Surface Water Quality and Monitoring Program: 2018 – 2019 Annual Report

Project Name: WestConnex New M5

Project number:	15.7020.2597
Document number:	M5N-ES-RPT-PWD-0038
Revision date:	30 September 2019
Revision:	00

Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
00	30/09/2019	[redacted]	[redacted]	[redacted]	[redacted]
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

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 third year of the construction phase (August 2018 – July 2019). This report presents the data and analysis as required by the approved WQP&MP.

The results of groundwater monitoring undertaken during this period are presented in a separate report (M5N-GOL-TER-100-200-GT-1520. 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 the Groundwater Monitoring Progress Reports (M5N-GOL-TER-100-200-GT-1520)
		A brief report on the validation of groundwater modelling (once only, in the initial reporting period).	The 24 Month Groundwater Model Review Report (M5N-GOL-DAN-100-200-HG-0290-D) was provided to DPE & DPI Water in May 2019. The groundwater model was updated (in accordance with Condition B27) utilising groundwater level monitoring over a 24-month period (31/05/2016 to 31/05/2018).
		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 third year of the construction phase of the project (August 2018 – July 2019: the monitoring year).

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

- Water quality monitoring at licenced discharge points;

- Monthly surface water monitoring at the Project monitoring sites including control and impact sites;
- Quarterly wet weather surface water monitoring during events when more than 10 mm of rainfall is recorded in a 24-hour period (where safe to do so); and
- Visual surveillance for potential streambed fracturing.

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

The results of monthly groundwater sampling at monitoring bores installed in ground water dependant ecosystems, Hawkesbury Sandstone, Ashfield Shale, Regentville Siltstone and alluvium are provided in the Groundwater Monitoring Progress Report (M5N-GOL-TER-100-200-GT-1520).

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 2018 and July 2019, 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 2018 – 2019

Construction Compound	Construction Milestones (August 2018 – July 2019)
C1 – 3 **Western Surface Works** **Kingsgrove Tunnels**	• MOC1 construction and fit out of mechanical and electrical infrastructure (substation, ventilation stacks, deluge building maintenance and bulky goods buildings) • All Cut & Cover concrete pavements completed • Construction of Electrical Equipment Room's (EER) & Longitudinal egress passage (LEP) within both Cut & Covers • Completion works within both Cut & Covers on going with barrier install and painting • Earthworks and associated services install for the Shared User Path's • Landscaping works along the south-western end of the works commenced • Final noise mound construction commenced • Installation of the new stormwater drainage • Noise wall installation along the westbound motorway • New Motorway pavement construction has continued • Major traffic switch completed in June with the success switch of the westbound alignment into it permanent configuration • Permanent road barriers construction • Street lighting install commenced • All tolling gantries have now been installed. Major signage gantries installation ongoing.
C4 - 6 **Bexley Tunnels**	• Tunnelling and tunnel support from the C5 tunnel site • Construction and fit out of MOC2 • Mechanical and electrical fit out of MOC2 and tunnel
C7 **Arncliffe Tunnels**	• Tunnelling and tunnel support from temporary shaft and decline including excavation with road headers, rock hammers, profilers and from blasting • Paving, barrier construction and utility installation within tunnel alignment • Concrete batching from onsite batch plant • Construction and fit out of MOC3 facilities including supply shafts, exhaust shafts and substation • Mechanical and electrical fit out of MOC3 substation and exhaust shafts

Construction Compound	Construction Milestones (August 2018 – July 2019)
C8 - 11 **St Peters Interchange** **St Peters Tunnels**	• Piling, pavement and general earthworks • Application of soil binder across stockpiles and access routes • Treatment of groundwater through the Leachate Treatment Plant • Concreting works • MOC4 works and cut and cover structure • Internal fit out of MOC5 building • Installation of gas and leachate collection networks • Operation of crushing and screening plant • Tunnelling and spoil removal • Continuation of the installation of precast bridge structures • Construction of Fire Water Complex (FWC) and deluge tanks
St Peters Local Roads	• Service investigations and relocations • Geotechnical and pavement investigations • Materials classification • Vegetation clearing • Stripping of fill materials along Campbell Street West and Euston Road North • Footpath, kerb, and gutter works • Business driveway upgrades on Campbell Road and Euston Road • Asphalting on Campbell Road and Euston Road • Piling pad construction for structures • Temporary noise barrier installation • Landscaping works along Campbell Road and Euston Road • Remediation of lead contamination on Gardeners Road • Driven piling on Gardeners Road West • Sydney Park roundabout upgrade to signalised intersection • Traffic switches on May Street intersection and Euston Road – Campbell Road intersection • Completion of Venice Street and desalination block on Euston Road • Road construction and establishment

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 2018 – 2019

Monthly rainfall totals (mm) for reporting period		
Month	**Sydney Airport AMO #66037**	**Canterbury Racecourse AWS #066194**
Aug-18	5.2 (76.0)	5.8 (62.2)
Sep-18	67.6 (59.8)	76.4 (46.0)
Oct-18	146.0 (70.6)	194.2 (64.3)
Nov-18	92.6 (80.6)	58 (76.9)
Dec-18	70.2 (73.6)	92.0 (65.8)
Jan-19	73.2 (94.5)	74.4 (80.6)
Feb-19	76.8 (111.1)	72.6 (101.8)
Mar-19	198.0 (117.9)	149.0 (78.2)
Apr-19	15.0 (106.8)	19.4 (101.1)
May-19	7.6 (95.1)	7.4 (72.2)
Jun-19	154.8 (125.3)	121.2 (108.9)
Jul-19	39.2 (68.6)	38.0 (53.9)
Total	946.2 (1079.9)	908.4 (911.9)

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

3. Water discharged from construction compounds

3.1 Licenced Discharge Points

The Project has 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	Months Active											
			Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19
St Peters Interchange														
Sediment Basin SPI-1	332025	6245722												
Water Treatment Plant SPI-2	331312	6245727												
Sediment Basin SPI-3	331424	6245615												
Arncliffe Construction Compound														
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-3	323267	6242887												

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)

- This page is intentionally blank -

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	PB
Coordinate System	MGA ZONE 56	Requested by	CG
Height Datum	AHD	Date Printed	10/04/2019
Filename:	Premise_Overview_revV.mxd		

WestConnex New M5

CPB CONTRACTORS | DRAGADOS | SAMSUNG C&T

aurecon | JACOBS | HASSELL | Golder Associates

WESTCONNEX New M5

Premise Map Overview

DOCUMENT NUMBER

Figure 1: Locations for licenced discharge points

- This page is intentionally blank -

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.

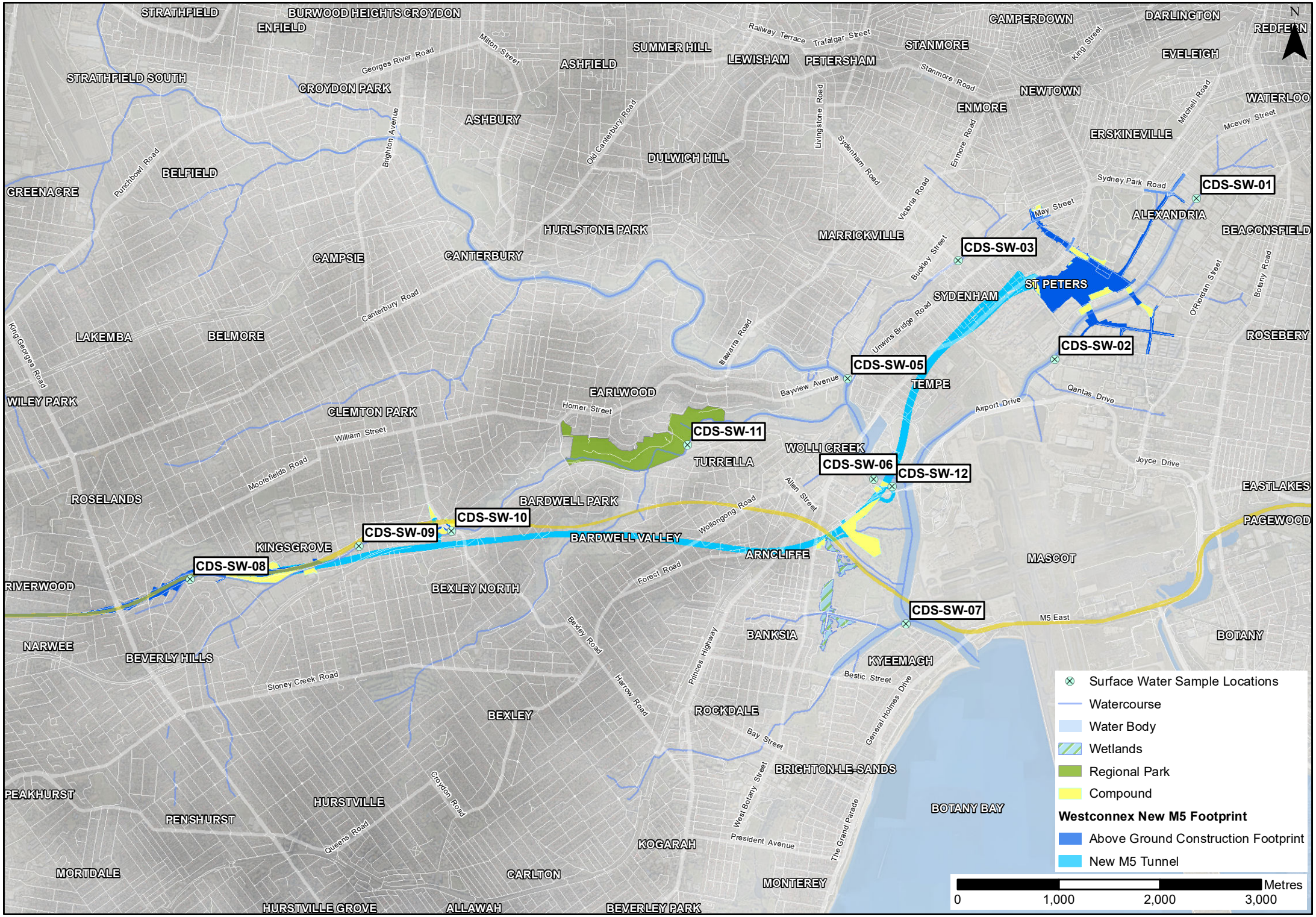
Table 8: Surface water quality monitoring locations

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 footbridge, near 5-9 Henderson Street	327910	6244087	Estuarine / marine
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 summarised within the Surface Water Quality – Baseline Monitoring Report (M5N-ES-RPT-PWD-0005).

