDS-SW-11) however these values were not consistent with laboratory analysis with pH levels within range at both locations. Conductivity was above the assigned trigger values at both locations while chromium and total nitrogen were elevated at Bexley and Turrella respectively. All discharges from Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in April.

j. May 2018

Within the Alexandra Canal and Eastern Channel catchments, elevated levels of total nitrogen were noted upstream of the Project at CDS-SW-01. Two exceedances for DO and zinc were outside the

trigger values assigned for CDS-SW-02. All analytes were observed to be compliant from samples collected at CDS-SW-03. Sampling at the Cooks River site (CDS-SW-05) recorded an elevated level for turbidity while all other parameters were compliant. All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in May.

Within the Cooks River catchment, no exceedances were detected from either the upstream or downstream sampling locations at Arncliffe (CDS-SW-06, CDS-SW-07). Sampling undertaken adjacent to the discharge point (CDS-SW-12) recorded an elevated level for manganese, but this was not replicated downstream. Field testing indicated pH levels were out of range but laboratory analysis confirmed values were within the acceptable range. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in May.

In the Wolli Creek catchment, no monitoring was undertaken at CDS-SW-08 and CDS-SW-09 due to insufficient flows to collect samples. Downstream of Bexley (CDS-SW-10) and Turrella (CDS-SW-11), conductivity and DO were detected outside of trigger values. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target at Bexley (BED-1). All daily discharges from Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in May.

k. June 2018

On the night prior to sampling, 19 mm of rain was noted to impact sample locations in and around Mascot, Sydenham and Tempe. Within the Alexandra Canal and Eastern Channel catchments, several physical parameters were above trigger values at multiple sites. Turbidity was above the trigger values at all samples locations in the eastern end of the Project (CDS-SW-01, CDS-SW-02, CDS-SW-03, CDS-SW-05). Total nitrogen and total phosphorus exceeded the trigger values at CDS-SW-01 while a minor exceedance was detected for nitrate at CDS-SW-02. Elevated levels were noted for TSS and total phosphorus at CDS-SW-03, while the Cooks River (CDS-SW-05) had one heavy metal exceedance for zinc. All discharges from the Water Treatment Plant (SPI-2) and Sediment Basin (SPI-3) were compliant with the EPL criteria in June.

Rainfall events on the eve of sampling also impacted the Cooks River catchment with several physical and chemical exceedances observed across the sampling locations surrounding Arncliffe. Turbidity, zinc and pH were above the trigger values assigned for the upstream location of CDS-SW-06 however the exceedance for pH not replicated by laboratory analysis, which confirmed pH values were acceptable. Adjacent to the discharge location at Arncliffe (CDS-SW-12), an exceedance for turbidity and manganese was noted with water observed to be slightly ‘murky’ as a result of stormwater discharging at the time of sampling. Downstream of Arncliffe at CDS-SW-07, nitrate was above the acceptable criteria while field pH levels were low. Laboratory analysis confirmed the pH levels were within the acceptable range. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in June.

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 and total nitrogen were elevated at CDS-SW-10 however all samples collected downstream at CDS-SW-11 were compliant. All discharges from Water Treatment Plants (KGD-1, BED-1) and Sediment Basins (WSW-1) were compliant with the EPL requirements for the month of June.

l. July 2018

Within the Alexandra Canal catchment, field pH was noted above trigger values at Sheas Creek (CDS-SW-01) and Eastern Channel (CDS-SW-03) however both results were within the appropriate ranges for the laboratory analysis. Samples collected from Alexandra Canal (CDS-SW-02) revealed zinc to be above the trigger values while all other analytes were compliant. No exceedances were observed at CDS-SW-05. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target, while daily discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in July.

Within the Cooks River catchment, one pH exceedance was detected via field testing upstream of Arncliffe (CDS-SW-06) however this result not consistent with the laboratory analysis. No other exceedances were detected for physical or chemical parameters from the adjacent (CDS-SW-12) or downstream locations (CDS-SW-07) surrounding Arncliffe. Quarterly discharge results revealed that total nitrogen was marginally above the quarterly (80 percentile) target, while daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in July.

In the Wolli Creek catchment, no samples were collected from CDS-SW-08 and CDS-SW-09 due to low stream flow observed along the drainage channel. DO was below the trigger values at Bexley (CDS-SW-10) and chromium and conductivity levels were above trigger values. Further downstream, exceedances for conductivity and total nitrogen were detected at Turrella (CDS-SW-11). Inadvertently, quarterly discharge samples were not collected from the Water Treatment Plant (BED-1) however, all discharge monitoring at this site was compliant with EPL criteria. Quarterly discharge results for KGD 1 revealed a minor exceedance of the total nitrogen target, while all daily discharges from the Water Treatment Plant (KGD-2) were compliant with the EPL criteria in July.

6. Outcomes

6.1 Proposed changes to water quality monitoring program

There are no proposed changes to the sampling locations or parameters for the Water Quality Monitoring Program.

6.2 Summary

Water quality data for surface water monitoring and licenced discharges is presented in this report for the period from August 2017 to July 2018 (the second year of construction of the New M5 Project). Works associated with the New M5 Project during this period includes the continuation of surface construction activities at all major sites, civil works for major interchanges, tunnel excavation and Motorway Operation Complex (MOC) construction (project wide).

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.

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, however, as noted from results collected during this reporting period, elevated levels of dissolved solids still requires the elevation of reporting limits, particularly for estuarine samples. 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

Construction Water Treatement 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%
SPD (C8)	Q5	17/08/2017	PS	WTP Discharge	ES1720537-001	7.62	23	<0.05	0.059	0.002	0.004	0.009	1.9	0.02	
SPD (C8)	Q6	11/12/2017	KM	WTP-SPD	ES1731396-001	7.27	24	0.23	0.029	0.012	0.003	0.023	1.5	0.01	
SPD (C8)	Q7	9/02/2018	KM	WTP180427	ES1812102-001	8.07	11	<0.05	0.875	0.008	0.006	0.016	44.1	<0.01	
SPD (C8)	Q8	27/07/2018	PS	SPIWTP	ES1822107-001	7.42	<5	0.13	0.045	0.004	0.004	<0.005	21.2	<0.01	
Arncliffe (C7)	Q5	14/08/2017	MM	170804_ARN2	ES1720227-009	7.11	24	<0.05	0.249	0.002	0.002	0.007	1.4	<0.10	
Arncliffe (C7)	Q6	11/12/2017	MM	171211_ARN2	ES1731394-007	8.12	<5	<0.05	0.086	0.001	<0.001	<0.005	65.2	0.02	
Arncliffe (C7)	Q7	3/04/2018	MM	ARN2	ES1810031-001	7.67	8	<0.05	0.04	<0.001	<0.001	<0.005	1.4	0.07	
Arncliffe (C7)	Q8	31/07/2018	MM	ARN2	ES1822495-004	7.69	20	<0.05	0.404	0.002	0.004	0.017	3.2	<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)	Q5	14/08/2018	CG	170804_BED1	ES1720227-010	6.97	12	<0.05	0.005	0.03	0.002	0.012	2.7	<0.01	
Bexley North (C4)	Q6	31/10/2017	CG	171031 BED1	ES1729947-005	7.39	<5	<0.05	0.002	0.002	0.001	<0.005	1	0.01	
Bexley North (C4)	Q7	27/03/2018	HY	BEXLEY WTP	ES1809089-003	7.42	<5	<0.05	0.003	0.001	0.004	<0.005	1.5	<0.01	
Bexley North (C4)	Q8	17/05/2018	HY	BEXLEY WTP	ES1814421-001	6.79	11	<0.05	0.094	0.001	0.001	<0.005	22.9	0.03	
Kingsgrove (C3)	Q5	14/08/2017	CG	KGT WTP	ES1720227-003	7.55	<5	<0.05	0.026	<0.001	0.002	0.005	5.2	<0.1	
Kingsgrove (C3)	Q6	16/11/2017	CG	KGT WTP	ES1728847-003	7.84	14	0.07	0.071	0.005	0.002	0.02	6.2	<0.02	
Kingsgrove (C3)	Q7	1/02/2018	HY	KGD WTP	ES1803607-003	7.19	8.5	<0.05	0.01	0.005	0.002	<0.005	2.5	0.04	
Kingsgrove (C3)	Q8	26/07/2018	HY	KGD WTP	ES1822081-001	8	14	<0.05	0.124	<0.001	0.006	<0.005	3	<0.02	

2017-2018 Period of activity for licenced discharge points					
Discharge Point		WTP ARN-2	WTP BED-1	WTP KGD-1	WTP SPI-2
Aug-17	Q5				
Sep-17					
Oct-17					
Nov-17	Q6				
Dec-17					
Jan-18					
Feb-18	Q7				
Mar-18					
Apr-18					
May-18	Q8				
Jun-18					
Jul-18					

Appendix B: Surface water quality results

August 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	4/08/2017	13.30 PM	PS & CM	Rainfall 12mm overnight 03/08 - 04/08. WTP discharging on day of monitoring	7.92	95	16.34	205	59.6	481	N	Water running, turbid, brown - clear, no odour
CDS-SW-02	5/08/2017	8:00:00 AM	RB	Rainfall 12mm overnight 03/08 - 04/08. WTP discharging on day of monitoring	7.28	14.6	13.72	177	59.1	20500	N	Water level high. Tide going out, water turbid, partially clear. No odour
CDS-SW-03	4/08/2017	13:00 PM	PS & CM	Rainfall 12mm overnight 03/08 - 04/08. WTP discharging on day of monitoring	8.4	324	17.57	186	74.9	895	N	Low level, slight flow, turbid, brown dirty water
CDS-SW-04	14/08/2017	1:45:00 PM	MM & CG									No Flow
CDS-SW-05	4/08/2017	12:45:00 PM	PS & CM	Rainfall 12mm overnight 03/08 - 04/08. WTP discharging on day of monitoring	8.08	26.2	14.9	210	74.9	21300	N	Tide running out, low water level, water turbid, no odour
CDS-SW-06	14/08/2017	2:00:00 PM	MM & CG	Weather fine - no rainfall in past 5 days.	8	3	16.25	245	187	50400	N	High tide at 1:30pm, tide flowing out. Calm, no odour, clear.
CDS-SW-07	14/08/2017	1:30:00 PM	MM & CG	Weather fine - no rainfall in past 5 days.	7.92	0.8	16.16	231	247	51100	N	High tide at 1:30pm, very active fish, tide going out, no rubbish or debris, no odour, clear.
CDS-SW-08	14/08/2017	10:00:00 AM	HY									No Flow
CDS-SW-09	14/08/2017	10:15:00 AM	HY									No Flow
CDS-SW-10	14/08/2017	10:30:00 AM	HY	Low flow. No recent rain.	7.71	4	13.23	227	17.79	2110	N	Low flow, brown tinge, no odour, rubbish.
CDS-SW-11	14/08/2017	11:00:00 AM	[redacted]	Slow flow. No recent rain.	7.35	9.8	13.91	246	17.56	1010	N	Brownish colour, no odour.
CDS-SW-12	14/08/2017	2:15:00 PM	[redacted]	Discharge occurring from ARN2, Weather fine, no rainfall in the past 5 days.	7.92	0.8	16.16	231	247	51100	N	Clear, no odour, small fish present at monitoring site.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

August 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	ES1719389-001	8.01	33	455	0.08	0.024	0.001	<0.0001	0.001	0.005	<0.001	0.001	0.032	<0.00004	<0.05	2.7	0.7	0.15
CDS-SW-02	ES17949-001	7.79	<5	20900	<0.05	0.035	0.002	<0.0001	<0.001	0.001	<0.001	0.001	0.036	<0.00004	0.08	2.8	2.3	0.08
CDS-SW-03	ES1719389-002	7.98	134	633	1.45	0.041	0.005	<0.0001	0.001	0.032	0.016	0.002	0.073	<0.00004	0.11	5.7	4.4	3.1
CDS-SW-04																		
CDS-SW-05	ES1719389-003	7.98	19	21100	0.3	0.046	<0.001	<0.0001	<0.001	0.004	0.002	0.001	0.036	<0.00004	0.13	1.1	0.8	<0.05
CDS-SW-06	ES1720227-005	7.9	<5	49500	<0.1	0.012	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	<1.0	<1.0	0.1
CDS-SW-07	ES1720227-006	7.97	<5	49500	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	<1.0	<1.0	0.22
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1720227-002	8.52	6	2110	0.07	0.01	<0.001	0.0003	0.004	0.004	<0.001	0.001	0.007	0.0006	<0.05	1	0.6	0.08
CDS-SW-11	ES1720227-001	7.42	10	1040	0.23	0.1	<0.001	0.0004	<0.001	0.001	<0.001	0.002	0.027	0.00008	<0.05	3.4	2.8	2.49
CDS-SW-12	ES1720227-007	8.06	<5	52100	<0.1	0.011	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	<1.0	<1.0	0.07

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

August 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	ES1719389-001	0.05	1.97	0.08	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES17949-001	0.03	0.47	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1719389-002	0.18	1.15	0.34	0.17	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1719389-003	0.02	0.24	0.09	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1720227-005	<0.01	0.08	<0.1	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, TKN, Total P, and TN.
CDS-SW-07	ES1720227-006	<0.01	0.14	<0.1	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, TKN, Total P, and TN.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1720227-002	<0.01	0.37	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, TKN, Total P, and TN.
CDS-SW-11	ES1720227-001	0.05	0.52	0.04	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, TKN, Total P, and TN.
CDS-SW-12	ES1720227-007	<0.01	0.03	<0.1	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, TKN, Total P, and TN.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	21/09/2017	-	PS & IS	Sunny, fast flow	8.1	4.3	19.42	169	56.2	450	N	Fast flow runing out towards Alexandria Canal, high flow, water clear. High tide 8:53am, no rain.
CDS-SW-02	21/09/2017	-	PS & IS	Sunny, clear skies tide high and running out	7.6	0	19.54	198	33.3	46400	N	High tide 8:53am 1.59m, low tide 14:22 pm, 0.31m no rain, no odour, high tide running out
CDS-SW-03	21/09/2017	-	PS & IS	Sunny, still flow, no rain	8.07	59.5	20.39	173	82.5	598	N	No wind sunny organisms observed in water
CDS-SW-04	20/09/2017		MM & CG									No Flow
CDS-SW-05	21/09/2017	-	PS & IS	Sunny, Tide running out, clear skies	7.81	0	18.76	200	52	49900	N	High tide 8:53am 1.59m, low tide 14:22 pm 0.31m no rain, no odour water level high runing out Leaf litter, medium flow
CDS-SW-06	20/09/2017	12:45:00 PM	MM & CG	Sunny, no rain	7.96	3.6	16.8	189	74	47400	N	Low tide, no notable observations
CDS-SW-07	20/09/2017	12:00:00 PM	MM & CG	Sunny, no rain	8.2	1.6	16.5	196	124	50200	N	High tide at 8:13am. Light easterly breeze, not much activity. Salty odour, clear in colour.
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	28/09/2017	12:00:00 PM	PB & HY	Cloudy, slightly drizzly	6.22	7.6	19.67	325	104	4710	N	Brownish, leaf litter, rubbish
CDS-SW-11	28/09/2017	12:00:00 PM	PB & HY	Cloudy, slightly drizzly	6.93	14.2	19.06	304	135.3	3970	N	Dirty, leaf litter, low flor, rubbish
CDS-SW-12	20/09/2017	12:30:00 PM	MM & CG	Sunny, no rain	8.07	8.1	17.4	187	86	45200	N	High tide at 8:13am. ARN2 not discharging at time of monitoring, exposed banks made it difficult to get good sample. Salty odour, clear.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	ES1723844-002	7.17	9	506	0.08	0.009	<0.001	<0.0001	<0.001	0.007	<0.001	<0.001	0.023	<0.00004	0.05	3.6	0.9	1.04
CDS-SW-02	ES1723844-001	7.92	10	45900	<0.1	0.021	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	0.8	0.6	0.3
CDS-SW-03	ES1723844-003	7.95	27	725	1.5	0.179	0.004	0.0001	0.002	0.014	0.031	0.004	0.08	<0.00004	0.83	6.3	6.2	3.84
CDS-SW-04																		
CDS-SW-05	ES1723844-004	8	61	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-06	ES1723878-001	7.78	21	47100	<0.1	0.068	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	0.062	<0.00004	<0.05	0.3	0.2	0.17
CDS-SW-07	ES1723878-003	8.01	18	52500	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	0.2	0.2	0.15
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1724422-002	7.96	44	3980	0.08	0.007	0.002	0.0005	0.008	0.006	<0.001	0.003	0.021	0.00008	0.13	3	2.8	0.16
CDS-SW-11	ES1724422-001	7.77	13	4760	0.05	0.051	<0.001	0.0018	<0.001	0.002	<0.001	0.002	0.028	0.00028	0.06	3.2	2.5	1.8
CDS-SW-12	ES1723878-002	7.89	38	50200	<0.1	0.013	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	0.7	0.5	0.47

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	ES1723844-002	0.07	2.6	0.1	0.02	9	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1723844-001	0.02	0.13	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1723844-003	0.04	0.03	0.35	0.09	11	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1723844-004	0.02	0.08	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1723878-001	0.06	0.04	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals
CDS-SW-07	ES1723878-003	<0.01	0.05	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1724422-002	0.02	0.2	0.19	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1724422-001	0.1	0.63	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1723878-002	0.02	0.16	0.03	0.01	8	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