Figure 2: Locations for surface water quality monitoring


CDS-SW-01
CDS-SW-02
CDS-SW-03
CDS-SW-05
CDS-SW-06
CDS-SW-07
CDS-SW-08
CDS-SW-09
CDS-SW-10
CDS-SW-11
CDS-SW-12
STRATHFIELD
BURWOOD HEIGHTS CROYDON
ENFIELD
STRATHFIELD SOUTH
CROYDON PARK
ASHFIELD
SUMMER HILL
LEWISHAM
PETERSHAM
STANMORE
CAMPERDOWN
DARLINGTON
REDFERN
EVELEIGH
NEWTOWN
ENMORE
ERSKINEVILLE
WATERLOO
ASHBURY
DULWICH HILL
BELFIELD
GREENACRE
HURLSTONE PARK
MARRICKVILLE
ALEXANDRIA
BEACONSFIELD
CAMPSIE
CANTERBURY
ST PETERS
SYDENHAM
ROSEBERY
LAKEMBA
BELMORE
TEMPE
WILEY PARK
EARLWOOD
CLEMTON PARK
WOLLI CREEK
TURRELLA
EASTLAKES
ROSELANDS
BARDWELL PARK
PAGEWOOD
KINGSGROVE
BARDWELL VALLEY
ARNCLIFFE
MASCOT
RIVERWOOD
BEXLEY NORTH
BANKSIA
BOTANY
NARWEE
BEVERLY HILLS
KYEEMAGH
BEXLEY
ROCKDALE
BRIGHTON-LE-SANDS
PEAKHURST
HURSTVILLE
PENSHURST
BOTANY BAY
KOGARAH
MORTDALE
CARLTON
MONTEREY
HURSTVILLE GROVE
ALLAWAH
BEVERLEY PARK
Georges River Road
Milton Street
Railway Terrace
Trafalgar Street
Stanmore Road
King Street
Mitchell Road
Mcevoy Street
Punchbowl Road
Brighton Avenue
Old Canterbury Road
Livingstone Road
Sydenham Road
Enmore Road
Victoria Road
Sydney Park Road
May Street
Buckley Street
Unwins Bridge Road
O'Riordan Street
Botany Road
Canterbury Road
Illawarra Road
King Georges Road
Bayview Avenue
Airport Drive
Qantas Drive
Homer Street
William Street
Moorefields Road
Joyce Drive
Allen Street
Wollongong Road
Forest Road
Bexley Road
Princes Highway
Harrow Road
Bestic Street
General Holmes Drive
Bay Street
West Botany Street
The Grand Parade
President Avenue
Croydon Road
Queens Road
Stoney Creek Road
M5 East
Surface Water Sample Locations
Watercourse
Water Body
Wetlands
Regional Park
Compound
Westconnex New M5 Footprint
Above Ground Construction Footprint
New M5 Tunnel
Metres
0
1,000
2,000
3,000
N

- This page is intentionally blank –

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. Excavation of both the east and westbound tunnels had progressed beyond the two streambed fracture monitoring locations by the end of April 2018. Monthly inspections continued 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 2018 – July 2019, 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 between August 2018 and July 2019. Throughout the period at sites located in Alexandra Canal (CDS-SW-02) and Cooks River (CDS-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) for some analytes such as arsenic, copper and zinc being raised higher than the corresponding trigger values. Each instance of this occurrence is captured in the notes section of the corresponding spreadsheets in Appendix B. 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 2018

In the week prior to sampling in August 2018, approximately 1 mm of rain was recorded at the BoM Sydney Airport AMO weather station. Within the Alexandra Canal catchments, several parameters including turbidity, conductivity, total nitrogen and total phosphorus were recorded above the adopted trigger values at the upstream monitoring location Sheas Creek (CDS-SW-01). Similarly, turbidity, total nitrogen, nitrate and total phosphorus were detected above the adopted trigger values downstream of the Project at Alexandra Canal (CDS-SW-02), which were consistent with upstream values. Elevated levels of conductivity and total phosphorus were also detected at the Eastern Channel (CDS-SW-03). An exceedance was detected for pH at CDS-SW-03 via field testing methods however laboratory analysis confirmed pH levels were within the acceptable ranges. All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in August.

Within the Cooks River, no exceedances were detected in any of the samples collected upstream of the Arncliffe Compound (C7) at CDS-SW-05 or CDS-SW-06. At monitoring locations CDS-SW-12 and CDS-SW-07 two exceedances for conductivity were detected. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in August which suggests this is not related to project activities.

Samples collected from the Wolli Creek catchment downstream of the Bexley Compound (C4-C6) recorded elevated levels for conductivity including at Bexley (CDS-SW-10) and Turrella (CDS-SW-11). An exceedance was detected for pH at Bexley (CDS-SW-10) via field testing methods however laboratory analysis confirmed pH levels were within the acceptable ranges. There were no uncontrolled discharges off site during August.. All daily discharges from the Water Treatment Plant (KGD-1, BED-

1) were compliant with the EPL criteria in August. No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow within the canal.

b. September 2018

Sampling completed across the Project alignment was completed during fine conditions with no rainfall noted in the week prior to sampling.

Samples collected upstream of the Project at Sheas Creek (CDS-SW-01) were observed to contain total phosphorus above the adopted trigger values. Elevated levels of total phosphorus were not observed at the downstream sampling location of Alexandra Canal (CDS-SW-02) however one exceedance was observed for manganese. Additionally, an exceedance was detected for pH at Alexandra Canal (CDS-SW-02) via field testing methods however laboratory analysis confirmed pH levels were within the acceptable ranges. Two exceedances for pH and turbidity were detected at the upstream location, Eastern Channel (CDS-SW-03). It was noted that conductivity was outside the adopted trigger values via field testing methods, however laboratory analysis confirmed conductivity was within the acceptable range for Eastern Channel (CDS-SW-03). All discharges from the Water Treatment Plant (SPI-2) were compliant with the EPL criteria in September.

Samples collected from the Cooks River at CDS-SW-05 and CDS-SW-06 upstream of the Arncliffe Compound (C7) were found to contain elevated levels of manganese. No exceedances were detected at the downstream location of CDS-SW-07. One exceedance for conductivity was detected at CDS-SW-12. 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) identified one exceedance for conductivity above the adopted trigger value for Bexley (CDS-SW-10) which was also consistent with the month of August. No exceedances were detected further downstream at Turrella (CDS-SW-11). All discharges from the Water Treatment Plants (KGD-1, BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in September. No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow within the canal.

c. October 2018

In the week prior to sampling, approximately 25 mm of rain was recorded at the BoM Sydney Airport AMO weather station No uncontrolled discharge off site was recorded during this wet weather event.

Within the Alexandra Canal catchment, exceedances for conductivity and zinc were identified above the adopted trigger values upstream of the Project at Sheas Creek (CDS-SW-01). Zinc and pH were detected above the adopted trigger value for Alexandra Canal (CDS-SW-02), however it was noted that the elevated zinc concentrations were consistent with the upstream sampling location and therefore not attributed to Project related activities. Elevated turbidity, conductivity, total suspended solids and total phosphorus were detected in the upstream sampling location of Eastern Channel (CDS-SW-03). Exceedances across the Alexandra Canal and Eastern Channel catchments were attributed to external influences (e.g. heavy rainfall and non-Project related activities). All discharges from the Water Treatment Plant (SPI-2) and Sediment Basin (SPI-1) were compliant with the EPL criteria in October.

Elevated levels of turbidity, total nitrogen and total phosphorus were detected upstream of Arncliffe Compound (C7) at CDS-SW-05 and CDS-SW-06. Additionally, nitrate was also observed in exceedance at CDS-SW-06 while elevated levels of total nitrogen, nitrate and total phosphorus were consistent at the downstream sampling location at CDS-SW-07. Adjacent to the previous Arncliffe Compound (C7) discharge outlet at CDS-SW-12, several analytes including turbidity, conductivity, manganese, total nitrogen and nitrate were all found to exceed the adopted trigger values. Additionally, pH was detected below the required trigger values at CDS-SW-12 via field testing methods however laboratory analysis confirmed pH levels were within the acceptable range. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in October.