October 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												
CDS-SW-02												
CDS-SW-03												
CDS-SW-04												
CDS-SW-05												
CDS-SW-06	25/10/2017	-	MM & CG	Rainfall event in past 7 days (30mm)	8.11	1.2	21.59	249	61	45100	N	No odour, clear, tide on the way out, high tide at 12:40PM
CDS-SW-07	25/10/2017	-	MM & CG	Rainfall event in past 7 days (30mm)	8.11	0.4	21.67	310	91.8	47500	N	No odour, clear, tide on the way out, high tide at 12:40PM
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	31/10/2017	10:30:00 AM	PB & HY	Overcast, rainfall in past 7 days	6.56	4.4	17.19	194	91.2	3780	N	Rubbish
CDS-SW-11	31/10/2017	9:30:00 AM	PB & HY	Overcast, rainfall in past 7 days	5.37	6	19.95	287	118.7	31000	Y	Dirty, decent flow, rubbish
CDS-SW-12	25/10/2017	-	MM & CG	Rainfall event in past 7 days (30mm)	7.57	1.9	22.26	273	68	37700	N	No odour, clear, tide on the way out, high tide at 12:40PM. ARN2 discharging at time of sampling

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

October 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																		
CDS-SW-02																		
CDS-SW-03																		
CDS-SW-04																		
CDS-SW-05																		
CDS-SW-06	ES1727046-001	7.8	10	46800	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	5.8	5.7	0.07
CDS-SW-07	ES1727046-003	8.12	<5	49400	<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	<0.05
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1727268-002	7.59	10	3220	<0.05	0.021	0.002	0.0004	0.012	0.004	<0.001	<0.001	0.014	0.00009	<0.05	0.9	0.5	0.2
CDS-SW-11	ES1727268-001	7.33	11	27200	<0.05	0.09	<0.001	0.0019	<0.001	0.001	<0.001	0.002	0.032	0.00057	0.08	<0.5	<0.5	0.03
CDS-SW-12	ES1727046-002	7.78	10	39000	<0.1	0.411	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	0.451	<0.00004	<0.05	2.2	2	0.52

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

October 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																
CDS-SW-02																
CDS-SW-03																
CDS-SW-04																
CDS-SW-05																
CDS-SW-06	ES1727046-001	<0.01	0.07	0.12	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals,
CDS-SW-07	ES1727046-003	<0.01	0.07	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals, Total P and Ammonia
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1727268-002	0.07	0.36	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1727268-001	0.02	0.1	0.07	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for TKN due to sample matrix
CDS-SW-12	ES1727046-002	0.03	0.18	0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised the LOR for Metals

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

November 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	21/11/2017	2:15:00 PM	CM & PL	High Tide 10:39, 7.6mm rain	8.29	-	22.65	130	107.4	607	N	Tide on the run out, sunny, light green in colour
CDS-SW-02	22/11/2017	1:45:00 PM	CM & PL	High Tide 10:39 7.6mm rain	7.53	3.6	24	137	70.2	38400	N	Tide on the run out, sunny, light green in colour
CDS-SW-03	22/11/2017	2:00:00 PM	CM & PL	High Tide 10:39 7.6mm rain	7.58	108	30.2	32	35.8	507	Y	Tide on the run out, sunny, light green in colour
CDS-SW-04												No Flow
CDS-SW-05	23/11/2017	3:00:00 PM	CM & PL	High Tide 10:39 7.6mm rain	7.64	-	23.3	104	53.5	43500	N	Tide on the run out, sunny, light green in colour
CDS-SW-06	27/11/2017	4:08:00 PM	CG & MM	Overcast, no recent rainfall, high tide 3:32pm	8.43	2.7	22.09	192	77.1	45100	N	Windy, choppy waves
CDS-SW-07	27/11/2017	3:40:00 PM	CG & MM	Overcast, no recent rainfall, high tide 3:32pm	8.43	1.1	22.2	187	86.7	45000	N	High winds, choppy waves, small fish observed
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	16/11/2017	11:55:00 AM	PB & HY	Sunny, no recent rainfall	7.57	17.6	22.97	147	149.6	3770	N	Very low flow, rubbish, odour
CDS-SW-11	16/11/2017	11:55:00 AM	PB & HY	Sunny, no recent rainfall	7.21	4.8	22.8	160	115.1	966	Y	Little rubbish, good flow, lots of water
CDS-SW-12	27/11/2017	4:00:00 PM	CG & MM	Overcast, no recent rainfall, high tide 3:32pm	8.5	2.1	22.11	208	92.2	44500	N	High winds, choppy waves, debbris build up on banks. No water from ARN2 discharging at time of monitoring

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

November 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	ES1729457-001	8.11	<5	616	0.11	0.007	0.002	<0.0001	<0.001	0.007	<0.001	<0.001	0.028	<0.00004	0.08	2.8	0.6	0.12
CDS-SW-02	ES1729457-004	7.99	20	40000	<0.1	0.022	<0.01	<0.0001	<0.010	<0.010	<0.01	<0.010	<0.05	<0.00004	<0.05	0.7	0.5	0.27
CDS-SW-03	ES1729457-002	7.91	12	530	1.07	0.108	0.002	<0.001	0.002	0.008	0.008	0.002	0.02	<0.00004	0.84	0.8	0.8	0.12
CDS-SW-04																		
CDS-SW-05	ES1729457-003	7.95	21	44300	<0.1	0.017	<0.01	<0.001	<0.010	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	<0.5	<0.5	0.14
CDS-SW-06	ES1729947-001	7.9	8	51200	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.0001	<0.05	<1.0	<1.0	0.11
CDS-SW-07	ES1729947-002	7.93	18	52400	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.0001	<0.05	<1.0	<1.0	<0.05
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1728847-002	7.87	42	3540	<0.05	0.033	0.002	<0.0001	0.192	0.002	<0.001	0.005	<0.005	<0.00004	0.06	0.9	0.8	0.06
CDS-SW-11	ES1728847-001	7.56	20	848	0.34	0.096	<0.001	0.0001	<0.001	<0.001	<0.001	<0.001	0.016	<0.00004	0.13	1.7	1.6	0.18
CDS-SW-12	ES1729947-003	7.95	12	52600	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.0001	<0.05	<1.0	<1.0	<0.05

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

November 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	ES1729457-001	-	-	0.06	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1729457-004	-	-	0.11	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1729457-002	-	-	0.15	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1729457-003	-	-	0.3	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1729947-001	<0.01	0.02	0.27	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on TKN and TN
CDS-SW-07	ES1729947-002	<0.01	0.05	0.32	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on TKN, TN and Ammonia
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1728847-002	0.02	0.07	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1728847-001	0.02	0.08	0.09	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1729947-003	<0.01	0.03	0.25	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on TKN, TN and Ammonia

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

December 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	21/12/2017	2:10:00 PM	PL	Overcast	7.71	81.3	23.17	142	95.4	519	N	Observation were taken 2hrs after high tide
CDS-SW-02	21/12/2017	3:25:00 PM	PL	Overcast	7.8	36.9	25.16	143	68.5	38800	N	Observation were taken 2hrs after high tide
CDS-SW-03	21/12/2017	2:50:00 PM	PL	Overcast	8.03	140	25.36	126	64.1	1220	N	Observation were taken 2hrs after high tide
CDS-SW-04												No Flow
CDS-SW-05	21/12/2017	2:30:00 PM	PL	Overcast	7.5	26.2	25.24	181	36.8	42700	N	Observation were taken 2hrs after high tide
CDS-SW-06	6/12/2017	3:05:00 PM	CG & MM	Overcast, approximately 26.7mm in past 7 days	8.18	3.9	21.41	256	100.5	43500	N	Very windy, high tide, choppy. High tide at 1:01pm
CDS-SW-07	6/12/2017	2:45:00 PM	CG & MM	Overcast, approximately 26.7mm in past 7 days	7.83	0.4	20.5	228	102.7	44700	N	Very windy, high tide, choppy. High tide at 1:01pm
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	7/12/2017	-	HY & CG	Sunny, 6mm in past 24 hours, 42.5 in past 7 days	8	17.7	27.8	198	91	1780	N	Strong odour, lots of rubbish observed, low flow
CDS-SW-11	7/12/2017	-	HY & CG	Sunny, 6mm in past 24 hours, 42.5 in past 7 days	6.4	2.3	22.1	174	100	32700	N	Spring high tide, ducks, fish weir flowing backwards all samples influenced by tide.
CDS-SW-12	6/12/2017	3:00:00 PM	CG & MM	Overcast, approximately 26.7mm in past 7 days	8.16	3.1	21.8	248	102.7	45000	N	Very windy, very high tide, not discharging at time. High tide at 1.01pm

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

December 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	ES1732766-001	7.92	<5	522	<0.05	0.004	0.001	<0.0001	<0.001	0.006	<0.001	<0.001	0.022	<0.00004	<0.05	2.8	1	0.03
CDS-SW-02	ES1732766-004	7.8	16	40200	<0.10	0.036	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	0.06	1.1	0.9	0.19
CDS-SW-03	ES1732766-002	7.7	42	580	0.21	0.058	0.002	<0.0001	0.002	0.008	0.004	0.001	0.039	<0.00004	0.39	3.2	3	1.14
CDS-SW-04																		
CDS-SW-05	ES1732766-003	7.7	20	43700	<0.10	0.06	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.19
CDS-SW-06	171208_US ES1731394-002	8.01	<5	40300	<0.10	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.018	<0.05	<0.00004	<0.05	4.8	4.7	0.05
CDS-SW-07	171208_DS ES1731394-003	8.02	<5	42100	<0.10	<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-08																		
CDS-SW-09																		
CDS-SW-10	Bexley ES1731394-004	8.31	17	1350	0.06	0.027	0.002	0.0003	0.006	0.009	<0.001	<0.001	0.018	0.00039	0.08	0.9	0.7	0.06
CDS-SW-11	Turrella ES1731394-005	7.65	<5	28000	<0.1	0.035	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	0.06	<0.2	<0.2	0.21
CDS-SW-12	171208_AS ES1731394-001	7.97	<5	41900	<0.1	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.011	<0.05	<0.00004	<0.05	5.1	5	0.16

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

December 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	ES1732766-001	0.03	1.8	0.07	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1732766-004	0.01	0.16	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1732766-002	0.02	0.18	0.39	0.15	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1732766-003	0.01	0.09	0.09	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	171208_US ES1731394-002	<0.01	0.09	<0.05	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on Total P
CDS-SW-07	171208_DS ES1731394-003	<0.01	0.04	<0.05	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on Total P, TKN and TN due to sample matrix
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	Bexley ES1731394-004	0.01	0.15	0.06	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	Turrella ES1731394-005	0.01	0.12	0.07	0.05	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on TKN and TN, conductivity high due to spring tide.
CDS-SW-12	171208_AS ES1731394-001	<0.01	0.06	<0.05	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR on Total P due to sample matrix

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

January 2018

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	10/01/2018	9:18:00 AM	PL-CM	Approx. 16.2mm of rain in the past 7 days	7.91	11.3	21.95	139	57.2	4130	N	Clear
CDS-SW-02	10/01/2018	9:48:00 AM	PL-CM	Approx. 16.2mm of rain in the past 7 days	7.43	112	22.72	133	50.7	10100	Y	Brown
CDS-SW-03	10/01/2018	10:08:00 AM	PL-CM	Approx. 16.2mm of rain in the past 7 days	7.97	89.4	22.21	116	48.9	9540	N	Brown
CDS-SW-04												No Flow
CDS-SW-05	10/01/2018	10:42:00 AM	PL-CM	Approx. 16.2mm of rain in the past 7 days	7.34	32.5	23.94	124	25.9	23300	N	Clear
CDS-SW-06	30/01/2018	2:05:00 PM	CG & MM	No rainfall in the past 7 days, low tide at 2:44pm	8.12	12.4	27.86	225	95	42600	N	Yellow/brown tinge to water, sheen on top, very low tide - sand bank in river exposed
CDS-SW-07	30/01/2018	2:30:00 PM	CG & MM	No rainfall in the past 7 days, low tide at 2:44pm	8.31	7.7	26.18	207	88	44900	N	Brown tinge, very windy, water murky and choppy
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	30/01/2018		CG & HY	No rainfall in the past 7 days.	8.9	26.8	33	-18	100	3360	N	Some debris
CDS-SW-11	30/01/2018		CG & HY	No rainfall in the past 7 days.	8.1	12.2	28.7	148	100	3170	N	Good
CDS-SW-12	30/01/2018	12:45:00 PM	CG & MM	No rainfall in the past 7 days, low tide at 2:44pm	7.8	10.6	25.87	227	95	43400	N	Water turbid, low tide and exposed banks.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

January 2018

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	ES1801542	8.01	<5	402	0.34	0.01	0.001	<0.0001	<0.001	0.01	0.002	0.001	0.078	<0.00004	0.22	2.6	0.7	0.05
CDS-SW-02	ES1801542	7.46	47	10700	0.07	0.045	0.001	<0.0001	<0.001	0.004	0.001	0.003	0.075	<0.00004	0.13	2.3	1.5	0.46
CDS-SW-03	ES1801542	7.63	20	312	0.1	0.021	0.002	<0.0001	0.01	0.009	0.004	<0.001	0.049	<0.00004	0.28	1.7	0.8	0.03
CDS-SW-04																		
CDS-SW-05	ES1801542	7.68	10	23400	0.1	0.049	0.001	<0.0001	<0.001	0.001	<0.001	<0.001	0.024	<0.00004	0.1	1.2	1	0.26
CDS-SW-06	ES1803477-005	7.73	7	50200	<0.10	<0.010	<0.010	<0.001	<0.010	<0.010	<0.010	<0.010	<0.050	0.00004	<0.05	<1.0	<1.0	0.05
CDS-SW-07	ES1803477-007	7.86	6	52200	<0.10	<0.010	<0.010	<0.001	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.04
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1803607-002	9.01	2.8	3420	<0.05	0.013	0.002	0.0004	0.01	0.009	<0.001	0.002	0.031	0.00005	<0.05	1.4	1.3	0.35
CDS-SW-11	ES1803607-001	7.91	4.2	3250	0.21	0.011	0.001	0.0004	<0.001	0.002	<0.001	<0.001	0.015	<0.00004	0.18	0.8	0.7	0.03
CDS-SW-12	ES1803477-006	7.75	18	50300	<0.1	0.01	<0.010	<0.001	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	1.19

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

January 2018

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	ES1801542	0.03	1.85	0.12	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1801542	0.03	0.75	0.17	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1801542	0.04	0.87	0.15	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1801542	0.04	0.14	0.2	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1803477-005	<0.01	<0.01	<0.1	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR for dissolved metals due to high salinity. LOR raised for TKN and Total P
CDS-SW-07	ES1803477-007	<0.01	<0.01	<0.10	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR for dissolved metals due to high salinity. LOR raised for TKN and Total P
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1803607-002	0.04	0.11	0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	TSS not tested by ALS. Positive Hg.
CDS-SW-11	ES1803607-001	0.01	0.07	0.19	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	TSS not tested by ALS
CDS-SW-12	ES1803477-006	0.05	1.37	<0.10	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	ALS raised LOR for dissolved metals due to high salinity. LOR raised for TKN and Total P

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

February 2018

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				No sampling was conducted due to limited access.								No sampling was conducted due to limited access.
CDS-SW-02	14/02/2018	11:45:00 AM	PL & CM	Sampling conducted on the 10th of the month,with a total rainfall of 47.6mm within the catchment as taken from STN 0066037	3.33	16.1	27.52	405	78	38700	N	Yellowish/ green in colour
CDS-SW-03	14/02/2018	12:55:00 PM	PL & CM	Sampling conducted on the 10th of the month,with a total rainfall of 47.6mm within the catchment as taken from STN 0066037	4.9	63.8	35.96	373	65.2	639	N	Water was still with no movement with mosquito larvae, clear in colour
CDS-SW-04												No Flow
CDS-SW-05	14/02/2018	11:30	PL & CM	Sampling conducted on the 10th of the month,with a total rainfall of 47.6mm within the catchment as taken from STN 0066037	4.12	16.3	28.62	404	54	45000	N	Greenish colour, quick flow out
CDS-SW-06	28/02/2018	1:15:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	8.16	6.6	23.22	222	71	36200	N	Slight wind, bird life and no visible rubbish. Murky colour.
CDS-SW-07	28/02/2018	1:00:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	8.38	3.9	22.77	203	80	42500	N	No rubbish, slight wind, murky colour.
CDS-SW-08												No Flow
CDS-SW-09	1/03/2018	2:45:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	8.86	96.3	28	256	60.8	1010	N	Strong sewage odour, low flow in channel
CDS-SW-10	1/03/2018	3:05:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	8.83	35.7	26.56	128	52.5	1310	N	Sewage odour, medium flow, pooling of water in rock beds
CDS-SW-11	1/03/2018	3:20:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	7.42	3.3	23.55	192	33.1	363	N	High flow, no odour, full.
CDS-SW-12	28/02/2018	1:25:00 PM	CG & MM	73mm of rain within last 7 days. Low Tide at 15:24	8.2	26	24.03	227	55.3	38700	N	Choppy - very windy causing water to break onto exposed bank. ARN2 not discharging at time.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