Samples collected from the western end of the Project (Kingsgrove – Turrella) also displayed catchment wide (upstream and downstream) exceedances for turbidity and total nitrogen across Kooemba Road (CDS-SW-08), Kooreela Street (CDS-SW-09), Bexley (CDS-SW-10) and Turrella (CDS-SW-11). Additionally, conductivity and total phosphorus were marginally above of the adopted trigger values at Turrella (CDS-SW-11) however these exceedances were not considered to be attributed to Project

related activities due to heavy rainfall in the week prior to sampling. All daily discharges from the Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in October.

d. November 2018

In the week prior to sampling, approximately 17 mm of rain was recorded at the BoM Sydney Airport AMO weather station No uncontrolled discharge off site was recorded during this wet weather event.

Within the Alexandra Canal and Eastern Channel catchments, no exceedances were identified above trigger levels assigned at Sheas Creek (CDS-SW-01). Exceedances for manganese, zinc and total nitrogen were detected in samples collected from Alexandra Canal (CDS-SW-02). Turbidity and pH were above the adopted trigger values at the Eastern Channel (CDS-SW-03), however pH was later confirmed to be within the acceptable ranges following laboratory analysis. As a result, an inspection was completed at all surrounding satellite Project sites to assess any potential or likely sources for the turbidity exceedance at CDS-SW-03. No such sources were located, and the inspection concluded this exceedance was not attributed to Project related activities. All daily discharges from the Water Treatment Plant (SPI-2) and Sediment Basin (SPI-1) were compliant with the EPL criteria in November.

In the Cooks River catchment, no exceedances were detected at the upstream sampling location of CDS-SW-05. Downstream at CDS-SW-06, one minor exceedance for manganese was detected while total phosphorus exceeded the adopted criteria at the downstream sampling location of CDS-SW-07, however it was noted that no Project related activities were undertaken in proximity of either sampling locations. Several exceedances were detected at CDS-SW-12 for manganese, total nitrogen, total kjeldahl nitrogen, ammonia and total phosphorus. 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 pH and conductivity at Bexley (CDS-SW-10), however these were not attributed to Project activities as these results are consistent with previous months at this location and all daily discharges from Bexley Compound were compliant with the Project's EPL criteria on the day of sampling. Conductivity was found to be below the adopted trigger values further downstream at Turrella (CDS-SW-11). All discharges from the Water Treatment Plants (BED-1, KGD-1) were compliant with the EPL criteria in November. No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

e. December 2018

Sampling completed across the Project alignment was completed during fine conditions with no rainfall noted in the week prior to sampling.

Within the Alexandra Canal and Eastern Channel catchments, total nitrogen and total phosphorus were recorded above the adopted trigger values upstream of the Project at Sheas Creek (CDS-SW-01). Additionally, pH levels were detected below the adopted trigger values for Sheas Creek via field testing methods, however laboratory analysis later confirmed pH levels were within the acceptable ranges. Downstream of the Project, manganese exceeded the adopted trigger values at Alexandra Canal (CDS-SW-02), while pH levels were in exceedance at the Eastern Channel (CDS-SW-03). The results triggered an inspection that noted that these exceedances were not related to Project related activities. All discharges from the Water Treatment Plant (SPI-2) and Sediment Basin (SPI-1) were compliant with the EPL criteria in December. December also marked the last month of operation for the Water Treatment Plant (SPI-2) which was demobilised.

Within the Cooks River catchment, no exceedances were detected either upstream or downstream of the project at CDS-SW-05, CDS-SW-06, CDS-SW-07, however one exceedance for manganese was detected at CDS-SW-12. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in December.

In the Wolli Creek catchment, exceedances for pH, conductivity and copper were detected at Bexley (CDS-SW-10), these measurements were consistent with results from previous sampling months. Discharge records were compliant with the Project EPL criteria on the day of sampling. Further downstream at Turrella (CDS-SW-11), exceedances for field conductivity and total phosphorus were identified, however laboratory analysis confirmed that sample level for conductivity was below the adopted trigger value. All discharges from the Water Treatment Plants (KGD-1, BED-1) were compliant with the EPL criteria in December. December marked the last use of the Water Treatment Plant (KGD-1), which had been in intermittent use since full time use finished in September 2018.No samples were

collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

f. January 2019

In the week prior to sampling, approximately 10 mm of rain was recorded at the BoM Sydney Airport AMO weather station No uncontrolled discharge off site was recorded during this wet weather event.

Upstream of the Project, elevated levels of total nitrogen and total phosphorus were observed in samples collected from Sheas Creek (CDS-SW-01). Samples collected from Alexandra Canal (CDS-SW-02) revealed one minor exceedance for manganese, which was noted to have exceeded the adopted trigger values for the second consecutive month. Samples collected from the Eastern Channel (CDS-SW-03) revealed one exceedance for pH which was also noted to be above the adopted trigger values for the second consecutive month.

Within the Cooks River catchment, no exceedances were recorded at any sampling locations (CDS-SW-05, CDS-SW-06, CDS-SW-07, CDS-SW-12) upstream or downstream of the Arncliffe Compound (C7). All daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in January.

Within the Wolli Creek catchment, exceedances were detected at Bexley (CDS-SW-10) for conductivity and copper, which were consistent with samples collected in December. Further downstream in Turrella (CDS-SW-11), exceedances were detected for turbidity, dissolved oxygen, conductivity and total phosphorus. Additionally, an exceedance for pH at Turrella was identified via field testing methods, however the laboratory analysis later confirmed pH levels were within the acceptable range. All discharges from the Water Treatment Plant (BED-1) were compliant with the EPL criteria in January.No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

g. February 2019

In the week prior to sampling, approximately 0.6 mm of rain was recorded.

Samples collected from Sheas Creek (CDS-SW-01) identified one exceedance for total nitrogen which was consistent with the previous two months of sampling. Downstream of the Project, no exceedances were detected within Alexandra Canal (CDS-SW-02), while two exceedances for pH and turbidity were detected in the Eastern Channel (CDS-SW-03). It was also noted that pH values were outside the acceptable ranges in previous months and they were attributed to non-project related sources in the environment surrounding the Eastern Channel including numerous observed non-project sources discharging into the canal.

Within the Cooks River catchment, no exceedances were recorded at any sampling locations (CDS-SW-05, CDS-SW-06, CDS-SW-07, CDS-SW-12) upstream or downstream of the Arncliffe Compound (C7). All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in February.

Sampling undertaken in the Wolli Creek catchment, identified exceedances for conductivity at both Bexley (CDS-SW-10) and Turrella (CDS-SW-11) which were consistent with sampling from recent months. All daily discharge results for Water Treatment Plant (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in February. No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow within the canal.

There was no uncontrolled discharge off site from the project during this sampling period.

h. March 2019

In the week prior to sampling, approximately 3.8 mm of rain was recorded at the BoM Sydney Airport AMO weather station No uncontrolled discharge off site was recorded during this wet weather event. . An equipment malfunction related to field pH testing was identified during initial sampling. As a result, field tested pH values were not reliable and have not been commented on for the month of March.

Within the Alexandra Canal and Eastern Channel catchments, conductivity, total nitrogen and total phosphorus were above the adopted criteria for Sheas Creek (CDS-SW-01). Additionally, it was noted that March was the third consecutive month where total nitrogen was observed above the adopted

trigger values upstream of the Project. Downstream of the Project, no exceedances were recorded in any of the samples collected from Alexandra Canal (CDS-SW-02). Two exceedances were detected in the Eastern Channel (CDS-SW-03) for total phosphorus and pH. All discharges from the Sediment Basin (SPI-1) were compliant with the EPL criteria in March.

Within the Cooks River catchment, no water quality parameters were detected above the adopted trigger values assigned for CDS-SW-05, CDS-SW-06, CDS-SW-07 and CDS-SW-12. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in March.

In the Wolli Creek catchment, exceedances were detected downstream of the Project at both the Bexley (CDS-SW-10) and Turrella (CDS-SW-11) sampling locations for conductivity, which were consistent for the previous four months. All discharges from the Water Treatment Plant (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in March. No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

i. April 2019

Sampling completed across the Project alignment was completed during fine conditions with no rainfall noted in the week prior to sampling.

Within the Alexandra Canal catchment, elevated levels of total suspended solids, total nitrogen and total phosphorus were noted upstream of the Project at Sheas Creek (CDS-SW-01). Downstream of the Project, no exceedances were detected at Alexandra Canal (CDS-SW-02), however an exceedance for pH was detected in the Eastern Channel (CDS-SW-03).

Within the Cooks River catchment, no exceedances were detected from sample locations upstream or downstream, inclusive of CDS-SW-05, CDS-SW-06 and CDS-SW-07. At CDS-SW-12, several exceedances were detected for manganese, total nitrogen and ammonia. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria of April.

In the Wolli Creek catchment, conductivity and pH levels from field testing were above the adopted trigger value for Bexley (CDS-SW-10), however pH levels were later found to be within the acceptable range following laboratory analysis. No exceedances were detected further downstream in Turrella (CDS-SW-11). All discharges from Water Treatment Plants (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria in April.

No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

There was no uncontrolled discharge off site from the project during this sampling period.

j. May 2019

In the week prior to sampling, approximately 6 mm of rain was recorded at the BoM Sydney Airport AMO weather station. There were no uncontrolled discharge off site was recorded during this wet weather event.