February 2018

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																		
CDS-SW-02	EC180209	7.81	18	38700	<0.10	0.027	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	1.6	1.5	0.11
CDS-SW-03	EC180209	7.81	16	399	0.54	0.1	0.002	<0.0001	<0.001	0.006	0.005	0.001	0.017	<0.00004	0.39	0.8	0.8	0.1
CDS-SW-04																		
CDS-SW-05	EC180209	8.06	24	45800	<0.10	0.021	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.7	0.7	0.04
CDS-SW-06	ES1806584-001	7.77	16	42000	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.38
CDS-SW-07	ES1806584-003	8.05	7	49000	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<05	0.28
CDS-SW-08																		
CDS-SW-09	ES1806584-005	7.45	37	1190	0.14	0.017	0.001	<0.0001	<0.001	0.072	<0.001	0.003	0.038	<0.00004	0.13	16.5	16.3	17.9
CDS-SW-10	ES1806584-007	7.7	18	1700	0.09	0.028	0.003	<0.0001	0.006	0.024	<0.001	0.002	0.027	<0.00004	<0.05	10.4	10	10.6
CDS-SW-11	ES1806584-006	7.2	14	871	0.64	0.053	0.004	<0.0001	0.004	0.009	0.003	0.002	0.07	<0.00004	0.33	1.2	0.9	0.2
CDS-SW-12	ES1806584-002	7.94	46	45000	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.3

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

February 2018

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																No sampling was conducted due to limited access.
CDS-SW-02	EC180209	-	-	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	EC180209	-	-	0.15	0.05	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	EC180209	-	-	0.08	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1806584-001	0.01	0.14	<0.05	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Some samples diluted due to high salinity and LOR raised accordingly for dissolved metals. LOR raised for TKN, Total P and TN on various samples.
CDS-SW-07	ES1806584-003	<0.01	0.09	0.16	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Some samples diluted due to high salinity and LOR raised accordingly for dissolved metals. LOR raised for TKN, Total P and TN on various samples.
CDS-SW-08																
CDS-SW-09	ES1806584-005	<0.01	0.23	1.74	1.32	<5	<20	160	950	140	<1	<2	<2	<2	<5	Low TDS, EG094 method run instead of EG093. LOR raised for TKN, Total P and TN on various samples. Mislabelled as Kooemba.
CDS-SW-10	ES1806584-007	0.16	0.28	0.92	0.91	<5	<20	<100	210	<100	<1	<2	<2	<2	<5	Low TDS, EG094 method run instead of EG093. LOR raised for TKN, Total P and TN on various samples.
CDS-SW-11	ES1806584-006	0.02	0.31	0.1	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Low TDS, EG094 method run instead of EG093. LOR raised for TKN, Total P and TN on various samples.
CDS-SW-12	ES1806584-002	0.02	0.2	0.06	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Some samples diluted due to high salinity and LOR raised accordingly for dissolved metals. LOR raised for TKN, Total P and TN on various samples.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

March 2018

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	28/03/2018	8:57:00 AM	PL, CM	Rreceding 1.75m high from 6:35am with a rainfall of 36mm in the past 7 days	5.08	15.2	21.35	244	11.9	1090	N	Water level was approx. 65mm deep with a rapid flow rate
CDS-SW-02	28/03/2018	8:28:00 AM	PL, CM		5.25	9.2	20.97	227	141.9	36400	N	Water level was approx. 65mm deep and alive with schooling fry
CDS-SW-03	28/03/2018	12:00:00 PM	PL, CM		2	64.3	27.15	231	90.1	1390	N	Water level was still high with a slow flow out at 8:25am
CDS-SW-04												No Flow
CDS-SW-05	28/03/2018	11:35:00 AM	PL, CM	Rreceding 1.75m high from 6:35am with a rainfall of 36mm in the past 7 days	4.75	23.4	23.84	224	79	41800	N	Close to a dead low, observed an abundance of school fish close the the bank
CDS-SW-06	28/03/2018	10:15:00 AM	CG & MM	High Tide at 6:35am, rainfall in past 7 days - 36mm	7.01	1.9	21.6	217	56	49300	N	No odour, clearish, flowing water, some plant debris present, light film of scum on top
CDS-SW-07	28/03/2018	9:35:00 AM	CG & MM	High Tide at 6:35am, rainfall in past 7 days - 36mm	6.95	1.7	21.2	232	90	50300	N	No odour, clear, fast flowing tide (out), debris present (plant matter and rubbish), film of scum on top.
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	27/03/2018	11:00:00 AM	SB, HY	Receding 1.69m tide from 5:33am Rainfall of 48mm in the past 7 days	6.89	21.8	18.58	171	161.8	2170	N	Bit silty - rubbish present
CDS-SW-11	27/03/2018	11:45:00 AM	SB, HY	Receding 1.69m tide from 5:33am Rainfall of 48mm in the past 7 days	4.71	7	20.31	313	115.9	571	N	Clean and clear, average flow
CDS-SW-12	28/03/2018	10:00:00 AM	CG & MM	High Tide at 6:35am, rainfall in past 7 days - 36mm	7.04	1.3	21.6	220	87	50400	N	No odour, clear, still, little to no debris in water

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

March 2018

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	ES1809272	8.07	<5	675	<0.05	0.02	0.001	<0.0001	<0.001	0.003	<0.001	<0.001	0.029	<0.00004	<0.05	2.4	0.7	0.31
CDS-SW-02	ES1809272	7.79	25	37100	<0.10	<0.010	<0.01	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	1.2	0.8	0.19
CDS-SW-03	ES1809272	7.99	14	923	0.08	0.012	0.003	<0.0001	<0.001	0.004	<0.001	0.001	0.031	<0.00004	0.13	1	0.9	0.38
CDS-SW-04																		
CDS-SW-05	ES1809272	7.81	28	43700	<0.10	<0.010	<0.01	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.06
CDS-SW-06	ES1809395-001	7.88	21	51400	0.11	<0.010	<0.01	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.06
CDS-SW-07	ES1809395-003	7.95	10	51900	<0.10	<0.010	<0.01	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.08
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1809089-002	7.63	12	2320	0.16	0.163	0.001	0.003	0.019	0.008	0.001	0.002	0.064	<0.00004	0.14	1.3	1	0.17
CDS-SW-11	ES1809089-001	7.3	6	626	0.59	0.054	<0.001	0.0007	<0.001	0.003	<0.001	<0.001	0.039	<0.00004	0.13	1.1	0.8	0.53
CDS-SW-12	ES1809395-002	7.79	8	52400	<0.10	<0.010	<0.01	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.11

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

March 2018

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	ES1809272	0.1	1.57	0.05	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1809272	0.03	0.32	0.19	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1809272	<0.01	0.05	0.08	0.02	6	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1809272	<0.01	0.06	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1809395-001	<0.01	0.03	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Upstream of CDSJV activities. 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	ES1809395-003	0.01	0.08	<0.10	<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	ES1809089-002	0.03	0.26	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	No lab comments provided. Exceedances cannot be explained
CDS-SW-11	ES1809089-001	0.03	0.24	0.11	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	No comments
CDS-SW-12	ES1809395-002	<0.01	0.02	<0.10	<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 | Estuarine | Above trigger level

Freshwater

April 2018

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	27/04/2018	10:10:00 AM	PL & CM	No rain in the past 7 days, High tide 06:10 @ 1.69m with a 0.38m low @	8.6	25.2	19.32	389	118.7	3890	N	Static water, clear in colour, No odour
CDS-SW-02	27/04/2018	9:18:00 AM	PL & CM	No rain in the past 7 days, High tide 06:10 @ 1.69m with a 0.38m low @ 12:32	7.7	15.8	21.41	144	89.4	47200	N	High wind, No odur
CDS-SW-03	27/04/2018	10:50:00 AM	PL & CM	No rain in the past 7 days, High tide 06:10 @ 1.69m with a 0.38m low @ 12:32	8.3	53.2	20.21	263	108.4	6220	N	Good flow, there is a lot of iron oxide entering from the sides. No water odour but odur was noticed coming from the creek
CDS-SW-04												No Flow
CDS-SW-05	27/04/2018	9:51:00 AM	PL & CM	No rain in the past 7 days, High tide 06:10 @ 1.69m with a 0.38m low @ 12:32	7.8	6.7	21.02	218	86.8	496	N	No odour
CDS-SW-06	26/04/2018	10:30:00 AM	MM & CG	Low tide at 10:57, 0mm rain in the last 7 days.	7.65	4.2	21	281	98	43400	N	Some debris (feather, plant matter, rubbish), slight wind, fine.
CDS-SW-07	26/04/2018	10:05:00 AM	MM & CG	Low tide at 10:57, 0mm rain in the last 7 days.	7.34	2.5	20.73	326	155	43200	N	Fine, slight wind, water turbid due to breaking on exposed bank.
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	24/04/2018	9:30:00 AM	SB, CG	Low tide 9:55am at 0.30m 0mm rain in the 7days	6.08	5.9	21.18	14	105	3940	N	Calm, clear water, fairly clean
CDS-SW-11	24/04/2018	10:30:00 AM	SB, CG	Low tide 9:55am at 0.30m 0mm rain in the 7days	6.57	3.3	19.46	150	105.6	2530	N	Scum on surface
CDS-SW-12	26/04/2018	10:05:00 AM	MM & CG	Low tide at 10:57, 0mm rain in the last 7 days.	8.15	31.5	20.67	278	82.6	43600	N	Fine, water flowing out, not much debris.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

April 2018

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	ES1812101-002	7.94	18	4020	0.06	0.04	0.001	<0.0001	0.008	0.002	<0.001	<0.001	0.006	<0.00004	<0.05	1.4	1.2	0.59
CDS-SW-02	ES1812101-004	7.92	38	48200	<0.01	0.019	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	1.9	1.8	0.46
CDS-SW-03	ES1812101-001	8.03	52	616	0.19	0.016	0.001	<0.0001	<0.001	0.005	<0.001	0.001	0.014	<0.00004	<0.05	3.1	1.3	0.17
CDS-SW-04																		
CDS-SW-05	ES1812101-003	8.02	44	51600	<0.1	<0.01	<0.01	<0.001	<0.01	<0.010	<0.01	<0.01	<0.05	<0.00004	0.06	<1.0	<1.0	0.14
CDS-SW-06	ES1811937-002	7.94	24	50500	<0.1	0.012	<0.010	<0.001	<0.010	<0.010	<0.01	<0.01	<0.05	<0.00004	<0.05	0.7	0.6	<0.05
CDS-SW-07	ES1811937-004	8.07	16	51200	<0.10	0.012	<0.010	<0.001	<0.01	<0.010	<0.01	<0.01	<0.05	<0.00004	0.06	<0.5	<0.5	0.17
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1811937-006	7.64	<5	4350	<0.05	0.034	0.004	0.0003	0.042	0.004	<0.001	0.003	0.018	0.00035	<0.05	1.9	1.2	0.42
CDS-SW-11	ES1811937-005	7.79	<5	2660	<0.05	0.094	<0.001	0.0003	<0.001	0.005	<0.001	<0.001	0.018	<0.00004	<0.05	3.3	2.5	1.32
CDS-SW-12	ES1811937-003	7.93	36	51300	<0.10	0.014	<0.010	<0.001	<0.01	<0.01	<0.01	<0.01	<0.05	<0.00004	<0.05	0.7	0.6	0.12

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

April 2018

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	ES1812101-002	0.02	0.13	0.13	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1812101-004	0.03	0.11	0.11	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1812101-001	0.1	1.74	0.28	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1812101-003	0.01	0.09	<0.1	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1811937-002	0.01	0.08	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Upstream of CDSJV activities. 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	ES1811937-004	0.01	0.1	<0.01	<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.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1811937-006	0.09	0.6	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Lab comments did not influence results. Positive Hg still below trigger level.
CDS-SW-11	ES1811937-005	0.09	0.72	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Lab comments did not influence results.
CDS-SW-12	ES1811937-003	0.01	0.08	<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.

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

May 2018

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	29/05/2018	9:30:00 AM	PL &CM	1.44m High Tide@ 8:05am with a 0.54m Low tide at 1:48pm, no recent	7.31	17.1	18.91	148	146.5	809	N	Clear water, good flow
CDS-SW-02	29/05/2018	10:00:00 AM	PL &CM	1.44m High Tide@ 8:05am with a 0.54m Low tide at 1:48pm, no recent rainfall, fine sunny day, calm with no wind	7.36	17.9	17.47	148	36.2	46200	N	Clear water, Slow flow
CDS-SW-03	29/05/2018	10:45:00 AM	PL &CM	1.44m High Tide@ 8:05am with a 0.54m Low tide at 1:48pm, no recent rainfall, fine sunny day, calm with no wind	8.17	11.1	17.08	140	123	676	N	Clear water, no flow
CDS-SW-04												No Flow
CDS-SW-05	29/05/2018	10:30:00 AM	PL &CM	1.44m High Tide@ 8:05am with a 0.54m Low tide at 1:48pm, no recent rainfall, fine sunny day, calm with no wind	7.56	15.1	16.95	151	48.6	50500	N	Clear water, good flow
CDS-SW-06	10/05/2018	9:39:00 AM	CG & MM	Low tide at 10:30am, no recent rainfall, fine sunny day, little to no wind	7.55	3.5	17.89	215	55	41200	Y	Film of grease or oils spotted on surface of water - seen upstream of monitoring point. Not related to CDSJV works. No debris in water.
CDS-SW-07	10/05/2018	8:51:00 AM	CG & MM	Low tide at 10:30am, no recent rainfall, fine sunny day, little to no wind	7.72	1.2	17.81	300	102.9	42300	N	No wind, very still, slowing heading out, no debris.
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	14/05/2018	10:30:00 AM	SB & HY	Low tide 1:13pm, 4mm rain in past 7 days	7.06	1.8	15.6	90	131.9	1910	N	Bit stinky, rubbish in water includin metal pole, fence panel
CDS-SW-11	14/05/2018	9:30:00 AM	SB & HY	Low tide 1:13pm, 4mm rain in past 7 days	7.02	0	15.49	205	23.53	1180	N	Running, flowing
CDS-SW-12	10/05/2018	9:23:00 AM	CG & MM	Low tide at 10:30am, no recent rainfall, fine sunny day, little to no wind	6.8	3.9	17.6	181	93	41900	N	No wind, low tide, no debris, exposed banks but water not turbid.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

May 2018

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	ES1815525-004	8.04	11	623	0.14	0.018	0.001	<0.0001	<0.001	0.007	<0.001	<0.001	0.03	<0.00004	0.11	2.9	0.8	0.15
CDS-SW-02	ES1815525-004	7.83	13	47500	<0.10	0.018	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	0.094	<0.00004	<0.05	0.8	0.6	0.41
CDS-SW-03	ES1815525-001	8.08	6	466	0.06	0.012	<0.001	<0.0001	0.002	0.005	<0.001	0.001	0.026	<0.00004	<0.05	1.1	0.8	0.45
CDS-SW-04																		
CDS-SW-05	ES1815525-003	7.94	13	51000	<0.10	<0.010	<0.001	<0.0010	<0.010	<0.010	<0.001	<0.010	0.056	<0.00004	<0.05	<0.5	<0.5	0.14
CDS-SW-06	ES1813640-001	7.74	6	50400	<0.10	0.014	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.050	<1.0	<1.0	0.24
CDS-SW-07	ES1813640-002	7.84	<5	50500	<0.10	0.02	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.050	<1.0	<1.0	0.52
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1813743-002	7.61	10	1880	0.12	0.045	<0.001	0.0001	0.008	0.005	<0.001	<0.001	0.032	<0.00004	0.2	1.9	1	0.42
CDS-SW-11	ES1813743-001	7.41	<5	1160	0.37	0.064	<0.001	0.0011	<0.001	0.004	<0.001	<0.001	0.023	<0.00004	0.08	1.9	1.2	1.19
CDS-SW-12	ES1813640-003	7.75	<5	51000	<0.10	0.21	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00015	<0.05	<1.0	<1.0	0.4

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

May 2018

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	ES1815525-004	0.17	1.89	0.08	0.05	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1815525-004	0.03	0.15	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1815525-001	0.06	0.23	0.1	0.07	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1815525-003	0.02	0.11	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1813640-001	0.01	0.07	<0.10	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Limit of detection were raised for dissolved metals and nutrients due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection.
CDS-SW-07	ES1813640-002	0.02	0.1	<0.10	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Limit of detection were raised for dissolved metals and nutrients due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1813743-002	0.06	0.82	0.07	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1813743-001	0.08	0.6	0.04	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1813640-003	0.01	0.1	<0.10	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Limit of detection were raised for dissolved metals and nutrients due to laboratory processes. Parameters An, Cu and Zn triggered were below limits of detection.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