Within the Alexandra Canal catchment, elevated levels of total nitrogen and total phosphorus were noted upstream of the Project at Sheas Creek (CDS-SW-01). Further downstream of the Project, measured levels for turbidity, total nitrogen and nitrate were above the adopted trigger values assigned for Alexandra Canal (CDS-SW-02), while an exceedance for conductivity was observed in samples collected from the Eastern Channel (CDS-SW-03).

No exceedances were detected in any of the samples collected from the Cooks River catchment at sample locations upstream or downstream of Arncliffe Compound (C7) (CDS-SW-05, CDS-SW-06, CDS-SW-07). An exceedance for conductivity was detected at (CDS-SW-12). All daily discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria of May.

In the Wolli Creek catchment, samples collected from Bexley (CDS-SW-10) identified exceedances for conductivity, total suspended solids and manganese. It was noted that conductivity levels were in exceedance for the fifth consecutive month. Samples collected further downstream at Turrella (CDS-SW-11) revealed exceedances for dissolved oxygen, conductivity and manganese. All discharges from the Water Treatment Plant (BED-1) were compliant with the EPL criteria in May. No samples were

collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

k. June 2019

In the week prior to sampling, approximately 63 mm of rain was recorded at the BoM Sydney Airport AMO weather station. There were no uncontrolled discharge off site was recorded during this wet weather event.

Within the Alexandra Canal and Eastern Channel catchments, several parameters were above the adopted trigger values including total suspended solids, total nitrogen and total phosphorus in samples collected at Sheas Creek (CDS-SW-01). Downstream of the Project, samples collected from Alexandra Canal (CDS-SW-02) included exceedances for zinc and nitrate, while samples collected from the Eastern Channel (CDS-SW-03) indicated an exceedance for conductivity, which was marginally below the adopted low-end trigger value. All discharges from Sediment Basin (SPI-1) were compliant with the EPL criteria in June.

In the Cooks River catchment, an exceedance for nitrate was detected at all sampling locations including CDS-SW-05, CDS-SW-06 and CDS-SW-12. Further downstream of the Project at CDS-SW-07, similar exceedances were observed to the upstream locations with the addition of manganese. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in June.

In the Wolli Creek catchment, samples collected from Kooreela Street (CDS-SW-09: upstream) were found to contain exceedances for pH and total nitrogen. Further downstream at Bexley (CDS-SW-10), exceedances for pH and total nitrogen were consistent with the upstream sampling location with the addition of chromium, while samples collected downstream in Turrella (CDS-SW-11) were found to have a minor exceedance for conductivity below the low-end adopted trigger value. All discharges from Water Treatment Plant (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria for the month of June. June marked the last month of standard operation for the Water Treatment Plant (BED-1), which was downgraded to standby status (to be used as required to support water treatment at Arncliffe (ARN-2)). No samples were collected from Kooemba Road (CDS-SW-08) due to low stream flow observed within the canal.

l. July 2019

Sampling completed across the Project alignment was completed during fine conditions with no rainfall noted in the week prior to sampling.

Within the Alexandra Canal catchment, an exceedance for total nitrogen was noted above the adopted trigger values assigned for Sheas Creek (CDS-SW-01) for the seventh consecutive month. Downstream of the Project, no exceedances were detected in any samples collected from Alexandra Canal (CDS-SW-02), however an exceedance was detected for turbidity in the Eastern Channel (CDS-SW-03), which was attributed to human error (lower flow than usual resulting in sediment disturbance during sample collection) and not Project related activities. All discharges from Sediment Basin (SPI-1) were compliant with the EPL criteria in July.

Within the Cooks River catchment, no water quality parameters were detected above the adopted trigger values assigned for CDS-SW-05, CDS-SW-06, CDS-SW-07 and CDS-SW-12. All discharges from the Water Treatment Plant (ARN-2) were compliant with the EPL criteria in July.

Around the time of sampling within the Wolli Creek Catchment, the overflow of a Sydney Water sewer asset resulted in the discharge of sewage into Wolli Creek, directly east of Tallawalla Street, Beverly Hills. The commencement of the overflow is not known to CDS. The blockage and overflow of the main sewer line was not related to Project activities and CDS was informed that Sydney Water reported the dry weather overflow to the EPA. Sydney Water commenced remediation and rectifications works shortly after the overflow was identified by CDS and reported to the Sydney Water emergency line.

Samples collected from Bexley (CDS-SW-10) identified exceedances for turbidity, dissolved oxygen, copper, total nitrogen, ammonia and total phosphorus, while further downstream in Turrella (CDS-SW-11), similar exceedances were detected with copper, total nitrogen and ammonia. All discharges from Water Treatment Plant (BED-1) and Sediment Basin (WSW-1) were compliant with the EPL criteria for the month of July. It is anticipated that some impacts of the sewer overflow may potentially be detectable in water samples continuing into the next reporting period.

No samples were collected from Kooemba Road (CDS-SW-08) and Kooreela Street (CDS-SW-09) due to low stream flow observed within the canal.

There was no uncontrolled discharge off site from the project during this sampling period.

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 2018 to July 2019 (the third 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, completion of 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
- 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 activities As noted from results collected during this reporting period, elevated levels of dissolved solids (particularly from estuarine sampling location) requires the elevation of reporting limits during laboratory analysis. Importantly, during the monitoring period, no adverse water quality impacts were observed at any of the receiving waters that were 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%
SPI (C8)	Q10	1/11/2018	PS	SPI-WTP	ES1832587-001	7.43	<5	<0.05	0.043	0.004	0.002	<0.005	9.3	NT	NT
Arncliffe (C7)	Q9	12/10/2018	MM	WTP Oct	ES1830505-001	7.33	54	<0.05	0.178	0.002	0.002	0.022	2.7	<0.05	NT
Arncliffe (C7)	Q10	21/03/2019	RP	190321_ARN2	ES1908725-001	7.78	34	<0.05	0.167	0.002	0.004	0.01	2.7	<0.02	NT
Arncliffe (C7)	Q11	4/06/2019	RP	190604_ARN2	ES1917497-001	7.13	<5	0.07	0.089	<0.001	0.002	0.011	4.4	0.06	NT
Arncliffe (C7)	Q12	2/07/2019	RP	190702_ARN2	ES1920492-001	7.55	<5	0.09	0.686	0.002	0.005	0.029	4.4	0.19	NT
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)	Q9	4/03/2019	RP	190304_BED	ES1906723-001	7.48	<5	<0.05	0.158	0.002	0.001	0.02	1.1	<0.02	NT
Bexley North (C4)	Q10	27/05/2019	RP	190527_BED	ES1916314-001	7.85	8	<0.05	0.018	<0.001	0.005	<0.005	1.8	<0.02	NT
Bexley North (C4)	Q11	30/05/2019	RP	190530_BED	ES1916705-001	7.83	<5	<0.05	0.072	<0.001	0.003	<0.005	1.6	0.08	NT
Bexley North (C4)	Q12	6/06/2019	RP	190606_BED1	ES1917496-001	7.82	6	<0.05	0.09	<0.01	0.003	<0.005	1.1	<0.01	NT

2018-2019 Period of activity for licenced discharge points								
Discharge Point		WTP ARN-2	WTP BED-1	WTP KGD-1	WSW-1	SPI-1	SPI-3	WTP SPI-2
Aug-18	Q9							
Sep-18								
Oct-18								
Nov-18	Q10							
Dec-18								
Jan-19								
Feb-19	Q11							
Mar-19								
Apr-19								
May-19	Q12							
Jun-19								
Jul-19								

Appendix B: Surface water quality results

August 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	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	7.04	52.1	15.85	268	136.8	165	N	Water flowing, iron staining on base and walls of canal.
CDS-SW-02	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	7.87	18.6	13.9	205	197.9	29200	N	Low flow, clear water.
CDS-SW-03	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	9.17	26.2	15.21	154	288.98	256	N	Tide running out, leaf litter, drizzling rain.
CDS-SW-05	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	8.09	4.5	13.83	190	85.3	44100	N	Tide running out, leaf litter.
CDS-SW-06	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	8.27	4	13.78	258	156.4	45800	N	Tide running out, clear water.
CDS-SW-07	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	8.42	4.6	13.54	238	51.8	45300	N	Tide running out, clear water.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	9.13	8.9	14.4	128	85	3250	N	Flowing, slightly green, rubbish.
CDS-SW-11	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	7.83	3.4	12.98	183	209	4910	N	Flowing, slightly green, rubbish.
CDS-SW-12	31/08/2018	-	PS & PGS	Rain event in past 7 days - 1mm	8.2	3.2	14.38	282	255	36400	N	Tide running out, clear water.