June 2018

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	28/06/2018	11:15:00 AM	PS & CM	19mm rainfall overnight	7.75	37.6	18.32	143	84.6	495	N	Slow flowing very dirty sediment laden water light brown color
CDS-SW-02	28/06/2018	9:45:00 AM	PS & CM	19mm rainfall overnight	7.39	63	16.5	60	128	25300	Y	Rain event, clearish murky water high tide, leaf litter, bankfull
CDS-SW-03	28/06/2018	10:42:00 AM	PS & CM	19mm rainfall overnight	8.31	384	17.8	119	114.9	418	N	Fast flow water, iron oxidising on sides of concrete/brick channel
CDS-SW-04												No Flow
CDS-SW-05	28/06/2018	10:15:00 AM	PS & CM	19mm rainfall overnight	7.25	21.7	15.46	145	73.8	23200	Y	High tide on the run out leaf litter, bankfull
CDS-SW-06	28/06/2018	9:17:00 AM	MM & US	19mm rainfall overnight	6.88	38.2	14.14	215	73.7	39800	N	Still a lot of debris in water, very murky possibly from stormwater, hightide at 8:32am.
CDS-SW-07	28/06/2018	8:45:00 AM	MM & US	19mm rainfall overnight, airport excavating on runway batter adjacent to monitoring location.	6.16	8.4	14.1	334	125.2	33800	N	Still, debris present, slightly murky. High tide at 08:32am
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	27/06/2018	9:45:00 AM	HY & SB	Rainfall 15.4mm rain	7.18	7.4	12.38	167	240.5	301	N	Flowing, rubbish present. No odour, no discolouraton
CDS-SW-11	27/06/2018	8:30:00 AM	HY & SB	Rainfall 15.4mm rain	7.02	2.4	10.63	163	136.6	763	N	Flowing, ducks. No discolouration, no odour.
CDS-SW-12	28/06/2018	9:00:00 PM	MM & US	19mm rainfall overnight	7.25	18.5	14.91	273	82.2	18400	N	Water discharging from stormwater, slightly murky. High tide 08:32am

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

June 2018

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	ES1819051-002	7.9	8	519	0.17	0.026	0.001	<0.0001	0.002	0.006	<0.001	<0.001	0.052	<0.00004	0.09	5.2	1.1	0.26
CDS-SW-02	ES1819051-004	7.36	36	2890	0.21	0.015	0.001	<0.0001	<0.001	0.002	<0.001	<0.001	0.025	<0.00004	<0.05	1.2	0.7	0.24
CDS-SW-03	ES1819051-001	7.86	130	662	0.1	0.005	0.002	<0.0001	0.004	0.011	<0.001	<0.001	0.027	<0.00004	<0.05	2.4	0.6	0.14
CDS-SW-04																		
CDS-SW-05	ES1819051-003	7.58	16	22000	0.05	0.025	0.001	<0.0001	<0.001	0.002	<0.001	<0.001	0.074	<0.00004	<0.05	0.9	0.6	0.22
CDS-SW-06	ES1819259-001	7.63	9	22000	<0.05	0.016	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.047	<0.00004	<0.05	0.6	0.4	0.21
CDS-SW-07	ES1819259-002	7.66	12	20600	<0.05	0.011	0.002	<0.0001	<0.001	0.001	<0.001	0.001	0.024	<0.00004	<0.05	1.7	0.4	0.27
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1818880-002	7.52	11	2960	<0.05	0.046	0.002	0.0006	0.027	0.001	<0.001	0.001	0.023	<0.00004	<0.05	3.7	2.8	0.87
CDS-SW-11	ES1818880-001	7.09	<5	783	0.33	0.037	<0.001	0.0003	<0.001	0.002	<0.001	0.001	0.054	<0.00004	<0.05	1.5	0.5	0.26
CDS-SW-12	ES1819259-003	7.66	8	19600	<0.05	0.06	0.001	<0.0001	0.002	<0.001	<0.001	0.001	0.037	0.00006	<0.05	1.6	1.3	0.58

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

June 2018

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	ES1819051-002	0.12	4.01	0.57	0.25	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1819051-004	0.03	0.48	0.08	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1819051-001	0.07	1.71	0.13	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1819051-003	0.03	0.29	0.06	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1819259-001	0.02	0.22	<0.02	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Limits of detection raised for Total P due to laboratory processes
CDS-SW-07	ES1819259-002	0.04	1.26	0.2	0.13	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1818880-002	0.13	0.8	0.02	0.01	<5	<20	260	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1818880-001	0.05	0.95	<0.01	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1819259-003	0.09	0.17	<0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Limits of detection raised for Total P due to laboratory processes

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

July 2018

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	26.07.2018	10:05:00 AM	PS, CM	Still water, ionisation of iron from concrete canal; rust spots	8.86	4.7	13.05	152	236.5	526	N	No flow, clear rusty spots
CDS-SW-02	26.07.2018	9:05:00 AM	PS, CM	Clear water, high tide running out, no debris	8.05	7.2	14.07	156	122.8	43200	N	Clear water, tide running out, light wind
CDS-SW-03	26.07.2018	9:41:00 AM	PS, CM	Slow flowing water, algae slime growing in stagnant pools	9.41	7.6	14.36	83	71.7	560	Y	Rust spots on concrete channel, water flowing, algae growing
CDS-SW-04												No Flow
CDS-SW-05	26.07.2018	9:37:00 AM	PS, CM	Clear water tide receeding debris in water	8.05	4.5	13.33	194	47.7	47700	N	Clear water, tide running out, light wind, debris in water.
CDS-SW-06	31.07.2018	9:34:00 AM	PS, MM	Still water, no debris, receeding tide	8.53	2.6	12.9	224	53	49800	N	Clear, No odour
CDS-SW-07	31.07.2018	9:06:00 AM	PS, MM	Still water, construction work on bank of cooks river at airport, receeding tide	7.09	0.5	13.45	308	101	50800	N	Clear, fishy odour
CDS-SW-08												No Flow
CDS-SW-09												No Flow
CDS-SW-10	26.07.2018	11:00:00 AM	PB, HY		8.01	1.2	13.53	1.9	4.66	2950	N	Slightly dry, lots of rubbish
CDS-SW-11	26.07.2018	10:00:00 AM	PB, HY		7.19	5.1	10.78	1.27	235.7	2950	N	Rubbish, bit smelly
CDS-SW-12	31.07.2018	9:20:00 AM	PS, MM	Still water, no debris, receeding tide, some fish present	7.93	2.2	12.34	241	55.7	47200	N	Clear, No odour

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

July 2018

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	ES1822005-001	7.71	9	609	0.12	0.02	0.001	<0.0001	<0.001	0.004	<0.001	<0.001	0.013	<0.00004	<0.05	2.6	0.6	0.24
CDS-SW-02	ES1822005-004	7.78	12	45200	<0.10	0.014	<0.001	<0.0010	<0.010	<0.010	<0.010	<0.010	0.058	<0.00004	<0.05	<0.5	<0.5	<0.10
CDS-SW-03	ES1822005-002	7.86	7	376	<0.05	0.005	<0.001	<0.0001	0.001	0.003	<0.001	<0.001	0.012	<0.00004	<0.05	1.1	0.7	0.59
CDS-SW-04																		
CDS-SW-05	ES1822005-003	7.92	9	51000	<0.10	<0.010	<0.001	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	<0.10
CDS-SW-06	ES1822495-001	8.15	16	51400	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.5	0.4	0.1
CDS-SW-07	ES1822495-002	8.27	<5	52600	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.10	0.5	0.4	0.06
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1821994	7.97	7	2990	<0.05	0.01	0.002	0.0002	0.041	0.006	<0.001	<0.001	0.006	<0.00004	<0.05	2.1	1.4	0.96
CDS-SW-11	ES1821994	7.44	<5	2970	0.09	0.12	<0.001	0.0004	<0.001	<0.001	<0.001	0.001	0.026	<0.00004	<0.05	3.1	2.5	2.16
CDS-SW-12	ES1822495-003	8.11	6	49500	<0.10	0.016	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00009	0.07	0.4	0.2	0.11

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

July 2018

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	ES1822005-001	0.15	1.86	0.11	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1822005-004	0.02	0.07	0.15	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1822005-002	0.09	0.31	0.09	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-04																
CDS-SW-05	ES1822005-003	0.02	0.08	0.17	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1822495-001	-	-	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1822495-002	-	-	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1821994	0.39	0.35	0.03	<0.01	<5	<20	<20	210	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1821994	0.09	0.54	0.03	<0.01	<5	<20	<20	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1822495-003	-	-	0.14	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

Appendix C: Australian Laboratory Services Certificate of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1720537**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: RESULTS ADDRESS	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 17-Aug-2017 15:00
Order number	: 4506808	Date Analysis Commenced	: 17-Aug-2017
C-O-C number	: ----	Issue Date	: 23-Aug-2017 12:43
Sampler	: PS		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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	WTP Discharge	----	----	----	----
			Client sampling date / time	17-Aug-2017 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1720537-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.62**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**8280**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**23**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**20.4**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.006**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.012**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	----	----	----	----
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	**0.009**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.059**	----	----	----	----
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	----	----	----	----
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	**0.63**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.52**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.30**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.82**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.9**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WTP Discharge	----	----	----	----
				Client sampling date / time	17-Aug-2017 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1720537-001	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
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	%		**111**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**110**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1719490**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 07-Aug-2017 12:30
Order number	: 4506808	Date Analysis Commenced	: 07-Aug-2017
C-O-C number	: ----	Issue Date	: 11-Aug-2017 14:56
Sampler	: RB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	----	----	----	----
			Client sampling date / time	05-Aug-2017 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1719490-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.79**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**20900**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**8.0**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----
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	**0.001**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.036**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.035**	----	----	----	----
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	----	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.08**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.08**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.47**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.50**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.8**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	----	----	----	----
				Client sampling date / time	05-Aug-2017 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1719490-001	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.12**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
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	%		**110**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**125**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**98.4**	----	----	----	----

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

Work Order	: **ES1720227**	Page	: 1 of 9
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 15-Aug-2017 17:30
Order number	: 4506808	Date Analysis Commenced	: 15-Aug-2017
C-O-C number	: ----	Issue Date	: 23-Aug-2017 14:38
Sampler	: ----		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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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
	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.

- G035: Positive Hg results for sample #1 and 2 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	TURELLA	BEXLEY	KGT WTP	KG CIVIL SED BASIN	170814_US
			Client sampling date / time	14-Aug-2017 11:15	14-Aug-2017 10:30	14-Aug-2017 12:15	09-Aug-2017 15:00	14-Aug-2017 00:00
Compound	CAS Number	LOR	Unit	ES1720227-001	ES1720227-002	ES1720227-003	ES1720227-004	ES1720227-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.42**	**8.52**	**7.55**	**----**	**7.90**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1040**	**2110**	**----**	**----**	**49500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**10**	**6**	<5	**41**	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	**7.3**	**1.8**	**2.6**	**14.6**	**1.6**
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**----**	**----**	**128**	**----**	**----**
pH Redox	----	0.01	pH Unit	**----**	**----**	**7.37**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	**0.001**	**----**	<0.010
Cadmium	7440-43-9	0.0001	mg/L	**0.0004**	**0.0003**	<0.0001	**----**	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.004**	**0.038**	**----**	<0.010
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.004**	<0.001	**----**	<0.010
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.001**	**0.002**	**----**	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	**----**	<0.010
Zinc	7440-66-6	0.005	mg/L	**0.027**	**0.007**	**0.005**	**----**	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.100**	**0.010**	**0.026**	**----**	**0.012**
Iron	7439-89-6	0.05	mg/L	**0.23**	**0.07**	<0.05	**----**	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00008**	**0.00060**	<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	**2.49**	**0.08**	**----**	**----**	**0.10**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	<0.01	**0.04**	**----**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.52**	**0.37**	**0.09**	**----**	**0.08**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.57**	**0.37**	**0.13**	**----**	**0.08**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TURELLA	BEXLEY	KGT WTP	KG CIVIL SED BASIN	170814_US
				Client sampling date / time	14-Aug-2017 11:15	14-Aug-2017 10:30	14-Aug-2017 12:15	09-Aug-2017 15:00	14-Aug-2017 00:00
Compound	CAS Number	LOR	Unit		ES1720227-001	ES1720227-002	ES1720227-003	ES1720227-004	ES1720227-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**2.8**	**0.6**	**5.1**	----	<1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**3.4**	**1.0**	**5.2**	----	<1.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.04**	**0.02**	<0.10	----	<0.10
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
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	TURELLA	BEXLEY	KGT WTP	KG CIVIL SED BASIN	170814_US
				Client sampling date / time	14-Aug-2017 11:15	14-Aug-2017 10:30	14-Aug-2017 12:15	09-Aug-2017 15:00	14-Aug-2017 00:00
Compound	CAS Number	LOR	Unit		ES1720227-001	ES1720227-002	ES1720227-003	ES1720227-004	ES1720227-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**108**	**110**	**----**	**----**	**112**
Toluene-D8	2037-26-5	2	%		**101**	**108**	**----**	**----**	**101**
4-Bromofluorobenzene	460-00-4	2	%		**98.7**	**104**	**----**	**----**	**99.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170814_DS	170814_AS	170804 WSW1	170804_ARN2	170804_BED1
			Client sampling date / time	14-Aug-2017 00:00	14-Aug-2017 00:00	04-Aug-2017 00:00	14-Aug-2017 00:00	14-Aug-2017 00:00
Compound	CAS Number	LOR	Unit	ES1720227-006	ES1720227-007	ES1720227-008	ES1720227-009	ES1720227-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.97**	**8.06**	**8.33**	**7.11**	**6.97**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**49500**	**52100**	**----**	**----**	**----**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**12**	**24**	**12**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.2**	**1.3**	**5.4**	**4.1**	**0.3**
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**----**	**----**	**124**	**142**	**154**
pH Redox	----	0.01	pH Unit	**----**	**----**	**8.63**	**6.91**	**7.15**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	**0.002**	**0.001**	**0.004**
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	**0.0001**	**0.0001**	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	**0.006**	<0.001	**0.036**
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	**0.001**	**0.002**	**0.003**
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	**0.001**	**0.002**	**0.002**
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.005	**0.007**	**0.012**
Manganese	7439-96-5	0.001	mg/L	<0.010	**0.011**	<0.001	**0.249**	**0.005**
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.05	<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	<0.00004
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	**0.22**	**0.07**	**----**	**----**	**----**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	**0.03**	**0.07**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.14**	**0.03**	**0.16**	**0.11**	**0.48**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.14**	**0.03**	**0.19**	**0.18**	**0.48**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170814_DS	170814_AS	170804 WSW1	170804_ARN2	170804_BED1
				Client sampling date / time	14-Aug-2017 00:00	14-Aug-2017 00:00	04-Aug-2017 00:00	14-Aug-2017 00:00	14-Aug-2017 00:00
Compound	CAS Number	LOR	Unit		ES1720227-006	ES1720227-007	ES1720227-008	ES1720227-009	ES1720227-010
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<1.0	<1.0	<0.2	**1.2**	**2.2**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<1.0	<1.0	<0.2	**1.4**	**2.7**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.10	<0.10	<0.02	<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	<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	170814_DS	170814_AS	170804 WSW1	170804_ARN2	170804_BED1
				Client sampling date / time	14-Aug-2017 00:00	14-Aug-2017 00:00	04-Aug-2017 00:00	14-Aug-2017 00:00	14-Aug-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES1720227-006**	**ES1720227-007**	**ES1720227-008**	**ES1720227-009**	**ES1720227-010**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**116**	**124**	**----**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**104**	**118**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**102**	**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
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1723844**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 22-Sep-2017 14:23
Order number	: 4506808	Date Analysis Commenced	: 22-Sep-2017
C-O-C number	: ----	Issue Date	: 28-Sep-2017 18:09
Sampler	: PS		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW
		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)
- EK061G:/EK067G/EK062G: LOR raised for TKN, Total P& TN on sample No 4 & 5 due to sample matrix.
- EK055G: It has been noted that Ammonia is greater than TKN for sample No 2 , however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AC	SC	EC	CR	DUP
			Client sampling date / time	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00
Compound	CAS Number	LOR	Unit	ES1723844-001	ES1723844-002	ES1723844-003	ES1723844-004	ES1723844-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.92	7.17	7.95	8.00	7.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	45900	506	725	50400	45800
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	10	9	27	61	19
EA045: Turbidity								
Turbidity	----	0.1	NTU	4.7	8.0	31.3	3.6	4.7
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.001	0.004	<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	0.002	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	<0.010	0.007	0.014	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.001	0.004	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.010	<0.001	0.031	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	<0.050	0.023	0.080	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	0.021	0.009	0.179	<0.010	0.019
Iron	7439-89-6	0.05	mg/L	<0.10	0.08	1.50	<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	0.83	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.30	1.04	3.84	0.16	0.24
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.07	0.04	0.02	0.02
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.13	2.60	0.03	0.08	0.13
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.15	2.67	0.07	0.10	0.15
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.9	6.2	<0.5	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.8	3.6	6.3	<0.5	0.8

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AC	SC	EC	CR	DUP
				Client sampling date / time	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00	21-Sep-2017 00:00
Compound	CAS Number	LOR	Unit		ES1723844-001	ES1723844-002	ES1723844-003	ES1723844-004	ES1723844-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.12**	**0.10**	**0.35**	<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**	**0.02**	**0.09**	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**9**	**11**	<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	%		**97.9**	**99.7**	**94.4**	**96.2**	**99.9**
Toluene-D8	2037-26-5	2	%		**122**	**119**	**122**	**120**	**117**
4-Bromofluorobenzene	460-00-4	2	%		**115**	**119**	**114**	**113**	**116**

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

Work Order	: **ES1723878**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted] M5 (CDS-JV)	[redacted]	[redacted]
Order number	: 4506808	Date Samples Received	: 22-Sep-2017 15:25
C-O-C number	: ----	Date Analysis Commenced	: 22-Sep-2017
Sampler	: MM	Issue Date	: 28-Sep-2017 16:09
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW
		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: Samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	170919_US	170919_AS	170919_DS	----	----
			Client sampling date / time	20-Sep-2017 12:45	20-Sep-2017 12:30	20-Sep-2017 12:00	----	----
Compound	CAS Number	LOR	Unit	ES1723878-001	ES1723878-002	ES1723878-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.78**	**7.89**	**8.01**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**47100**	**50200**	**52500**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**21**	**38**	**18**	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.6**	**3.2**	**1.2**	----	----
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	**0.062**	<0.050	<0.050	----	----
Manganese	7439-96-5	0.001	mg/L	**0.068**	**0.013**	<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	<0.00004	<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	**0.17**	**0.47**	**0.15**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.06**	**0.02**	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.04**	**0.16**	**0.05**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.10**	**0.18**	**0.05**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.2**	**0.5**	**0.2**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.3**	**0.7**	**0.2**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	170919_US	170919_AS	170919_DS	----	----
				Client sampling date / time	20-Sep-2017 12:45	20-Sep-2017 12:30	20-Sep-2017 12:00	----	----
Compound	CAS Number	LOR	Unit		ES1723878-001	ES1723878-002	ES1723878-003	--------	--------
					Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.03**	**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	**8**	<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	%		**95.2**	**105**	**106**	----	----
Toluene-D8	2037-26-5	2	%		**118**	**120**	**126**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**112**	**115**	**119**	----	----

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

Work Order	: **ES1724422**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: RESULTS ADDRESS	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 28-Sep-2017 17:00
Order number	: 4506808	Date Analysis Commenced	: 29-Sep-2017
C-O-C number	: ----	Issue Date	: 09-Oct-2017 13:42
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
[redacted] djar	Organic Coordinator	Sydney Organics, Smithfield, NSW
[redacted]	Analyst	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.

- ES1724422 #1 &2 provided with Unfiltered Red Bottle, they can not be used for filtered low level mercury test. Therefore, samples were filtered from Natural Bottle.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	----	----	----
			Client sampling date / time	28-Sep-2017 12:00	28-Sep-2017 12:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1724422-001	ES1724422-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.77**	**7.96**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**4760**	**3980**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**13**	**44**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.2**	**3.8**	----	----	----
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	**0.0018**	**0.0005**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.008**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.006**	----	----	----
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	**0.028**	**0.021**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.051**	**0.007**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.05**	**0.08**	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00028**	**0.00008**	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.06**	**0.13**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**1.80**	**0.16**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.10**	**0.02**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.63**	**0.20**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.73**	**0.22**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.5**	**2.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.2**	**3.0**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	----	----	----
			Client sampling date / time	28-Sep-2017 12:00	28-Sep-2017 12:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1724422-001	ES1724422-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.03**	**0.19**	----	----	----
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	%	**97.3**	**127**	----	----	----
Toluene-D8	2037-26-5	2	%	**102**	**91.2**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**92.7**	**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

Work Order	: **ES1727046**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	[redacted]
[redacted]	[redacted] Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5 (CDS-JV)	Date Samples Received	: 27-Oct-2017 18:50
Order number	: 4506808	Date Analysis Commenced	: 27-Oct-2017
C-O-C number	: ----	Issue Date	: 03-Nov-2017 17:14
Sampler	: MM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	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.

- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EK067G: LOR raised for Total P on sample nos: 3 and 4 due to sample matrix.
- EK055G: LOR raised for Ammonia on sample 3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	171025_US	171025_AS	171025_DS	171026_ARN2	----
			Client sampling date / time	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit	ES1727046-001	ES1727046-002	ES1727046-003	ES1727046-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.80**	**7.78**	**8.12**	**7.66**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**46800**	**39000**	**49400**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**10**	**10**	<5	<5	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.2**	**2.1**	**1.1**	**3.8**	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	**159**	----
pH Redox	----	0.01	pH Unit	----	----	----	**7.23**	----
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	**0.451**	<0.050	**0.008**	----
Manganese	7439-96-5	0.001	mg/L	<0.010	**0.411**	<0.010	**0.479**	----
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<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	----
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	**0.07**	**0.52**	<0.05	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	**0.03**	<0.01	**0.12**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.07**	**0.18**	**0.07**	**0.49**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.07**	**0.21**	**0.07**	**0.61**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	171025_US	171025_AS	171025_DS	171026_ARN2	----
				Client sampling date / time	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1727046-001	ES1727046-002	ES1727046-003	ES1727046-004	--------
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**5.7**	**2.0**	**0.8**	**2.9**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**5.8**	**2.2**	**0.9**	**3.5**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.12**	**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	----	----
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	171025_US	171025_AS	171025_DS	171026_ARN2	----
				Client sampling date / time	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	25-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit		ES1727046-001	ES1727046-002	ES1727046-003	ES1727046-004	--------
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**106**	**103**	**101**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**96.6**	**99.6**	**96.7**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**96.2**	**98.7**	**98.2**	**----**	**----**

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

Work Order	: **ES1727268**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 31-Oct-2017 14:45
Order number	: 4506808	Date Analysis Commenced	: 31-Oct-2017
C-O-C number	: ----	Issue Date	: 06-Nov-2017 18:15
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Accreditation No. 825
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- 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]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
		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.

- EK061G: LOR raised for TKN on sample no:1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turrella	Bexley	----	----	----
			Client sampling date / time	31-Oct-2017 09:30	31-Oct-2017 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1727268-001	ES1727268-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.33**	**7.59**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**27200**	**3220**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	**10**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**7.2**	**4.7**	----	----	----
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	**0.0019**	**0.0004**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.012**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	**0.004**	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.002**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.032**	**0.014**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.090**	**0.021**	----	----	----
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	**0.00057**	**0.00009**	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.08**	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.20**	**0.03**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.07**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.10**	**0.36**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.12**	**0.43**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	**0.5**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.5	**0.9**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turrella	Bexley	----	----	----
			Client sampling date / time	31-Oct-2017 09:30	31-Oct-2017 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1727268-001	ES1727268-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.07**	**0.03**	----	----	----
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	%	**97.7**	**115**	----	----	----
Toluene-D8	2037-26-5	2	%	**95.4**	**84.6**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**87.4**	**83.0**	----	----	----

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

Work Order	: **ES1729457**	Page	: 1 of 4
Amendment	: **1**		
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 22-Nov-2017 17:15
Order number	: 4506808	Date Analysis Commenced	: 23-Nov-2017
C-O-C number	: ----	Issue Date	: 27-Dec-2017 17:49
Sampler	: PL & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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
	Analyst	Sydney Inorganics, 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 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: Poor matrix spike recovery was obtained for Cd and Cu on sample ES1729415-001 due to matrix interference. Confirmed by reanalysis.
- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EK061G: LOR raised for TKN on sample nos: 3 and 5 due to sample matrix.
- Amendment (21/12/2017): 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	SC171121	EC171121	CR171121	AC171121	DCR171121
			Client sampling date / time	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	ES1729457-001	ES1729457-002	ES1729457-003	ES1729457-004	ES1729457-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.11**	**7.91**	**7.95**	**7.99**	**7.94**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**616**	**530**	**44300**	**40000**	**44200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**12**	**21**	**20**	**22**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.1**	**15.0**	**1.9**	**2.8**	**2.2**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**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	**0.002**	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.007**	**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	**0.008**	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	**0.028**	**0.020**	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.007**	**0.108**	**0.017**	**0.022**	**0.018**
Iron	7439-89-6	0.05	mg/L	**0.11**	**1.07**	<0.10	<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	**0.08**	**0.84**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.12**	**0.12**	**0.14**	**0.27**	**0.15**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.20**	**0.01**	**0.09**	**0.20**	**0.09**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.8**	<0.5	**0.5**	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.8**	**0.8**	<0.5	**0.7**	<0.5
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	**0.15**	**0.30**	**0.11**	**0.17**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.03**	**0.04**	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC171121	EC171121	CR171121	AC171121	DCR171121
			Client sampling date / time	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	ES1729457-001	ES1729457-002	ES1729457-003	ES1729457-004	ES1729457-005
				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								
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								
>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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1729947**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD [redacted] 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: + [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 28-Nov-2017 12:40
Order number	: 4506808	Date Analysis Commenced	: 28-Nov-2017
C-O-C number	: ----	Issue Date	: 04-Dec-2017 16:06
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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
[redacted]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
[redacted]		Sydney Inorganics, Smithfield, NSW
[redacted]	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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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 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK061G, EK062G: LOR raised for TKN and TN on samples 1, 2 and 3 due to sample matrix.
- EK055G: LOR raised for Ammonia on samples 2 and 3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	171127_US	171127_DS	171127_AS	171128_ARN2	171031 BED1
			Client sampling date / time	27-Nov-2017 16:08	27-Nov-2017 15:45	27-Nov-2017 16:00	28-Nov-2017 10:00	31-Oct-2017 16:00
Compound	CAS Number	LOR	Unit	ES1729947-001	ES1729947-002	ES1729947-003	ES1729947-004	ES1729947-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.90**	**7.93**	**7.95**	----	**7.39**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51200**	**52400**	**52600**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**18**	**12**	<5	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.0**	**2.0**	**1.6**	**1.2**	**0.2**
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	----	**137**
pH Redox	----	0.01	pH Unit	----	----	----	----	**6.08**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	----	**0.005**
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	----	**0.048**
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	----	**0.002**
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	<0.050	<0.050	----	<0.005
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	----	**0.002**
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	----	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.11**	<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	----	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.02**	**0.05**	**0.03**	----	**0.80**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.02**	**0.05**	**0.03**	----	**0.80**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	171127_US	171127_DS	171127_AS	171128_ARN2	171031 BED1
				Client sampling date / time	27-Nov-2017 16:08	27-Nov-2017 15:45	27-Nov-2017 16:00	28-Nov-2017 10:00	31-Oct-2017 16:00
Compound	CAS Number	LOR	Unit		ES1729947-001	ES1729947-002	ES1729947-003	ES1729947-004	ES1729947-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<1.0	<1.0	<1.0	----	**0.2**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<1.0	<1.0	<1.0	----	**1.0**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.27**	**0.32**	**0.25**	----	**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	<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	----	----
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	171127_US	171127_DS	171127_AS	171128_ARN2	171031 BED1
				Client sampling date / time	27-Nov-2017 16:08	27-Nov-2017 15:45	27-Nov-2017 16:00	28-Nov-2017 10:00	31-Oct-2017 16:00
Compound	CAS Number	LOR	Unit		ES1729947-001	ES1729947-002	ES1729947-003	ES1729947-004	ES1729947-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**114**	**107**	**115**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**104**	**97.0**	**104**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**85.5**	**81.8**	**85.7**	**----**	**----**

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

Work Order	: **ES1728847**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 16-Nov-2017 15:50
Order number	: 4506808	Date Analysis Commenced	: 16-Nov-2017
C-O-C number	: ----	Issue Date	: 23-Nov-2017 16:54
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

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Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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

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.

- EK067G: LOR raised for Total P for sample 3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	KGT WTP	----	----
			Client sampling date / time	16-Nov-2017 11:55	16-Nov-2017 11:55	16-Nov-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1728847-001	ES1728847-002	ES1728847-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.56**	**7.87**	**7.84**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**848**	**3540**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**20**	**42**	**14**	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.4**	**3.2**	**2.4**	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	**121**	----	----
pH Redox	----	0.01	pH Unit	----	----	**7.91**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.002**	**0.002**	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	<0.0001	**0.0023**	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.192**	**0.014**	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	**0.002**	**0.005**	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.005**	**0.002**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	**0.016**	<0.005	**0.020**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.096**	**0.033**	**0.071**	----	----
Iron	7439-89-6	0.05	mg/L	**0.34**	<0.05	**0.07**	----	----
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	**0.13**	**0.06**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.18**	**0.06**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.02**	**0.21**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.08**	**0.07**	**0.08**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.10**	**0.09**	**0.29**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Turella	Bexley	KGT WTP	----	----
				Client sampling date / time	16-Nov-2017 11:55	16-Nov-2017 11:55	16-Nov-2017 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1728847-001	ES1728847-002	ES1728847-003	--------	--------
					Result	Result	Result	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.6**	**0.8**	**5.9**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**1.7**	**0.9**	**6.2**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.09**	**0.02**	<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	----	----	----
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	**Turella**	**Bexley**	**KGT WTP**	**----**	**----**
				Client sampling date / time	16-Nov-2017 11:55	16-Nov-2017 11:55	16-Nov-2017 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1728847-001**	**ES1728847-002**	**ES1728847-003**	**--------**	**--------**
					Result	Result	Result	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**105**	**96.6**	**----**	**----**	**----**
Toluene-D8	2037-26-5	2	%		**104**	**84.3**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**111**	**96.4**	**----**	**----**	**----**

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

Work Order	: **ES1732766**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 22-Dec-2017 15:00
Order number	: 4506808	Date Analysis Commenced	: 23-Dec-2017
C-O-C number	: ----	Issue Date	: 11-Jan-2018 10:24
Sampler	: PL & KM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

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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
	Analyst	Sydney Inorganics, 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: Samples ES1732766 #003-004 were diluted due to high TDS. LOR's have been raised accordingly.
- EK061G/EK062G: LOR raised for TKN and TN on sample No 3 due to sample matrix.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SC171121 Received as SC171220	EC171121 Received as EC171220	CR171121 Received as CR171220	AC171121 Received as AC171220	DCR171121 Received as DUP
				Client sampling date / time	21-Dec-2017 14:10	21-Dec-2017 14:50	21-Dec-2017 15:30	21-Dec-2017 15:25	21-Dec-2017 14:10
					ES1732766-001	ES1732766-002	ES1732766-003	ES1732766-004	ES1732766-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.92**	**7.70**	**7.70**	**7.80**	**8.03**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**522**	**580**	**43700**	**40200**	**536**
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	**42**	**20**	**16**	**8**
EA045: Turbidity									
Turbidity	----	0.1	NTU		**5.1**	**38.9**	**3.0**	**4.8**	**4.7**
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.001**	**0.002**	<0.010	<0.010	**0.002**
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	<0.001
Copper	7440-50-8	0.001	mg/L		**0.006**	**0.008**	<0.010	<0.010	**0.007**
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.001**	<0.010	<0.010	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	**0.004**	<0.010	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L		**0.022**	**0.039**	<0.050	<0.050	**0.025**
Manganese	7439-96-5	0.001	mg/L		**0.004**	**0.058**	**0.060**	**0.036**	**0.004**
Iron	7439-89-6	0.05	mg/L		<0.05	**0.21**	<0.10	<0.10	**0.08**
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	**0.39**	<0.05	**0.06**	<0.05
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.03**	**1.14**	**0.19**	**0.19**	**0.02**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.03**	**0.02**	**0.01**	**0.01**	**0.04**
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**1.80**	**0.18**	**0.09**	**0.16**	**1.82**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**1.83**	**0.20**	**0.10**	**0.17**	**1.86**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.0**	**3.0**	<0.5	**0.9**	**0.9**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SC171121 Received as SC171220	EC171121 Received as EC171220	CR171121 Received as CR171220	AC171121 Received as AC171220	DCR171121 Received as DUP
				Client sampling date / time	21-Dec-2017 14:10	21-Dec-2017 14:50	21-Dec-2017 15:30	21-Dec-2017 15:25	21-Dec-2017 14:10
					ES1732766-001	ES1732766-002	ES1732766-003	ES1732766-004	ES1732766-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ **Total Nitrogen as N**	----	0.1	mg/L		**2.8**	**3.2**	<0.5	**1.1**	**2.8**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	**0.39**	**0.09**	**0.12**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	**0.15**	**0.02**	<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**	----	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									

Analytical Results

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

				Client sample ID	SC171121 Received as SC171220	EC171121 Received as EC171220	CR171121 Received as CR171220	AC171121 Received as AC171220	DCR171121 Received as DUP
				Client sampling date / time	21-Dec-2017 14:10	21-Dec-2017 14:50	21-Dec-2017 15:30	21-Dec-2017 15:25	21-Dec-2017 14:10
Compound	CAS Number	LOR	Unit		ES1732766-001	ES1732766-002	ES1732766-003	ES1732766-004	ES1732766-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
1.2-Dichloroethane-D4	17060-07-0	2	%		**101**	**88.4**	**104**	**105**	**97.5**
Toluene-D8	2037-26-5	2	%		**108**	**95.0**	**109**	**106**	**107**
4-Bromofluorobenzene	460-00-4	2	%		**99.1**	**88.7**	**98.3**	**97.1**	**99.8**

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

Work Order	: **ES1731396**	Page	: 1 of 4
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 11-Dec-2017 17:20
Order number	: 4506808	Date Analysis Commenced	: 12-Dec-2017
C-O-C number	: ----	Issue Date	: 19-Dec-2017 11:38
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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
	Analyst	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.

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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.

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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.

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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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WTP-SPD	----	----	----	----
			Client sampling date / time	11-Dec-2017 08:50	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1731396-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.27**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**24**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**107**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.38**	----	----	----	----
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	**0.011**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.012**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.001**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.023**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.029**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.23**	----	----	----	----
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	**0.10**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.08**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.18**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	----	----	----	----
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	**0.01**	----	----	----	----
EP020: Oil and Grease (O&G)								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**WTP-SPD**	**----**	**----**	**----**	**----**
				Client sampling date / time	11-Dec-2017 08:50	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1731396-001**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1731394**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 11-Dec-2017 18:00
Order number	: 4506808	Date Analysis Commenced	: 12-Dec-2017
C-O-C number	: ----	Issue Date	: 18-Dec-2017 16:51
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 8		
No. of samples analysed	: 8		

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Accreditation No. 825
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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW
	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
	Instrument Chemist	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.