Water monitoring not undertaken	Estuarine	Above trigger level
Freshwater		

August 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	ES1825956-001	8	29	609	0.09	0.01	0.001	<0.0001	<0.001	0.008	<0.001	0.001	0.012	0.00011	0.09	3.7	1.4	0.68
CDS-SW-02	ES1825956-004	7.87	6	43900	<0.10	0.02	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	3.1	2.6	1.69
CDS-SW-03	ES1825956-002	8.48	32	287	0.06	0.006	<0.001	0.0001	0.002	0.006	<0.001	<0.001	0.005	0.00004	<0.05	1.4	1.1	0.47
CDS-SW-05	ES1825956-003	7.92	13	51000	<0.10	<0.010	<0.010	0.001	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.10	<1.0	<1.0	0.24
CDS-SW-06	ES1825956-005	8.06	9	52300	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.01	<1.0	0.17
CDS-SW-07	ES1825956-006	8.11	<5	54300	<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	0.05
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1825956-008	8.37	18	3630	0.06	0.024	0.001	<0.0001	0.024	0.004	<0.001	0.001	0.005	<0.00004	<0.05	2.2	1.4	0.7
CDS-SW-11	ES1825956-007	7.63	<5	5190	0.06	0.09	<0.001	<0.0001	<0.001	0.002	<0.001	0.001	0.026	<0.00004	<0.05	1.3	0.5	0.31
CDS-SW-12	ES1825956-009	7.86	46	41600	<0.10	0.179	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	1.6	1.2	0.69

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

August 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	ES1825956-001	0.17	2.1	0.24	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Positive Hg result for ES1825956-001 confirmed by reanalysis
CDS-SW-02	ES1825956-004	0.04	0.42	3.1	0.16	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1825956-002	0.07	0.23	0.15	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1825956-003	0.02	0.16	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1825956-005	<0.01	0.27	0.1	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1825956-006	<0.01	0.09	0.15	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1825956-008	0.34	0.46	0.05	0.02	<5	<20	<20	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1825956-007	0.05	0.77	0.02	<0.01	<5	<20	<20	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1825956-009	0.06	0.31	<0.05	<0.01	<5	<20	210	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	19/09/18	9:45:00 AM	PS & PGS	-	8.14	6.8	18.29	192	185.5	581	N	Flowing water, iron staining on canal walls, sunny.
CDS-SW-02	19/09/18	8:00:00 AM	PS & PGS	-	6.57	7.1	17.41	272	131	36000	N	Opaque green, flowing, sunny.
CDS-SW-03	19/09/18	9:30:00 AM	PS & PGS	Construction works (Sydney Metro) observed upstream of sample location	9.27	246	16.99	126	99.2	3	N	Leaf litter, not flowing, sunny, clear.
CDS-SW-05	19/09/18	8:45:00 AM	PS & PGS	Washing stairs - local council	7.47	4.9	17.5	225	164.8	41900	N	Flowing water, sunny.
CDS-SW-06	21/09/18	10:57:00 AM	PS & PGS	Construction works (small Contractor) observed upstream of sampling location	7.79	5.3	16.88	193	234.2	49500	N	Low tide, running out, leaf litter.
CDS-SW-07	21/09/18	10:20:00 AM	PS & PGS	Construction works (Small Contractor) observed upstream of sampling location	7.9	7.4	16.51	201	285.3	45400	N	Low tide, running out, leaf litter.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	21/09/18	9:00:00 AM	PS & PGS	-	7.85	0.9	14.09	189	75.7	2640	N	Slight odour, flowing, murky/dirty water, rubbish.
CDS-SW-11	21/09/18	9:40:00 AM	PS & PGS	-	7.43	4.9	14.76	197	210	1510	N	Flowing, leaf litter, frothy scum on water, fauna (ducks).
CDS-SW-12	21/09/18	10:45:00 AM	PS & PGS	Construction works (Small Contractor) observed upstream of sampling location	7.91	2.8	17.07	203	234.7	46900	N	Low tide (still running out), sediment discharge visible.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	ES1827821-001	8.06	9	587	0.1	0.03	0.001	<0.0001	<0.001	0.004	<0.001	<0.001	0.011	<0.00004	<0.05	2.6	1.1	0.37
CDS-SW-02	ES1827821-004	7.65	9	36200	<0.10	0.044	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	1.1	0.9	0.33
CDS-SW-03	ES1827821-002	8.58	10	323	<0.05	0.005	<0.001	<0.0010	<0.001	0.004	<0.001	0.001	0.006	<0.00004	<0.05	0.8	0.6	0.22
CDS-SW-05	ES1827821-003	7.68	<5	36600	<0.10	0.058	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.4	0.3	0.22
CDS-SW-06	ES1828145-005	8.09	8	46800	<0.10	0.028	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.3	0.2	0.18
CDS-SW-07	ES1828145-004	8.12	<5	46200	<0.10	0.017	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.050	0.6	0.4	0.14
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1828145-001	7.69	8	2560	0.07	0.036	0.001	<0.0001	0.023	0.006	<0.001	<0.001	0.02	<0.00004	<0.05	1.6	0.8	0.44
CDS-SW-11	ES1828145-002	8.11	<5	1480	0.1	0.108	<0.001	<0.0001	<0.001	0.001	<0.001	<0.001	0.016	<0.00004	<0.05	0.9	0.6	0.02
CDS-SW-12	ES1828145-003	8.04	7	45700	<0.10	0.054	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.8	0.7	0.25

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

September 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	ES1827821-001	0.18	1.3	0.19	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1827821-004	0.03	0.19	<0.02	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1827821-002	0.06	0.14	0.09	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Horiba stopped working
CDS-SW-05	ES1827821-003	0.02	0.07	0.03	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1828145-005	0.02	0.12	<0.02	0.02	<5	<20	<20	<100	<100	<1	<2	<2	<2	<5	LOR raised for Total P for ES1828145-005 due to sample matrix
CDS-SW-07	ES1828145-004	0.02	0.17	0.03	<0.01	<5	<20	<20	<100	<100	<1	<2	<2	<2	<5	It was noted that Reactive P is greater than Total P for ES1827821-004, however this difference is within limits of experimental variation LOR raised for TKN & Total P due to sample matrix
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1828145-001	0.28	0.49	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1828145-002	0.04	0.23	0.04	<0.01	5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1828145-003	0.02	0.07	0.02	<0.01	6	<20	<20	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

October 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	5/10/18	14:52:00 PM	PS & PGS	Rain event in past 7 days - 25mm	7.72	40	16.25	212	290	169	Y	Flowing, clear water. High turbidity due to rain.
CDS-SW-02	5/10/18	8:42:00 AM	PS & PGS	Rain event in past 7 days - 25mm	5.98	5.02	16.3	236	120.9	161	Y	-
CDS-SW-03	5/10/18	12:54:00 PM	PS & PGS	Rain event in past 7 days - 25mm	8.33	220	15.24	208	280.4	259	N	Flowing, high tubidity. ECSC on Campbell Road inspected and operational. Turbidity was not associated with Project related activities. High turbidity due to rain.
CDS-SW-05	5/10/18	13:38:00 PM	PS & PGS	Rain event in past 7 days - 25mm	8.03	116	15.03	217	145.4	344	N	Leaf litter, brown dirty water. High turbidity due to rain.
CDS-SW-06	5/10/18	9:45:00 AM	PS & PGS	Rain event in past 7 days - 25mm	7.21	86	15.64	225	273.7	740	N	Leaf litter, high tide running out, light brown. High turbidity due to rain.
CDS-SW-07	5/10/18	10:20:00 AM	PS & PGS	Rain event in past 7 days - 25mm	7.11	8.48	15.8	245	154.8	3950	N	Brown, tide running out. High turbidity due to rain.
CDS-SW-08	5/10/18	-	PS & PGS	Rain event in past 7 days - 25mm	8.36	45.9	16.23	212	248.6	575	N	Canal flowing. High turbidity due to rain.
CDS-SW-09	5/10/18	12:32:00 PM	PS & PGS	Rain event in past 7 days - 25mm	7.77	45.1	16.39	232	304	457	Y	Flowing, light brown, odour. High turbidity due to rain.
CDS-SW-10	5/10/18	12:00:00 PM	PS & PGS	Rain event in past 7 days - 25mm	7.64	48.2	16.27	243	272.4	316	N	Rubbish and leaf litter, fauna, brown water. High turbidity due to rain.
CDS-SW-11	5/10/18	11:05:00 AM	PS & PGS	Rain event in past 7 days - 25mm	7.34	38.8	15.54	206	276.9	361	N	Flowing , fauna, frothy scum visible, dark green water. High turbidity due to rain.
CDS-SW-12	5/10/18	9:30:00 AM	PS & PGS	Rain event in past 7 days - 25mm	6.77	45.5	16.06	269	97	3070	N	Dark brown. High turbidity due to rain.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

October 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	ES1829641-001	7.13	16	216	0.09	0.009	<0.001	<0.0001	0.001	0.007	<0.001	<0.001	0.068	<0.00004	<0.05	1.6	0.7	0.23
CDS-SW-02	ES1829641-004	6.65	50	1700	0.09	0.02	0.001	<0.0001	<0.001	0.008	0.003	0.002	0.096	<0.00004	0.26	1.5	1.1	0.26
CDS-SW-03	ES1829641-002	7.64	84	302	0.1	0.006	0.002	<0.0001	0.014	0.01	0.002	<0.001	0.034	<0.00004	<0.05	2.2	0.9	0.11
CDS-SW-05	ES1829641-003	7.22	36	817	0.17	0.012	0.002	<0.0001	0.001	0.005	0.002	<0.001	0.034	<0.00004	<0.05	3.4	1.9	0.69
CDS-SW-06	ES1829641-011	7.15	45	779	0.15	0.012	0.001	<0.0001	<0.001	0.004	0.001	0.001	0.022	<0.00004	0.06	2.8	1.5	0.36
CDS-SW-07	ES1829641-012	7.14	33	4420	0.15	0.015	0.001	<0.0001	<0.001	0.003	0.001	0.002	0.029	<0.00004	<0.05	3.4	2.2	0.88
CDS-SW-08	ES1829641-009	7.88	12	659	0.23	0.018	<0.001	<0.0001	0.002	0.006	0.001	0.001	0.028	<0.00004	<0.05	3.3	1	0.05
CDS-SW-09	ES1829641-008	7.69	21	530	0.1	0.008	<0.001	<0.0001	0.001	0.006	0.001	<0.001	0.032	<0.00004	<0.05	3.8	0.8	0.04
CDS-SW-10	ES1829641-006	7.29	19	364	0.15	0.009	<0.001	<0.0001	0.001	0.005	0.002	0.001	0.031	<0.00004	<0.05	2.5	0.8	0.12
CDS-SW-11	ES1829641-007	7.06	16	281	0.21	0.012	<0.001	<0.0001	<0.001	0.006	0.002	0.001	0.051	<0.00004	0.06	3.8	1.8	0.5
CDS-SW-12	ES1829641-010	7.37	21	3440	<0.05	0.094	<0.001	<0.0001	<0.001	0.002	<0.001	0.002	0.023	<0.00004	0.08	2.3	1.4	0.59