- EG035: Positive Hg result for ES1731394 #4 has 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, EK062G: LOR raised for TN and TKN on sample nos: 3 and 5 due to sample matrix.
- EK067G: LOR raised for Total P on sample nos:1, 2 and 3 due to sample matrix.
- It has been noted that Ammonia is greater than TKN for sample 5, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	171208_AS	171208_US	171208_DS	Bexley	Turrella
			Client sampling date / time	08-Dec-2017 14:55	08-Dec-2017 14:55	08-Dec-2017 14:55	07-Dec-2017 00:00	07-Dec-2017 00:00
Compound	CAS Number	LOR	Unit	ES1731394-001	ES1731394-002	ES1731394-003	ES1731394-004	ES1731394-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.97**	**8.01**	**8.02**	**8.31**	**7.65**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**41900**	**40300**	**42100**	**1350**	**28000**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	**17**	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.1**	**1.3**	**0.8**	**2.0**	**1.4**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	**0.002**	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	**0.0003**	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	**0.006**	<0.010
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	**0.009**	<0.010
Nickel	7440-02-0	0.001	mg/L	**0.011**	**0.018**	**0.010**	<0.001	<0.010
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	<0.001	<0.010
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	**0.018**	<0.050
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	**0.027**	**0.035**
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	**0.06**	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	**0.00039**	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	**0.08**	**0.06**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.16**	**0.05**	**0.05**	**0.06**	**0.21**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<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**	**0.09**	**0.04**	**0.15**	**0.12**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.06**	**0.09**	**0.04**	**0.16**	**0.13**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**5.0**	**4.7**	<0.5	**0.7**	<0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**5.1**	**4.8**	<0.5	**0.9**	<0.2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	171208_AS	171208_US	171208_DS	Bexley	Turrella
				Client sampling date / time	08-Dec-2017 14:55	08-Dec-2017 14:55	08-Dec-2017 14:55	07-Dec-2017 00:00	07-Dec-2017 00:00
Compound	CAS Number	LOR	Unit		ES1731394-001	ES1731394-002	ES1731394-003	ES1731394-004	ES1731394-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	<0.05	<0.05	**0.06**	**0.07**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.03**	**0.02**	**0.03**	**0.05**
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	----	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	%		**123**	**124**	**118**	**109**	**122**
Toluene-D8	2037-26-5	2	%		**110**	**114**	**116**	**110**	**115**
4-Bromofluorobenzene	460-00-4	2	%		**100**	**101**	**102**	**95.6**	**99.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	171207_BED1	171211_ARN2	171207 KGDN PRE	----	----
			Client sampling date / time	07-Dec-2017 09:30	11-Dec-2017 10:00	07-Dec-2017 10:30	----	----
Compound	CAS Number	LOR	Unit	ES1731394-006	ES1731394-007	ES1731394-008	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.36**	**8.12**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**12**	<5	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.6**	**2.5**	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**144**	**95.0**	----	----	----
pH Redox	----	0.01	pH Unit	**6.85**	**7.88**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.007**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.040**	**0.001**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.001**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.007**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.010**	<0.005	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.015**	**0.086**	----	----	----
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	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	**1.32**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.06**	**0.10**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.67**	**33.8**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.73**	**33.9**	**0.21**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**31.3**	**3.1**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.1**	**65.2**	**3.3**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**171207_BED1**	**171211_ARN2**	**171207 KGDN PRE**	**----**	**----**
				Client sampling date / time	07-Dec-2017 09:30	11-Dec-2017 10:00	07-Dec-2017 10:30	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1731394-006**	**ES1731394-007**	**ES1731394-008**	**--------**	**--------**
					Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.02**	**0.14**	**----**	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<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

Work Order	: **ES1801542**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: 31 Burrows Rd St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 10-Jan-2018 16:30
Order number	: 4506808	Date Analysis Commenced	: 10-Jan-2018
C-O-C number	: ----	Issue Date	: 17-Jan-2018 12:59
Sampler	: P.L. & C.M.		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

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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
	Inorganics Coordinator	Sydney Inorganics, 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC180110	EC180110	CR180110	AC180110	DUP180110
			Client sampling date / time	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	ES1801542-001	ES1801542-002	ES1801542-003	ES1801542-004	ES1801542-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.01**	**7.63**	**7.68**	**7.46**	**7.54**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**402**	**312**	**23400**	**10700**	**10700**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**20**	**10**	**47**	**46**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.7**	**51.7**	**7.7**	**53.1**	**49.9**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.002**	**0.001**	**0.001**	**0.001**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.010**	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.010**	**0.009**	**0.001**	**0.004**	**0.004**
Nickel	7440-02-0	0.001	mg/L	**0.001**	<0.001	<0.001	**0.003**	**0.001**
Lead	7439-92-1	0.001	mg/L	**0.002**	**0.004**	<0.001	**0.001**	**0.002**
Zinc	7440-66-6	0.005	mg/L	**0.078**	**0.049**	**0.024**	**0.075**	**0.105**
Manganese	7439-96-5	0.001	mg/L	**0.010**	**0.021**	**0.049**	**0.045**	**0.049**
Iron	7439-89-6	0.05	mg/L	**0.34**	**0.10**	**0.10**	**0.07**	**0.06**
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	**0.22**	**0.28**	**0.10**	**0.13**	**0.14**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.05**	**0.03**	**0.26**	**0.46**	**0.50**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	**0.04**	**0.04**	**0.03**	**0.03**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.85**	**0.87**	**0.14**	**0.75**	**0.83**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.88**	**0.91**	**0.18**	**0.78**	**0.86**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**0.8**	**1.0**	**1.5**	**1.6**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.6**	**1.7**	**1.2**	**2.3**	**2.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC180110	EC180110	CR180110	AC180110	DUP180110
			Client sampling date / time	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00	10-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	ES1801542-001	ES1801542-002	ES1801542-003	ES1801542-004	ES1801542-005
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.12**	**0.15**	**0.20**	**0.17**	**0.19**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.08**	**0.04**	**0.06**	**0.02**	**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**	----	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	%	**76.6**	**81.8**	**83.8**	**84.2**	**131**
Toluene-D8	2037-26-5	2	%	**118**	**126**	**124**	**129**	**127**
4-Bromofluorobenzene	460-00-4	2	%	**113**	**119**	**120**	**122**	**121**

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

Work Order	: **ES1803477**	Page	: 1 of 8
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 31-Jan-2018 14:45
Order number	: 4506808	Date Analysis Commenced	: 31-Jan-2018
C-O-C number	: ----	Issue Date	: 07-Feb-2018 18:02
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 7		
No. of samples analysed	: 7		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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 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: Samples were diluted @10 and reanalysed due to matrix interference (High sample salinity). LORs have been raised accordingly.
- EK061G: Poor spike recovery for TKN due to matrix interferences.
- EK061/EK067G:LOR rised for Total Kjeldahl n and Total P analysis on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	181222_ARN2_RAW	181222_ARN2_TR	181230_ARN2_RAW	181230_ARN2_TR	180130_US
			Client sampling date / time	22-Jan-2018 10:00	22-Jan-2018 10:00	23-Jan-2018 16:00	23-Jan-2018 16:00	30-Jan-2018 14:05
Compound	CAS Number	LOR	Unit	ES1803477-001	ES1803477-002	ES1803477-003	ES1803477-004	ES1803477-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.41	7.67	9.11	7.55	7.73
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	50200
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	72800	<5	46000	11	----
Suspended Solids (SS)	----	5	mg/L	----	----	----	----	7
EA045: Turbidity								
Turbidity	----	0.1	NTU	4660	3.1	2260	2.7	2.3
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	33	<1	44	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	5	53	2	53	----
Total Alkalinity as CaCO3	----	1	mg/L	38	53	46	53	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	3170	3640	4270	3420	----
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
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.010
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.010
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.050
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	<0.010
Iron	7439-89-6	0.05	mg/L	----	----	----	----	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	----	----	----	----	0.00004
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	1.78	2.24	9.33	14.3	0.05
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	----	----	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	181222_ARN2_RAW	181222_ARN2_TR	181230_ARN2_RAW	181230_ARN2_TR	180130_US
			Client sampling date / time	22-Jan-2018 10:00	22-Jan-2018 10:00	23-Jan-2018 16:00	23-Jan-2018 16:00	30-Jan-2018 14:05
Compound	CAS Number	LOR	Unit	ES1803477-001	ES1803477-002	ES1803477-003	ES1803477-004	ES1803477-005
				Result	Result	Result	Result	Result
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	----	----	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.78**	**1.95**	**19.4**	**16.3**	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**11.4**	**3.0**	**15.5**	**16.0**	<1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**12.2**	**5.0**	**34.9**	**32.3**	<1.0
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	----	----	<0.10
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	**0.04**
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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	181222_ARN2_RAW	181222_ARN2_TR	181230_ARN2_RAW	181230_ARN2_TR	180130_US
				Client sampling date / time	22-Jan-2018 10:00	22-Jan-2018 10:00	23-Jan-2018 16:00	23-Jan-2018 16:00	30-Jan-2018 14:05
Compound	CAS Number	LOR	Unit		ES1803477-001	ES1803477-002	ES1803477-003	ES1803477-004	ES1803477-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	2	µg/L		----	----	----	----	<2
^ **Total Xylenes**	----	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	%		----	----	----	----	**114**
Toluene-D8	2037-26-5	2	%		----	----	----	----	**111**
4-Bromofluorobenzene	460-00-4	2	%		----	----	----	----	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	180130_AS	180130_DS	----	----	----
			Client sampling date / time	30-Jan-2018 12:45	30-Jan-2018 14:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1803477-006	ES1803477-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.75**	**7.86**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**50300**	**52200**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**18**	**6**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.8**	**1.5**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.010**	<0.010	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	----	----	----
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	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**1.19**	**0.04**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.37**	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.42**	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<2.0	<1.0	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<2.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	180130_AS	180130_DS	----	----	----
			Client sampling date / time	30-Jan-2018 12:45	30-Jan-2018 14:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1803477-006	ES1803477-007	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.10	<0.10	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.02**	**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**	----	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	%	**118**	**122**	----	----	----
Toluene-D8	2037-26-5	2	%	**112**	**122**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**104**	**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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1803607**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 01-Feb-2018 13:00
Order number	: 4506808	Date Analysis Commenced	: 01-Feb-2018
C-O-C number	: ----	Issue Date	: 08-Feb-2018 12:24
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

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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
	Analyst	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 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 result for ES1803607 #2 has been confirmed by reanalysis

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexely	KGD WTP	KGD Raw C1	KGD Raw C3
			Client sampling date / time	30-Jan-2018 16:00	30-Jan-2018 16:00	01-Feb-2018 10:00	30-Jan-2018 17:00	01-Feb-2018 11:00
Compound	CAS Number	LOR	Unit	ES1803607-001	ES1803607-002	ES1803607-003	ES1803607-004	ES1803607-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.91	9.01	7.19	7.95	10.8
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3250	3420	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	4.2	2.8	8.5	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	----	----	1500	921	1020
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	228	----	----
pH Redox	----	0.01	pH Unit	----	----	6.97	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	46
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	29
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	27	<1
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	27	75
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.003	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0004	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	0.010	0.056	----	----
Copper	7440-50-8	0.001	mg/L	0.002	0.009	0.005	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.002	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	0.015	0.031	<0.005	----	----
Manganese	7439-96-5	0.001	mg/L	0.110	0.013	0.010	----	----
Iron	7439-89-6	0.05	mg/L	0.21	<0.05	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.00005	<0.00004	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	0.18	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.35	0.81	0.66	0.49
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.04	0.18	0.30	0.43

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Turella	Bexely	KGD WTP	KGD Raw C1	KGD Raw C3
				Client sampling date / time	30-Jan-2018 16:00	30-Jan-2018 16:00	01-Feb-2018 10:00	30-Jan-2018 17:00	01-Feb-2018 11:00
Compound	CAS Number	LOR	Unit		ES1803607-001	ES1803607-002	ES1803607-003	ES1803607-004	ES1803607-005
					Result	Result	Result	Result	Result
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.07	0.11	0.09	0.07	0.07
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.08	0.15	0.27	0.37	0.50
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.7	1.3	2.2	2.6	2.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.8	1.4	2.5	3.0	2.7
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.19	0.05	0.04	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.08	<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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Turella	Bexely	KGD WTP	KGD Raw C1	KGD Raw C3
				Client sampling date / time	30-Jan-2018 16:00	30-Jan-2018 16:00	01-Feb-2018 10:00	30-Jan-2018 17:00	01-Feb-2018 11:00
Compound	CAS Number	LOR	Unit		ES1803607-001	ES1803607-002	ES1803607-003	ES1803607-004	ES1803607-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ **Total Xylenes**	----	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	%		**124**	**102**	----	----	----
Toluene-D8	2037-26-5	2	%		**95.8**	**102**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**101**	**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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1804880**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 14-Feb-2018 14:55
Order number	: 4506808	Date Analysis Commenced	: 14-Feb-2018
C-O-C number	: ----	Issue Date	: 20-Feb-2018 18:33
Sampler	: PL & C M		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 4		
No. of samples analysed	: 4		

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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
	Analyst	Sydney Inorganics, Smithfield, NSW
	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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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 salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	EC180209	CR180209	AC180209	DUP	----
			Client sampling date / time	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1804880-001	ES1804880-002	ES1804880-003	ES1804880-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.81**	**8.06**	**7.81**	**8.02**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**399**	**45800**	**38700**	**38500**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**16**	**24**	**18**	**28**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**8.9**	**5.3**	**5.5**	**5.7**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	<0.010	<0.010	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0010	<0.0010	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.010	<0.010	<0.010	----
Copper	7440-50-8	0.001	mg/L	**0.006**	<0.010	<0.010	<0.010	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	<0.010	<0.010	<0.010	----
Lead	7439-92-1	0.001	mg/L	**0.005**	<0.010	<0.010	<0.010	----
Zinc	7440-66-6	0.005	mg/L	**0.017**	<0.050	<0.050	<0.050	----
Manganese	7439-96-5	0.001	mg/L	**0.100**	**0.021**	**0.027**	**0.025**	----
Iron	7439-89-6	0.05	mg/L	**0.54**	<0.10	<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	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.39**	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.10**	**0.04**	**0.11**	**0.11**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.01**	**0.02**	**0.11**	**0.10**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	**0.7**	**1.5**	**1.0**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.8**	**0.7**	**1.6**	**1.1**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.15**	**0.08**	**0.12**	**0.12**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.05**	**0.03**	<0.01	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	EC180209	CR180209	AC180209	DUP	----
				Client sampling date / time	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	14-Feb-2018 00:00	----
Compound	CAS Number	LOR	Unit		ES1804880-001	ES1804880-002	ES1804880-003	ES1804880-004	--------
					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**	----	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	%		**112**	**136**	**128**	**128**	----
Toluene-D8	2037-26-5	2	%		**111**	**126**	**120**	**121**	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**116**	**112**	**113**	----

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

Work Order	: **ES1806584**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9414 3333	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 02-Mar-2018 11:15
Order number	: 4506808	Date Analysis Commenced	: 02-Mar-2018
C-O-C number	: ----	Issue Date	: 12-Mar-2018 15:51
Sampler	: MM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 7		
No. of samples analysed	: 7		

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- 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
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Analyst	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.