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

October 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	ES1829641-001	0.03	0.86	0.1	0.07	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1829641-004	0.02	0.35	0.16	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1829641-002	0.04	1.24	0.18	0.04	6	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1829641-003	0.03	1.5	0.25	0.12	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1829641-011	0.03	1.27	0.21	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1829641-012	0.04	1.18	0.31	0.09	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08	ES1829641-009	0.06	2.25	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-09	ES1829641-008	0.02	3.02	0.08	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-10	ES1829641-006	0.02	1.66	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1829641-007	0.04	1.99	0.16	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1829641-010	0.09	0.79	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

November 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	9/11/18	7:31:00 AM	PS & PGS	Rain event in past 24hrs - 17mm	7.31	3.6	19.07	297	83.1	554	Y	Sunny, clear water, water flowing, orange staining on sides of canal.
CDS-SW-02	9/11/18	11:00:00 AM	PS & PGS	Rain event in past 24hrs - 17mm	8.14	11.5	20.99	221	226.3	21400	N	Leaf litter, flowing water, high tide running out.
CDS-SW-03	9/11/18	8:52:00 AM	PS & PGS	Rain event in past 24hrs - 17mm	8.52	76.6	20.9	233	100.2	385	Y	No flow, sediment on bottom, shallow brown water, investigation triggered due to high NTU, visible oil and elevated pH.
CDS-SW-05	9/11/18	11:40:00	PS & PGS	Rain event in past 24hrs - 17mm	8.38	8.6	21.27	200	137.6	40700	N	High tide running out, clear water light breeze.
CDS-SW-06	9/11/18	3:10:00 PM	PS & PGS	Rain event in past 24hrs - 17mm	8.12	5.9	21.8	195	47.3	34300	N	Flowing water, windy, clear.
CDS-SW-07	9/11/18	3:40:00 PM	PS & PGS	Rain event in past 24hrs - 17mm	8.33	10.2	20.86	189	277.4	40300	N	Flowing water, windy, clear.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	9/11/18	1:30:00 PM	PS & PGS	Rain event in past 24hrs - 17mm	9.22	3.1	23.06	158	147.5	2080	N	Rubbish, flowing water, low water level, odour present.
CDS-SW-11	9/11/18	12:00:00 PM	PS & PGS	Rain event in past 24hrs - 17mm	8.42	9.7	17.9	181	251.7	459	N	Flowing water, fauna (ducks), scum visible on surface, leaf litter.
CDS-SW-12	9/11/18	3:00:00 PM	PS & PGS	Rain event in past 24hrs - 17mm	8.39	5.1	21.26	206	107.3	22200	N	Tide running out, light breeze, clear water.

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

November 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	ES1833679-001	7.76	2.6	565	0.22	0.016	<0.001	<0.0001	<0.001	0.007	<0.001	0.001	0.031	<0.00004	0.07	2.4	0.4	0.23
CDS-SW-02	ES1833679-004	7.59	14	23900	<0.05	0.044	0.002	<0.0001	<0.001	0.004	<0.001	0.001	0.049	<0.00004	<0.05	2.6	2.3	0.55
CDS-SW-03	ES1833679-002	8.24	30	390	0.08	0.01	0.003	<0.0001	<0.001	0.006	0.001	0.002	0.027	<0.00004	<0.05	1.1	0.5	0.49
CDS-SW-05	ES1833679-003	7.5	7	45700	<0.10	0.022	<0.01	0.001	<0.010	<0.01	<0.01	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.13
CDS-SW-06	ES1833679-009	7.67	12	37900	<0.10	0.036	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.25
CDS-SW-07	ES1833679-0010	7.75	11	44500	<0.10	0.024	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.2
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1833679-006	8.78	8	2260	0.09	0.018	<0.001	<0.0001	0.008	0.006	<0.001	0.002	0.014	<0.00004	0.06	1.2	0.5	0.17
CDS-SW-11	ES1833679-007	7.08	34	255	0.48	0.031	<0.001	<0.0001	<0.001	0.004	0.002	<0.001	0.039	<0.00004	0.48	0.4	<0.2	0.1
CDS-SW-12	ES1833679-008	7.27	13	24900	<0.05	0.576	<0.001	<0.0001	<0.001	0.002	<0.001	0.002	0.011	<0.00004	<0.05	3.1	2.1	2.07

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

November 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	ES1833679-001	0.03	1.97	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1833679-004	0.03	0.3	0.06	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1833679-002	0.06	0.58	0.1	0.07	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1833679-003	<0.01	0.06	0.07	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1833679-009	0.01	0.06	0.12	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1833679-0010	0.01	0.08	0.45	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1833679-006	0.13	0.52	0.05	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1833679-007	<0.01	0.38	0.09	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1833679-008	0.19	0.84	<0.05	<0.01	<5	<20	380	<100	<100	<1	<2	<2	<2	<5	LOR raised for Total P on ES2833679-008 due to sample matrix. Nitrogen exceedance - sewerage water overflow due to 17mm of rainfall.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

December 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	7/12/18	9:30:00 AM	PS & RP	Light breeze, clear, sunny	6.49	7.9	20.4	289	305.6	703	N	Clear, no odour, iron oxide staining visible.
CDS-SW-02	7/12/18	9:45:00 AM	PS & RP	Light breeze, clear, sunny	7.9	8.7	21.93	224	137.7	40500	N	Tide running out, leaf litter, no odour.
CDS-SW-03	7/12/18	11:00:00 AM	PS & RP	Light breeze, clear, sunny	9.8	39	26.65	134	149.4	615	N	Flowing water, high pH, litter, no odour.
CDS-SW-05	7/12/18	10:00:00 AM	PS & RP	Light breeze, clear, sunny	8.01	7.2	21.57	195	236.1	49100	N	Tide running out, leaf litter, no odour.
CDS-SW-06	7/12/18	12:20:00 PM	PS & RP	Windy	8.08	9.8	21.58	200	251.4	47900	N	Tide running out, leaf litter, no odour.
CDS-SW-07	7/12/18	12:45:00 PM	PS & RP	Windy	8.26	8	21.64	187	309	50100	N	Tide running out, leaf litter, no odour.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	7/12/18	2:10:00 PM	PS & RP	Light breeze, clear, sunny	10.05	25	28.62	82	156.5	2950	N	Light brown colour, odour, leaf and plastic litter, high pH.
CDS-SW-11	7/12/18	1:15:00 PM	PS & RP	Light breeze, clear, sunny	7.77	12.6	21.72	196	177.2	2240	N	Light brown, fauna, scum observed downstream of sampling location.
CDS-SW-12	7/12/18	12:10:00 PM	PS & RP	Windy	8.27	4.9	21.7	192	231.8	33700	N	Tide running out, leaf litter, no odour.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

December 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	ES1837047-001	7.4	19	612	0.14	0.018	0.001	<0.0001	<0.001	0.005	<0.001	0.001	0.016	0.00049	<0.05	3	0.9	0.27
CDS-SW-02	ES1837047-004	7.7	10	37400	<0.10	0.028	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00059	<0.05	0.8	0.7	0.12
CDS-SW-03	ES1837047-002	9.32	20	488	0.08	0.005	0.001	<0.0001	0.008	0.01	0.001	0.002	0.009	0.00006	0.07	0.5	0.3	0.09
CDS-SW-05	ES1837047-003	7.77	15	45700	<0.10	0.019	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.0004	<0.05	0.8	0.7	0.15
CDS-SW-06	ES1837047-009	7.84	<5	42900	<0.10	0.017	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.09
CDS-SW-07	ES1837047-0010	7.97	<5	45100	<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	0.12
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1837047-006	9.58	11	2770	0.08	0.019	<0.001	<0.0001	0.01	0.017	<0.001	0.001	0.009	0.00006	0.07	1.3	0.9	0.19
CDS-SW-11	ES1837047-007	7.12	16	1350	0.35	0.203	<0.001	<0.0001	<0.001	0.002	<0.001	0.002	0.009	<0.00004	0.32	2	1.9	1.19
CDS-SW-12	ES1837047-008	7.51	<5	28800	<0.10	0.345	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	1.3	1.1	0.98

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

December 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	ES1837047-001	0.14	1.92	0.15	0.05	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1837047-004	0.01	0.13	0.07	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1837047-002	0.04	0.18	0.09	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	No discharge occuring at Camdenville Basin or Cambell Road. Exceedances are not attributed to Project related activities.
CDS-SW-05	ES1837047-003	<0.01	0.11	0.06	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1837047-009	<0.01	0.05	0.07	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1837047-0010	<0.01	0.02	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1837047-006	0.15	0.21	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	No discharge occuring from Bexley or Kingsgrove at time of sampling. Upstream samples show also show high pH & electrical conductivity. Exceedances are not attributed to Project related activities.
CDS-SW-11	ES1837047-007	0.02	0.11	0.21	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1837047-008	0.09	0.08	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

January 2019

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	21/01/19	11:30:00 AM	PS & RP	Rain event in past 7 days - 10.4mm. Iron precipitate observed on canal wall and base	8.08	20.2	24.93	191	82.9	1120	Y	Water flowing, algae observed on canal walls, water pale brown yellow.
CDS-SW-02	21/01/19	11:00:00 AM	PS & RP	Rain event in past 7 days - 10.4mm	8.01	10.7	25.45	181	98.9	35300	N	Leaf litter, high tide running out.
CDS-SW-03	21/01/19	12:05:00 PM	PS & RP	Rain event in past 7 days - 10.4mm	8.97	14.1	27.05	183	158.2	1090	N	Low flow in canal due to slight breeze.
CDS-SW-05	21/01/19	12:25:00 PM	PS & RP	Rain event in past 7 days - 10.4mm	7.86	12.5	25.83	174	272.7	46200	N	Tide running out, leaf litter.
CDS-SW-06	21/01/19	10:40:00 AM	PS & RP	Rain event in past 7 days - 10.4mm - construction activities observed upstream of sampling location	8.07	5.4	24.78	152	55..3	49400	N	Full tide running out, water clear.
CDS-SW-07	21/01/19	10:10:00 AM	PS & RP	Rain event in past 7 days - 10.4mm	6.06	3.5	23.64	173	245.9	48600	N	Full tide running out, clear water, no watercraft using boat ramp at time of sampling.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	21/01/19	2:40:00 PM	PS & RP	Rain event in past 7 days - 10.4mm	8.87	5.1	25.71	131	111.3	4880	N	Light organic odour, stream flowing.
CDS-SW-11	21/01/19	1:40:00 PM	PS & RP	Rain event in past 7 days - 10.4mm	6.8	35.8	25.45	12	48.1	4830	N	Water flowing, fauna present (ducks), scum on surface of water.
CDS-SW-12	21/01/19	10:30:00 AM	PS & RP	Rain event in past 7 days - 10.4mm - construction activities observed upstream of sampling location	7.97	6.6	24.46	181	212.2	49800	N	Full tide running out, water clear.

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

January 2019

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	ES1902084-001	7.86	<5	891	0.1	0.01	0.001	<0.0001	<0.001	0.005	<0.001	0.001	0.033	0.0001	<0.05	3.4	0.8	0.13
CDS-SW-02	ES1902084-004	7.88	20	35700	<0.10	0.03	<0.010	0.001	<0.010	<0.010	<0.010	<0.010	<0.050	0.00004	<0.05	0.7	0.5	0.08
CDS-SW-03	ES1902084-002	6.28	16	1120	<0.05	0.006	0.001	<0.0001	0.005	0.005	<0.001	0.001	0.011	0.00017	<0.05	1.5	1	0.51
CDS-SW-05	ES1902084-003	7.67	22	48200	<0.10	0.015	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.7	0.6	0.25
CDS-SW-06	ES1902084-009	8.05	9	52100	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.01	<0.050	0.00004	<0.05	0.3	0.3	0.26
CDS-SW-07	ES1902084-010	7.9	10	51800	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00108	<0.05	0.4	0.4	0.31
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1902084-006	8.18	13	5260	0.09	0.059	0.001	<0.0001	0.003	0.013	0.003	0.001	0.028	<0.00004	0.06	1.6	1	0.22
CDS-SW-11	ES1902084-007	7.25	24	5270	2.8	0.348	<0.001	<0.0001	<0.001	<0.001	<0.001	0.002	<0.005	<0.00004	3.46	1.9	1.8	1.05
CDS-SW-12	ES1902084-008	7.95	8	52300	<0.10	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00006	<0.05	0.4	0.4	0.15

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

January 2019

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	ES1902084-001	0.14	2.46	0.15	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1902084-004	0.01	0.23	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1902084-002	0.06	0.42	0.12	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1902084-003	<0.01	0.09	0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1902084-009	<0.01	0.01	0.04	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1902084-010	<0.01	0.02	0.03	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	Positive Hg result for ES1902084-010 has been reconfirmed by reanalysis.
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1902084-006	0.12	0.46	0.02	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1902084-007	0.02	0.04	0.15	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1902084-008	<0.01	0.04	0.04	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

February 2019

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	7/02/19	2:20:00 PM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	8.3	3.9	25.01	155	162.7	1080	N	Creek flowing, algae and iron precipitate observed along canal walls/base.
CDS-SW-02	7/02/19	1:00:00 PM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	8.04	13.6	27.16	163	189.6	41600	N	High tide running out, sunny, leaf litter observed.
CDS-SW-03	7/02/19	3:10:00 PM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	9.76	38	34.04	101	116	615	N	Creek flowing, some leaf litter observed.
CDS-SW-05	7/02/19	2:40:00 PM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	7.98	12.6	27.37	169	72	41500	N	Leaf litter observed during run out tide.
CDS-SW-06	7/02/19	11:50:00 AM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	8.03	6	25.93	151	62.8	46900	N	-
CDS-SW-07	7/02/19	12:30:00 PM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	8.04	2.8	24.82	164	141	49100	N	High tide running out, strong winds, leaf litter observed.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	7/02/19	10:30:00 AM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	7.07	5.5	24.35	206	274	16800	N	Water flowing with litter present within creek.
CDS-SW-11	7/02/19	11:15:00 AM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport), Sunny 31 degrees	7.62	12.6	25.65	155	224.9	3630	Y	Water flowing, leaf litter and fauna (ducks and geese) present.
CDS-SW-12	7/02/19	11:40:00 AM	PS & RP	Rain event in past 24hrs - 0.6mm on 06/02 (BOM - Sydney Airport). Construction works observed to the west of sample location with no visible ECSC.	7.82	7.5	25.84	149	84.3	45900	N	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

February 2019

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	ES1904007-001	8.21	5	703	0.24	0.008	0.001	<0.0001	<0.001	0.006	<0.001	<0.001	0.02	<0.00004	<0.05	3.4	0.6	0.12
CDS-SW-02	ES1904007-004	8.06	12	41400	0.11	0.016	<0.010	<0.0010	<0.001	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.13
CDS-SW-03	ES1904007-002	9.02	25	561	0.14	0.004	0.002	<0.0001	0.004	0.007	<0.001	<0.001	0.008	<0.00004	<0.05	0.5	0.2	0.22
CDS-SW-05	ES1904007-003	8.07	11	41900	0.36	0.022	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	<0.10
CDS-SW-06	ES1904007-009	7.96	12	47300	0.24	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00005	<0.05	<0.5	<0.5	<0.10
CDS-SW-07	ES1904007-010	8.21	8	49900	0.13	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	<0.10
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1904007-006	8.07	6	17300	0.1	0.39	<0.001	<0.0001	<0.001	0.002	<0.001	0.002	0.008	0.00039	<0.05	1.3	1.0	0.77
CDS-SW-11	ES1904007-007	7.45	10	3530	1.2	0.24	<0.001	<0.0001	<0.001	0.002	<0.001	0.002	0.033	0.00006	0.18	0.6	0.5	0.56
CDS-SW-12	ES1904007-008	8.01	8	46700	0.22	0.015	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	0.00006	<0.05	<0.5	<0.5	<0.10

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

February 2019

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	ES1904007-001	0.07	2.78	0.06	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1904007-004	<0.01	0.06	0.1	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.
CDS-SW-03	ES1904007-002	0.04	0.28	0.06	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.
CDS-SW-05	ES1904007-003	<0.01	0.07	0.11	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1904007-009	<0.01	0.08	<0.05	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1904007-010	<0.01	0.06	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1904007-006	0.09	0.21	0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1904007-007	0.03	0.11	0.06	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.
CDS-SW-12	ES1904007-008	<0.01	0.04	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

March 2019

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	12/03/19	2:35:00 PM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	9.93	5.9	25.81	85	104	1940	N	Slow creek flow, no odour or colour.
CDS-SW-02	12/03/19	12:45:00 PM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	10.79	8.5	26.87	15	116.3	44100	N	Slow river flow during run out tide.
CDS-SW-03	12/03/19	1:10:00 PM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	10.87	7.6	29.78	55	145.3	1190	N	Slow flow, low water level.
CDS-SW-05	12/03/19	2:15:00 PM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	9.96	11.3	27.38	30	159.1	45900	N	Slow river flow during run out tide.
CDS-SW-06	12/03/19	11:50:00 AM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	11.25	5.7	25.92	-29	99.6	47300	N	Slow river flow, tide coming in.
CDS-SW-07	12/03/19	11:30:00 AM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	10.87	3.1	25.31	4	82.4	47800	N	Slow water flow, tide coming in, high watercraft activity in vacinity of sampling location.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	12/03/19	9:50:00 AM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	7.41	4.9	23.68	136	150.6	13100	N	Slow creek flow, no odour or colour.
CDS-SW-11	12/03/19	11:30:00 AM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	10.11	8.1	24.5	29	114	3100	N	Slow creek flow, tannin stained water, no odour.
CDS-SW-12	12/03/19	12:00:00 PM	RP & CB	Rain event in past 7 days - 3.6mm on 10/03	10.8	5.6	25.98	3	94.5	46200	N	Slow river flow, tide coming in.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