- EG093: Samples ES1806584 #005 - #007 were run under EG094 method due to low TDS content.
- EG020 : Some samples were diluted and rerun due to salinity and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EK057G: Poor spike recovery for Nitrite due to matrix interferences.
- EK061G:/EK067G/EK062G: LOR raised for TKN, Total P and TN on various samples due to sample matrix.
- EK055G: It has been noted that Ammonia is greater than TKN for sample No 5 & 7, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	180228_US	180228_AS	180228_DS	180228_ARN2	KOOEMBA
			Client sampling date / time	28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	01-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	ES1806584-001	ES1806584-002	ES1806584-003	ES1806584-004	ES1806584-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.77	7.94	8.05	7.58	7.45
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	42000	45000	49000	----	1190
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	16	46	7	8	37
EA045: Turbidity								
Turbidity	----	0.1	NTU	1.6	1.8	1.7	2.4	27.4
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	----	0.072
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	----	0.003
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	<0.050	<0.050	----	0.038
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	----	0.017
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	----	0.14
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	----	0.13
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.38	0.30	0.28	----	17.9
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.02	<0.01	----	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.14	0.20	0.09	----	0.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.15	0.22	0.09	----	0.23
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	<1.0	<0.5	----	16.3
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.5	<1.0	<0.5	----	16.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	180228_US	180228_AS	180228_DS	180228_ARN2	KOOEMBA
				Client sampling date / time	28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	01-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		ES1806584-001	ES1806584-002	ES1806584-003	ES1806584-004	ES1806584-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.05	**0.06**	**0.16**	----	**1.74**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.02**	**0.02**	----	**1.32**
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	----	**130**
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	----	**380**
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	**670**
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	----	**1180**
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	----	**160**
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	----	**950**
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	**140**
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	----	**1250**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	----	**160**
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	----	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	%		**96.1**	**90.3**	**90.8**	----	**87.5**
Toluene-D8	2037-26-5	2	%		**112**	**110**	**108**	----	**114**
4-Bromofluorobenzene	460-00-4	2	%		**107**	**103**	**99.6**	----	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	----	----	----
			Client sampling date / time	01-Feb-2018 00:00	01-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1806584-006	ES1806584-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.20**	**7.70**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**871**	**1700**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**14**	**18**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**7.2**	**3.8**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.004**	**0.003**	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.004**	**0.006**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.009**	**0.024**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.002**	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.003**	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.070**	**0.027**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.053**	**0.028**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.64**	**0.09**	----	----	----
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	**0.33**	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.20**	**10.6**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.16**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.31**	**0.28**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.33**	**0.44**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**10.0**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.2**	**10.4**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TURELLA	BEXLEY	----	----	----
				Client sampling date / time	01-Feb-2018 00:00	01-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1806584-006	ES1806584-007	--------	--------	--------
					Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.10**	**0.92**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.91**	----	----	----
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	**130**	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	**230**	----	----	----
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	**210**	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	**210**	----	----	----
^ **>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**	----	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	%		**92.9**	**91.8**	----	----	----
Toluene-D8	2037-26-5	2	%		**108**	**107**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**103**	**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

Work Order	: **ES1809272**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters N[redacted]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 28-Mar-2018 17:03
Order number	: 4506808	Date Analysis Commenced	: 29-Mar-2018
C-O-C number	: ----	Issue Date	: 05-Apr-2018 10:58
Sampler	: PL & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
	Analyst	Sydney Inorganics, Smithfield, NSW

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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.

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 : 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, Totol P and TN on sample No 3 & 5 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC180328	EC180328	CR180328	AC180328	DUP180328
			Client sampling date / time	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00
Compound	CAS Number	LOR	Unit	ES1809272-001	ES1809272-002	ES1809272-003	ES1809272-004	ES1809272-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.07**	**7.99**	**7.81**	**7.79**	**7.78**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**675**	**923**	**43700**	**37100**	**43800**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**14**	**28**	**25**	**24**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**8.6**	**16.3**	**6.8**	**4.1**	**5.6**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.003**	<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	**0.003**	**0.004**	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.001	**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	**0.029**	**0.031**	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.020**	**0.012**	<0.010	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L	<0.05	**0.08**	<0.10	<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	**0.13**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.31**	**0.38**	**0.06**	**0.19**	**0.08**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.10**	<0.01	<0.01	**0.03**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.57**	**0.05**	**0.06**	**0.32**	**0.08**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.67**	**0.05**	**0.06**	**0.35**	**0.08**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	**0.9**	<0.5	**0.8**	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.4**	**1.0**	<0.5	**1.2**	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC180328	EC180328	CR180328	AC180328	DUP180328
				Client sampling date / time	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00	28-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		ES1809272-001	ES1809272-002	ES1809272-003	ES1809272-004	ES1809272-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	**0.08**	**0.07**	**0.19**	<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**	**0.02**	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**6**	<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**	----	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	%		**106**	**106**	**104**	**104**	**104**
Toluene-D8	2037-26-5	2	%		**104**	**112**	**102**	**108**	**103**
4-Bromofluorobenzene	460-00-4	2	%		**100.0**	**104**	**97.1**	**99.4**	**97.8**

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

Work Order	: **ES1809395**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9414 3333	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 29-Mar-2018 12:00
Order number	: 4506808	Date Analysis Commenced	: 29-Mar-2018
C-O-C number	: ----	Issue Date	: 09-Apr-2018 14:39
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Analyst	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 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: 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 various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CR_US	CR_AS	CR_DS	----	----
			Client sampling date / time	28-Mar-2018 10:15	28-Mar-2018 10:00	28-Mar-2018 09:35	----	----
Compound	CAS Number	LOR	Unit	ES1809395-001	ES1809395-002	ES1809395-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.88**	**7.79**	**7.95**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51400**	**52400**	**51900**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**21**	**8**	**10**	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.7**	**1.2**	**1.3**	----	----
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	----	----
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Iron	7439-89-6	0.05	mg/L	**0.11**	<0.10	<0.10	----	----
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	<0.05	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.06**	**0.08**	**0.11**	----	----
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	**0.03**	**0.08**	**0.02**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.03**	**0.09**	**0.02**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<1.0	<1.0	<1.0	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CR_US	CR_AS	CR_DS	----	----
				Client sampling date / time	28-Mar-2018 10:15	28-Mar-2018 10:00	28-Mar-2018 09:35	----	----
Compound	CAS Number	LOR	Unit		ES1809395-001	ES1809395-002	ES1809395-003	--------	--------
					Result	Result	Result	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ **Total Nitrogen as N**	----	0.1	mg/L		<1.0	<1.0	<1.0	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.10	<0.10	<0.10	----	----
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	----	----
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**	----	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	%		**97.6**	**94.4**	**95.9**	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**CR_US**	**CR_AS**	**CR_DS**	**----**	**----**
				Client sampling date / time	28-Mar-2018 10:15	28-Mar-2018 10:00	28-Mar-2018 09:35	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1809395-001**	**ES1809395-002**	**ES1809395-003**	**--------**	**--------**
					Result	Result	Result	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**98.2**	**101**	**97.8**	**----**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**90.2**	**93.3**	**90.9**	**----**	**----**

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

Work Order	: **ES1809089**	Page	: 1 of 6
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9414 3333	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Mar-2018 16:30
Order number	: 4506808	Date Analysis Commenced	: 28-Mar-2018
C-O-C number	: ----	Issue Date	: 05-Apr-2018 10:56
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

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Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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
		Sydney Inorganics, Smithfield, NSW
	Organic Coordinator	Sydney Organics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	BEXLEY WTP	----	----
			Client sampling date / time	27-Mar-2018 10:00	27-Mar-2018 09:30	27-Mar-2018 10:00	----	----
Compound	CAS Number	LOR	Unit	ES1809089-001	ES1809089-002	ES1809089-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.30**	**7.63**	**7.42**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**626**	**2320**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	**12**	<5	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**4.0**	**2.8**	**0.2**	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	----	----	**1240**	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	**111**	----	----
pH Redox	----	0.01	pH Unit	----	----	**7.13**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.001**	**0.003**	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0007**	**0.0030**	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.019**	**0.096**	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	**0.008**	**0.001**	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.002**	**0.004**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.001**	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	**0.039**	**0.064**	<0.005	----	----
Manganese	7439-96-5	0.001	mg/L	**0.054**	**0.163**	**0.003**	----	----
Iron	7439-89-6	0.05	mg/L	**0.59**	**0.16**	<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	**0.13**	**0.14**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.53**	**0.17**	**0.12**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	**0.03**	**0.02**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.24**	**0.26**	**1.32**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TURELLA	BEXLEY	BEXLEY WTP	----	----
				Client sampling date / time	27-Mar-2018 10:00	27-Mar-2018 09:30	27-Mar-2018 10:00	----	----
Compound	CAS Number	LOR	Unit		ES1809089-001	ES1809089-002	ES1809089-003	--------	--------
					Result	Result	Result	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.27**	**0.29**	**1.34**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.8**	**1.0**	**0.2**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.1**	**1.3**	**1.5**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.11**	**0.12**	<0.01	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	<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	----	2	µg/L		<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TURELLA	BEXLEY	BEXLEY WTP	----	----
				Client sampling date / time	27-Mar-2018 10:00	27-Mar-2018 09:30	27-Mar-2018 10:00	----	----
Compound	CAS Number	LOR	Unit		ES1809089-001	ES1809089-002	ES1809089-003	--------	--------
					Result	Result	Result	----	----
EP080: BTEXN - Continued									
^ **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	%		**101**	**75.9**	----	----	----
Toluene-D8	2037-26-5	2	%		**97.8**	**82.2**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**90.5**	**71.8**	----	----	----

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

Work Order	: **ES1812101**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Apr-2018 18:25
Order number	: 4506808	Date Analysis Commenced	: 27-Apr-2018
C-O-C number	: ----	Issue Date	: 04-May-2018 16:03
Sampler	: PL & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW
	Senior Organic Chemist	Sydney Organics, Smithfield, NSW

General Comments

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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.

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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)
- EK061G/EK067G/EK062G: : LOR raised for TKN, Total P & TN on sample No 3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC1800427	EC1800427	CR1800427	AC1800427	DUP1800427
			Client sampling date / time	27-Apr-2018 10:45	27-Apr-2018 10:10	27-Apr-2018 09:50	27-Apr-2018 09:18	27-Apr-2018 10:50
Compound	CAS Number	LOR	Unit	ES1812101-001	ES1812101-002	ES1812101-003	ES1812101-004	ES1812101-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.03**	**7.94**	**8.02**	**7.92**	**8.07**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**616**	**4020**	**51600**	**48200**	**622**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**52**	**18**	**44**	**38**	**42**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**44.8**	**6.8**	**3.0**	**4.2**	**37.2**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.001**	<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	**0.008**	<0.010	<0.010	<0.001
Copper	7440-50-8	0.001	mg/L	**0.005**	**0.002**	<0.010	<0.010	**0.007**
Nickel	7440-02-0	0.001	mg/L	**0.001**	<0.001	<0.010	<0.010	**0.001**
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.014**	**0.006**	<0.050	<0.050	**0.017**
Manganese	7439-96-5	0.001	mg/L	**0.016**	**0.040**	<0.010	**0.019**	**0.016**
Iron	7439-89-6	0.05	mg/L	**0.19**	**0.06**	<0.10	<0.10	**0.19**
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	**0.06**	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.17**	**0.59**	**0.14**	**0.46**	**0.14**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.10**	**0.02**	**0.01**	**0.03**	**0.11**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.74**	**0.13**	**0.09**	**0.11**	**1.78**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.84**	**0.15**	**0.10**	**0.14**	**1.89**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.3**	**1.2**	<1.0	**1.8**	**1.1**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.1**	**1.4**	<1.0	**1.9**	**3.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC1800427	EC1800427	CR1800427	AC1800427	DUP1800427
				Client sampling date / time	27-Apr-2018 10:45	27-Apr-2018 10:10	27-Apr-2018 09:50	27-Apr-2018 09:18	27-Apr-2018 10:50
Compound	CAS Number	LOR	Unit		ES1812101-001	ES1812101-002	ES1812101-003	ES1812101-004	ES1812101-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.28**	**0.13**	<0.10	**0.11**	**0.23**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.06**	**0.04**	**0.01**	<0.01	**0.07**
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**	----	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	%		**107**	**106**	**119**	**112**	**102**
Toluene-D8	2037-26-5	2	%		**100**	**103**	**112**	**102**	**94.1**
4-Bromofluorobenzene	460-00-4	2	%		**95.6**	**103**	**113**	**105**	**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

Work Order	: **ES1812102**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Apr-2018 18:25
Order number	: 4506808	Date Analysis Commenced	: 27-Apr-2018
C-O-C number	: ----	Issue Date	: 04-May-2018 14:35
Sampler	: PL		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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ø = ALS is not NATA accredited for these tests.
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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WTP180427	----	----	----	----
				Client sampling date / time	27-Apr-2018 11:39	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1812102-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**8.07**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**11**	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		**1.4**	----	----	----	----
EA075: Redox Potential									
Redox Potential	----	0.1	mV		**77.0**	----	----	----	----
pH Redox	----	0.01	pH Unit		**7.80**	----	----	----	----
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		**0.008**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.006**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.016**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.875**	----	----	----	----
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	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**1.13**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**43.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**44.1**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1811937**	Page	: 1 of 8
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9414 3333	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 26-Apr-2018 16:30
Order number	: 4506808	Date Analysis Commenced	: 26-Apr-2018
C-O-C number	: ----	Issue Date	: 03-May-2018 16:46
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/222/17		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
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[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW

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

- EG035: Positive Hg result for ES1811937 #6 has been confirmed by reanalysis
- EG020: 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 2 due to sample matrix.
- EK061G: LOR raised for TKN on sample No 4 due to sample matrix.
- EK067G: LOR raised for Total P on sample No 2 & 3 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Supply Shaft D	US	AS	DS	Turella
			Client sampling date / time	26-Apr-2018 11:00	26-Apr-2018 10:30	26-Apr-2018 10:20	26-Apr-2018 10:05	24-Apr-2018 10:30
Compound	CAS Number	LOR	Unit	ES1811937-001	ES1811937-002	ES1811937-003	ES1811937-004	ES1811937-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**5.35**	**7.94**	**7.93**	**8.07**	**7.79**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**37900**	**50500**	**51300**	**51200**	**2660**
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**25500**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	**24**	**36**	**16**	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	----	**2.7**	**3.5**	**1.8**	**1.8**
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	**4940**	----	----	----	----
EA071: Langeliers Index								
Langelier Index	----	0.10	-	**-3.05**	----	----	----	----
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	**2**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**2**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**496**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**899**	----	----	----	----
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	**0.0003**
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	<0.050	<0.050	**0.018**
Manganese	7439-96-5	0.001	mg/L	----	**0.012**	**0.014**	**0.012**	**0.094**
Iron	7439-89-6	0.05	mg/L	----	<0.10	<0.10	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Supply Shaft D	US	AS	DS	Turella
			Client sampling date / time	26-Apr-2018 11:00	26-Apr-2018 10:30	26-Apr-2018 10:20	26-Apr-2018 10:05	24-Apr-2018 10:30
Compound	CAS Number	LOR	Unit	ES1811937-001	ES1811937-002	ES1811937-003	ES1811937-004	ES1811937-005
				Result	Result	Result	Result	Result
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	----	<0.05	**0.12**	**0.17**	**1.32**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	**0.01**	**0.01**	**0.01**	**0.09**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	**0.08**	**0.08**	**0.10**	**0.72**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	**0.09**	**0.09**	**0.11**	**0.81**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	**0.6**	**0.6**	<0.5	**2.5**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	**0.7**	**0.7**	<0.5	**3.3**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	<0.05	<0.05	<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	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Supply Shaft D	US	AS	DS	Turella
				Client sampling date / time	26-Apr-2018 11:00	26-Apr-2018 10:30	26-Apr-2018 10:20	26-Apr-2018 10:05	24-Apr-2018 10:30
Compound	CAS Number	LOR	Unit		ES1811937-001	ES1811937-002	ES1811937-003	ES1811937-004	ES1811937-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **>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**	----	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	%		----	**94.7**	**94.7**	**95.6**	**100**
Toluene-D8	2037-26-5	2	%		----	**108**	**105**	**104**	**101**
4-Bromofluorobenzene	460-00-4	2	%		----	**101**	**98.4**	**99.6**	**101**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	----	----	----	----
			Client sampling date / time	24-Apr-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1811937-006	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.64**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**4350**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.2**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.004**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0003**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.042**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.018**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.034**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00035**	----	----	----	----
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	**0.42**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.09**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.60**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.69**	----	----	----	----
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	**1.9**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	----	----	----	----
				Client sampling date / time	24-Apr-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1811937-006	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
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**	----	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	%		**98.2**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**104**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**98.0**	----	----	----	----

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

Work Order	: **ES1810031**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] MASCOT NSW 2020	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 06-Apr-2018 16:20
Order number	: 4506808	Date Analysis Commenced	: 07-Apr-2018
C-O-C number	: ----	Issue Date	: 13-Apr-2018 13:40
Sampler	: ----		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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
	Analyst	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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	ARN2	----	----	----	----
				Client sampling date / time	03-Apr-2018 07:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1810031-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.67**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**8**	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		**3.8**	----	----	----	----
EA075: Redox Potential									
Redox Potential	----	0.1	mV		**86.0**	----	----	----	----
pH Redox	----	0.01	pH Unit		**8.17**	----	----	----	----
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		**0.004**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
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		**0.040**	----	----	----	----
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	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.34**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**1.1**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1815525**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 29-May-2018 14:40
Order number	: 4506808	Date Analysis Commenced	: 29-May-2018
C-O-C number	: ----	Issue Date	: 05-Jun-2018 17:22
Sampler	: PL & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
	Analyst	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 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.

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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00
Compound	CAS Number	LOR	Unit	ES1815525-001	ES1815525-002	ES1815525-003	ES1815525-004	ES1815525-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.04**	**8.08**	**7.94**	**7.83**	**7.93**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**623**	**466**	**51000**	**47500**	**51200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	**6**	**13**	**13**	**16**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.7**	**7.1**	**3.6**	**9.5**	**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	**0.002**	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.007**	**0.005**	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.001	**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	**0.030**	**0.026**	**0.056**	**0.094**	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.018**	**0.012**	<0.010	**0.018**	<0.010
Iron	7439-89-6	0.05	mg/L	**0.14**	**0.06**	<0.10	<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	**0.11**	<0.05	<0.05	<0.05	**0.11**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.15**	**0.45**	**0.14**	**0.41**	**0.14**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.17**	**0.06**	**0.02**	**0.03**	**0.02**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.89**	**0.23**	**0.11**	**0.15**	**0.11**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.06**	**0.29**	**0.13**	**0.18**	**0.13**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	**0.8**	<0.5	**0.6**	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.9**	**1.1**	<0.5	**0.8**	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00	29-May-2018 00:00
Compound	CAS Number	LOR	Unit		ES1815525-001	ES1815525-002	ES1815525-003	ES1815525-004	ES1815525-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.08**	**0.10**	<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		**0.05**	**0.07**	<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**	----	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**	**117**	**111**	**111**	**112**
Toluene-D8	2037-26-5	2	%		**113**	**124**	**102**	**99.6**	**96.5**
4-Bromofluorobenzene	460-00-4	2	%		**108**	**112**	**99.0**	**99.7**	**96.5**

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

Work Order	: **ES1813640**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: Water	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 11-May-2018 18:00
Order number	: 4506808	Date Analysis Commenced	: 12-May-2018
C-O-C number	: ----	Issue Date	: 17-May-2018 19:01
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
	Analyst	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: Positive Hg result for ES1813640 #3 has been confirmed by reanalysis
- EG020 : 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 & TN on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	US	DS	AS	----	----
			Client sampling date / time	10-May-2018 09:39	10-May-2018 08:51	10-May-2018 09:23	----	----
Compound	CAS Number	LOR	Unit	ES1813640-001	ES1813640-002	ES1813640-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.74**	**7.84**	**7.75**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**50400**	**50500**	**51000**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	<5	<5	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.0**	**0.9**	**1.8**	----	----
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	**0.014**	**0.020**	**0.210**	----	----
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	<0.00004	**0.00015**	----	----
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	**0.24**	**0.52**	**0.40**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.01**	**0.02**	**0.01**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.07**	**0.10**	**0.10**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.08**	**0.12**	**0.11**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<1.0	<1.0	<1.0	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	US	DS	AS	----	----
				Client sampling date / time	10-May-2018 09:39	10-May-2018 08:51	10-May-2018 09:23	----	----
Compound	CAS Number	LOR	Unit		ES1813640-001	ES1813640-002	ES1813640-003	--------	--------
					Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.10	<0.10	<0.10	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.03**	**0.02**	**0.02**	----	----
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**	----	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	%		**108**	**105**	**104**	----	----
Toluene-D8	2037-26-5	2	%		**99.1**	**99.7**	**103**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**97.3**	**99.0**	**102**	----	----

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

Work Order	: **ES1813743**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: Water	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 14-May-2018 14:43
Order number	: 4506808	Date Analysis Commenced	: 14-May-2018
C-O-C number	: ----	Issue Date	: 18-May-2018 18:23
Sampler	: SB and HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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
	Analyst	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.

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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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	----	----	----
			Client sampling date / time	14-May-2018 09:30	14-May-2018 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1813743-001	ES1813743-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.41**	**7.61**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1160**	**1880**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**10**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**4.4**	**4.6**	----	----	----
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	**0.0011**	**0.0001**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.008**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.005**	----	----	----
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	**0.023**	**0.032**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.064**	**0.045**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.37**	**0.12**	----	----	----
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	**0.08**	**0.20**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**1.19**	**0.42**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.08**	**0.06**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.60**	**0.82**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.68**	**0.88**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.2**	**1.0**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.9**	**1.9**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	----	----	----
			Client sampling date / time	14-May-2018 09:30	14-May-2018 10:30	----	----	----
Compound	CAS Number	LOR	Unit	ES1813743-001	ES1813743-002	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	**0.07**	----	----	----
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**	----	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**	**97.7**	----	----	----
Toluene-D8	2037-26-5	2	%	**109**	**106**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**104**	**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

CERTIFICATE OF ANALYSIS

Work Order	: **ES1814421**	Page	: 1 of 4
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9414 3333	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 18-May-2018 16:30
Order number	: 4506808	Date Analysis Commenced	: 19-May-2018
C-O-C number	: ----	Issue Date	: 25-May-2018 16:56
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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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
		Sydney Inorganics, Smithfield, NSW
	Analyst	Sydney Inorganics, Smithfield, NSW
	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley WTP	----	----	----	----
			Client sampling date / time	17-May-2018 16:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1814421-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.79**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**11**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.4**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**75.0**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.45**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.075**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
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	**0.094**	----	----	----	----
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	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.09**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.22**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.31**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**22.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**22.9**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**Bexley WTP**	**----**	**----**	**----**	**----**
				Client sampling date / time	17-May-2018 16:10	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1814421-001**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**----**	**----**	**----**	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1819051**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: Kaylah MacIntosh	Contact	: Customer Services ES
Address	: 31 Burrows Rd St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 28-Jun-2018 16:30
Order number	: 4506808	Date Analysis Commenced	: 28-Jun-2018
C-O-C number	: ----	Issue Date	: 05-Jul-2018 16:54
Sampler	: PS & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	ES1819051-001	ES1819051-002	ES1819051-003	ES1819051-004	ES1819051-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.90**	**7.86**	**7.58**	**7.36**	**7.56**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**519**	**662**	**22000**	**2890**	**22200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**130**	**16**	**36**	**13**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**20.4**	**159**	**6.5**	**25.9**	**7.3**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.002**	**0.001**	**0.001**	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.002**	**0.004**	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.006**	**0.011**	**0.002**	**0.002**	**0.002**
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.052**	**0.027**	**0.074**	**0.025**	**0.071**
Manganese	7439-96-5	0.001	mg/L	**0.026**	**0.005**	**0.025**	**0.015**	**0.025**
Iron	7439-89-6	0.05	mg/L	**0.17**	**0.10**	**0.05**	**0.21**	<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	**0.09**	<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	**0.26**	**0.14**	**0.22**	**0.24**	**0.25**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.12**	**0.07**	**0.03**	**0.03**	**0.03**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**4.01**	**1.71**	**0.29**	**0.48**	**0.32**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**4.13**	**1.78**	**0.32**	**0.51**	**0.35**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	**0.6**	**0.6**	**0.7**	**0.5**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**5.2**	**2.4**	**0.9**	**1.2**	**0.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00	28-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	ES1819051-001	ES1819051-002	ES1819051-003	ES1819051-004	ES1819051-005
				Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.57**	**0.13**	**0.06**	**0.08**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.25**	**0.06**	**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**	----	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	%	**113**	**116**	**114**	**105**	**124**
Toluene-D8	2037-26-5	2	%	**102**	**106**	**104**	**98.6**	**117**
4-Bromofluorobenzene	460-00-4	2	%	**90.6**	**95.6**	**92.3**	**87.5**	**100**

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

Work Order	: **ES1819259**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: Water	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 29-Jun-2018 15:40
Order number	: 4506808	Date Analysis Commenced	: 30-Jun-2018
C-O-C number	: ----	Issue Date	: 06-Jul-2018 16:58
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- 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
	[redacted]	[redacted]
	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.

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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.

- EK067G:: LOR raised for Total P on sample No 1 & 3 due to sample matrix.
- EG035: Positive Hg result for ES1819259 #3 has been confirmed by reanalysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	US	DS	AS	----	----
			Client sampling date / time	28-Jun-2018 09:17	28-Jun-2018 08:45	28-Jun-2018 09:00	----	----
Compound	CAS Number	LOR	Unit	ES1819259-001	ES1819259-002	ES1819259-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.63**	**7.66**	**7.66**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**22000**	**20600**	**19600**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**9**	**12**	**8**	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.9**	**1.5**	**1.6**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.002**	**0.001**	----	----
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	**0.002**	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	**0.001**	<0.001	----	----
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	**0.047**	**0.024**	**0.037**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.016**	**0.011**	**0.060**	----	----
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	**0.00006**	----	----
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	**0.21**	**0.27**	**0.58**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.04**	**0.09**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.22**	**1.26**	**0.17**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.24**	**1.30**	**0.26**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**0.4**	**1.3**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	**1.7**	**1.6**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	US	DS	AS	----	----
				Client sampling date / time	28-Jun-2018 09:17	28-Jun-2018 08:45	28-Jun-2018 09:00	----	----
Compound	CAS Number	LOR	Unit		ES1819259-001	ES1819259-002	ES1819259-003	--------	--------
					Result	Result	Result	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.02	**0.20**	<0.02	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.13**	<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**	----	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	%		**111**	**103**	**111**	----	----
Toluene-D8	2037-26-5	2	%		**102**	**87.2**	**103**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**95.6**	**88.2**	**95.0**	----	----

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

Work Order	: **ES1818880**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	[redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Jun-2018 15:00
Order number	: 4506808	Date Analysis Commenced	: 27-Jun-2018
C-O-C number	: ----	Issue Date	: 04-Jul-2018 17:55
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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
	Analyst	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.

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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.

- EK071G:It has been noted that Reactive P is greater than Total P on sample No 1, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	----	----	----
			Client sampling date / time	27-Jun-2018 08:30	27-Jun-2018 09:45	----	----	----
Compound	CAS Number	LOR	Unit	ES1818880-001	ES1818880-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.09**	**7.52**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**783**	**2960**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**11**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**6.9**	**5.3**	----	----	----
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	**0.0003**	**0.0006**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.027**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**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	**0.054**	**0.023**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.037**	**0.046**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.33**	<0.05	----	----	----
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	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.26**	**0.87**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	**0.13**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.95**	**0.80**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.00**	**0.93**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	**2.8**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.5**	**3.7**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TURELLA	BEXLEY	----	----	----
			Client sampling date / time	27-Jun-2018 08:30	27-Jun-2018 09:45	----	----	----
Compound	CAS Number	LOR	Unit	ES1818880-001	ES1818880-002	--------	--------	--------
				Result	Result	----	----	----
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	**0.02**	**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	**200**	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	**200**	----	----	----
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	**260**	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	**260**	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	**260**	----	----	----
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**	----	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	%	**88.5**	**92.9**	----	----	----
Toluene-D8	2037-26-5	2	%	**101**	**108**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**101**	**104**	----	----	----

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

Work Order	: **ES1822005**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 26-Jul-2018 16:00
Order number	: 4506808	Date Analysis Commenced	: 26-Jul-2018
C-O-C number	: ----	Issue Date	: 31-Jul-2018 17:29
Sampler	: PS & CM		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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

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~ = Indicates an estimated value.

- EK061G/EK062G: LOR raised for TKN & TN on various samples due to sample matrix.
- EK055G: LOR raised for Ammonia on sample 3,4,5 due to sample matrix.
- 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	SC	EC	CR	AC	DUP
			Client sampling date / time	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	ES1822005-001	ES1822005-002	ES1822005-003	ES1822005-004	ES1822005-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.71**	**7.86**	**7.92**	**7.78**	**7.77**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**609**	**376**	**51000**	**45200**	**51200**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**9**	**7**	**9**	**12**	**12**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**2.2**	**2.2**	**3.3**	**1.9**
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	**0.004**	**0.003**	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	<0.001	<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	**0.013**	**0.012**	<0.050	**0.058**	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.020**	**0.005**	<0.010	**0.014**	<0.010
Iron	7439-89-6	0.05	mg/L	**0.12**	<0.05	<0.10	<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	**0.24**	**0.59**	<0.10	<0.10	<0.10
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.15**	**0.09**	**0.02**	**0.02**	**0.01**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.86**	**0.31**	**0.08**	**0.07**	**0.09**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.01**	**0.40**	**0.10**	**0.09**	**0.10**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.7**	<1.0	<0.5	<1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.6**	**1.1**	<1.0	<0.5	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00	26-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		ES1822005-001	ES1822005-002	ES1822005-003	ES1822005-004	ES1822005-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.11**	**0.09**	**0.17**	**0.15**	**0.16**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.08**	**0.08**	<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**	----	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	%		**104**	**95.8**	**124**	**126**	**122**
Toluene-D8	2037-26-5	2	%		**108**	**90.0**	**124**	**127**	**123**
4-Bromofluorobenzene	460-00-4	2	%		**103**	**92.8**	**118**	**121**	**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

Work Order	: **ES1822107**	Page	: 1 of 4
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] St Peters NSW	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Jul-2018 14:30
Order number	: 4506808	Date Analysis Commenced	: 27-Jul-2018
C-O-C number	: ----	Issue Date	: 01-Aug-2018 18:53
Sampler	: PARIS SPELLSON		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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	Analyst	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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SPIWTP	----	----	----	----
			Client sampling date / time	27-Jul-2018 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1822107-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.42**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.6**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**235**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.16**	----	----	----	----
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	**0.028**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	----	----	----	----
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	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.045**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.13**	----	----	----	----
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	**0.22**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.49**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.71**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**20.5**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**21.2**	----	----	----	----
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	**SPIWTP**	**----**	**----**	**----**	**----**
				Client sampling date / time	27-Jul-2018 10:45	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1822107-001**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP020: Oil and Grease (O&G) - Continued									
Oil & Grease	----	5	mg/L		<5	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1822495**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: [redacted] MASCOT NSW 2020	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 01-Aug-2018 11:00
Order number	: 4506808	Date Analysis Commenced	: 01-Aug-2018
C-O-C number	: ----	Issue Date	: 06-Aug-2018 20:02
Sampler	: Mikaela Malcolm		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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]	Organic Chemist	Sydney Organics, Smithfield, NSW
	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
	Analyst	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.

- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EG035: Positive Hg result for ES1822495 #3 has been confirmed by reanalysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	US	DS	AS	ARN2	----
			Client sampling date / time	31-Jul-2018 09:34	31-Jul-2018 09:06	31-Jul-2018 09:20	31-Jul-2018 10:30	----
Compound	CAS Number	LOR	Unit	ES1822495-001	ES1822495-002	ES1822495-003	ES1822495-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.15**	**8.27**	**8.11**	**7.69**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51400**	**52600**	**49500**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**16**	<5	**6**	**20**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.1**	**0.7**	**1.3**	**4.2**	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	----	----	----	**124**	----
pH Redox	----	0.01	pH Unit	----	----	----	**7.25**	----
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	**0.0002**	----
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	**0.002**	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	**0.004**	----
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	<0.050	<0.050	**0.017**	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	**0.016**	**0.404**	----
Iron	7439-89-6	0.05	mg/L	<0.10	<0.10	<0.10	<0.05	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	**0.00009**	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	**0.07**	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.10**	**0.06**	**0.11**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.09**	**0.06**	**0.15**	**0.36**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**0.4**	**0.2**	**2.8**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.5**	**0.5**	**0.4**	**3.2**	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	US	DS	AS	ARN2	----
				Client sampling date / time	31-Jul-2018 09:34	31-Jul-2018 09:06	31-Jul-2018 09:20	31-Jul-2018 10:30	----
Compound	CAS Number	LOR	Unit		ES1822495-001	ES1822495-002	ES1822495-003	ES1822495-004	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.02**	**0.14**	<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	<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	----	----
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**	----	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	%		**108**	**104**	**114**	----	----
Toluene-D8	2037-26-5	2	%		**109**	**101**	**113**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**105**	**98.6**	**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

Work Order	: **ES1821994**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 26-Jul-2018 16:00
Order number	: 4506808	Date Analysis Commenced	: 26-Jul-2018
C-O-C number	: ----	Issue Date	: 01-Aug-2018 17:19
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

General Comments

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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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Turella	Bexley	----	----	----
			Client sampling date / time	26-Jul-2018 10:00	26-Jul-2018 11:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1821994-001	ES1821994-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.44**	**7.97**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2970**	**2990**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**7**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**4.4**	**1.8**	----	----	----
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	**0.0004**	**0.0002**	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.041**	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	**0.006**	----	----	----
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	**0.026**	**0.006**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.120**	**0.010**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.09**	<0.05	----	----	----
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	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**2.16**	**0.96**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.09**	**0.39**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.54**	**0.35**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.63**	**0.74**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.5**	**1.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.1**	**2.1**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Turella	Bexley	----	----	----
				Client sampling date / time	26-Jul-2018 10:00	26-Jul-2018 11:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1821994-001	ES1821994-002	--------	--------	--------
					Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.03**	**0.03**	----	----	----
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	**170**	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	**50**	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	**220**	----	----	----
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	**210**	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	**210**	----	----	----
^ **>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**	----	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	%		**104**	**98.0**	----	----	----
Toluene-D8	2037-26-5	2	%		**112**	**100**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**99.7**	----	----	----

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

Work Order	: **ES1822081**	Page	: 1 of 4
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: Customer Services ES
Address	: Level 4, 799 Pacific Highway CHATSWOOD NSW 2067	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +[redacted]	Telephone	: +61-2-8784 8555
Project	: WESTCONNEX NEW M5	Date Samples Received	: 27-Jul-2018 14:00
Order number	: 4506808	Date Analysis Commenced	: 28-Jul-2018
C-O-C number	: ----	Issue Date	: 01-Aug-2018 11:54
Sampler	: HY		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories	*Position*	*Accreditation Category*
[redacted]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
	Analyst	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.

- EK067G: LOR raised for Total P on sample No 1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KGD WTP	WSW C&C Eastbound	----	----	----
			Client sampling date / time	26-Jul-2018 16:00	26-Jul-2018 17:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1822081-001	ES1822081-002	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.00**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**14**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.6**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**98.0**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.69**	----	----	----	----
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	**0.018**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.006**	----	----	----	----
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	**0.124**	----	----	----	----
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	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**1.30**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.17**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.03**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.20**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.8**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.0**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**KGD WTP**	**WSW C&C Eastbound**	**----**	**----**	**----**
				Client sampling date / time	26-Jul-2018 16:00	26-Jul-2018 17:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1822081-001**	**ES1822081-002**	**--------**	**--------**	**--------**
					Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		<0.02	**----**	**----**	**----**	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**98**	**----**	**----**	**----**