March 2019

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	ES1907654-001	7.68	6	770	0.51	0.053	0.002	<0.0001	<0.001	0.005	<0.001	<0.001	0.027	<0.00004	<0.05	3.2	1.2	0.29
CDS-SW-02	ES1907654-004	7.52	10	48200	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.04
CDS-SW-03	ES1907654-002	8.54	6	533	0.15	0.002	<0.001	<0.0001	0.005	0.006	<0.001	<0.001	0.01	<0.00004	0.05	2.2	1.7	1.08
CDS-SW-05	ES1907654-003	7.75	10	52100	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.05
CDS-SW-06	ES1907654-009	7.68	9	51700	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.08
CDS-SW-07	ES1907654-010	7.7	12	53400	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.12
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1907654-006	7.17	5	14600	0.15	0.149	<0.001	<0.0001	0.002	0.002	<0.001	0.001	0.017	<0.00004	<0.05	1.2	0.7	0.74
CDS-SW-11	ES1907654-007	7.1	10	3210	0.98	0.172	<0.001	<0.0001	<0.001	0.002	<0.001	<0.001	0.026	<0.00004	0.23	0.9	0.7	0.46
CDS-SW-12	ES1907654-008	7.49	6	50800	<0.050	0.015	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<1.0	<1.0	0.14

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

March 2019

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	ES1907654-001	0.13	1.92	0.15	0.09	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1907654-004	0.01	0.11	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1907654-002	0.04	0.44	0.46	0.12	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1907654-003	<0.01	0.04	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1907654-009	<0.01	0.03	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1907654-010	<0.01	0.13	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1907654-006	0.16	0.32	0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.
CDS-SW-11	ES1907654-007	0.04	0.15	0.04	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1907654-008	0.01	0.07	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

April 2019

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	16/04/19	2:00:00 PM	CB & RP	-	8.27	7.2	21.88	208	139.2	548	N	Medium water flow, no odour, algae and iron oxidation observed within channel, sediment observed in drainage line.
CDS-SW-02	16/04/19	9:55:00 AM	CB & RP	-	7.61	5.7	20.64	189	159.8	33000	N	Low tide, no fauna, no wind, no litter or erosion visible, slow water flow.
CDS-SW-03	16/04/19	1:20:00 PM	CB & RP	-	9.95	11.7	25.26	130	181.1	593	N	Very slow/stagnant water, no odour, silt observed in drainage line (not attributed to Project related activities).
CDS-SW-05	16/04/19	10:35:00 AM	CB & RP	-	8.1	10	21.01	186	121.1	37600	N	Low tide, no fauna, no wind, no litter or erosion visible, slow water flow.
CDS-SW-06	17/04/19	8:45:00 AM	RP	-	8.06	0	21.2	175	114.8	39000	N	No erosion or litter observed. Marine fauan observed in surrounding area. Calm surface conditions due to little to no wind at time of sampling.
CDS-SW-07	17/04/19	9:20:00 AM	RP	Marine craft (small runabout - <6m) launched prior to sampling	8.35	0	22.19	140	109	40700	N	No erosion or litter observed. Large amount of fry and jellyfish around jetty. Calm surface conditions due to little to no wind at time of sampling.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	16/04/19	12:45:00 PM	CB & RP	-	9.04	2	22.33	169	174.6	9530	N	Low tide, no fauna, no wind, no litter or erosion visible, slow water flow.
CDS-SW-11	16/04/19	11:35:00 AM	CB & RP	-	8.02	2.3	20.24	191	184.4	1580	N	Low tide, no wildlife activity, no wind, litter observed, no erosion visible.
CDS-SW-12	17/04/19	8:20:00 AM	RP	ARN2 discharging at the time of sampling. No visual indicators of non-compliance identified during sampling.	7.07	0	20.83	212	89.6	27200	N	No erosion or litter observed. Marine faua observed in surrounding area. Calm surface conditions due to little to no wind at time of sampling.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

April 2019

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	ES1911894-007	8.21	144	532	<0.05	0.004	0.001	<0.0001	<0.001	0.005	<0.001	0.002	0.02	<0.00004	<0.05	3.2	1	0.26
CDS-SW-02	ES1911894-001	7.44	6	35700	<0.50	0.023	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	0.9	0.6	0.25
CDS-SW-03	ES1911894-006	8.9	<5	371	<0.05	0.002	<0.001	<0.0001	0.014	0.007	<0.001	<0.001	<0.005	<0.00004	<0.05	1.1	0.6	0.1
CDS-SW-05	ES1911894-002	7.8	5	40900	<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	<0.05
CDS-SW-06	ES1912061-001	7.74	<5	48500	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.14
CDS-SW-07	ES1912061-002	7.86	5	49800	<0.50	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	<0.5	<0.5	0.11
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1911894-005	8.08	<5	11400	<0.05	0.185	<0.001	<0.0001	0.002	0.003	<0.001	0.001	0.008	<0.00004	<0.05	1.7	1	0.51
CDS-SW-11	ES1911894-003	7.91	<5	1620	<0.05	0.101	<0.001	<0.0001	<0.001	0.001	<0.001	0.001	0.016	<0.00004	0.07	1.5	1	0.32
CDS-SW-12	ES1912061-003	7.68	<5	33100	<0.50	0.055	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.00004	<0.05	2.7	2.2	2.23

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

April 2019

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	ES1911894-007	0.24	1.95	0.67	0.54	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1911894-001	0.03	0.3	<0.05	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1911894-006	0.06	0.48	<0.01	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1911894-002	<0.01	0.04	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1912061-001	<0.01	0.14	<0.05	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1912061-002	<0.01	0.08	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1911894-005	0.14	0.56	0.1	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1911894-003	0.06	0.44	<0.01	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1912061-003	0.17	0.32	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

May 2019

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	8/05/19	1:45:00 PM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.07	3.7	19.23	179	93.2	856	N	WSW 24km/h, sunny, calm breeze, light yellow in colour, iron precipitation on canal + sheen (appeared more like a detergent rather than a hydrocarbon).
CDS-SW-02	8/05/19	1:10:00 PM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.3	21.6	19.45	177	124.5	46800	N	WSW 26km/h, sunny, calm breeze, tide flowing out, some leaf litter observed, clear-light yellow tinge in colour, no visible erosion / siltration.
CDS-SW-03	8/05/19	10:35:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.37	9.1	18.9	216	116	302	N	W32km/h, sunny, no colour, no litter, no erosion/siltation observed, low trickle flow.
CDS-SW-05	8/05/19	11:00:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.01	9.7	18.44	207	111.9	47400	N	W32km/h, sunny, no colour, no litter, no erosion/siltation observed, low trickle flow.
CDS-SW-06	8/05/19	11:35:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.22	6.2	18.69	201	94.7	49700	N	W39km/h. sunny, no colour, no litter, no erosion/siltation, tide running out, no construction activities nearby, water birds observed.
CDS-SW-07	8/05/19	12:45:00 PM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.31	3.8	19.31	173	131.4	51200	N	WSW 57km/h, sunny, clear, strong breeze, no litter observed, no erosion/siltation, tide running out, small fish observed.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	8/05/19	9:00:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	7.82	6.1	13.38	213	135.5	5010	N	SW11km/h, overcast, no colour, no litter observed, no erosion/siltation observed, low trickle / flow.
CDS-SW-11	8/05/19	9:55:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	7.39	7.5	13.99	175	59.2	1930	N	NW 20km/h, overcast, no colour, no litter observed, no erosion/siltation, normal stream flow through weir, fauna present.
CDS-SW-12	8/05/19	11:25:00 AM	RP & MW	Rain event in past 7 days - 6mm (05/05)	8.27	5.5	18.58	190	104.5	51100	N	W30km/h, sunny, no colour, no litter, no erosion/siltation, low trickle flow, construction observed north of site (scaffolding), water birds observed.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

May 2019

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	ES1914072-001	7.61	<5	701	0.12	0.02	0.001	<0.0001	<0.001	0.007	<0.001	0.002	0.029	<0.00004	<0.05	3.9	1.4	0.58
CDS-SW-02	ES1914072-002	7.54	12	45000	<0.05	0.019	0.002	0.0001	<0.001	0.003	<0.001	<0.001	0.022	<0.00004	<0.05	2.7	0.9	0.3
CDS-SW-03	ES1914072-003	8.47	20	270	<0.05	0.004	<0.001	<0.0001	0.004	0.006	<0.001	<0.001	0.008	<0.00004	<0.05	1.7	1.2	0.89
CDS-SW-05	ES1914072-004	7.89	21	46100	<0.05	0.014	0.002	<0.0001	<0.001	0.002	<0.001	<0.001	0.012	<0.00004	<0.05	<0.5	<0.5	0.29
CDS-SW-06	ES1914072-005	7.69	5	47700	<0.05	0.01	0.002	<0.0001	<0.001	0.002	<0.001	<0.001	0.026	<0.00004	<0.05	0.9	0.7	0.4
CDS-SW-07	ES1914072-006	7.94	<5	50100	<0.05	0.006	0.002	<0.0001	<0.001	0.003	<0.001	<0.001	0.009	<0.00004	<0.05	<1.0	<1.0	0.31
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1914072-007	8.08	59	5080	0.15	0.047	<0.001	<0.0001	0.001	0.005	<0.001	0.001	0.013	<0.00004	0.09	1.4	1.1	0.41
CDS-SW-11	ES1914072-008	7.53	8	1840	0.48	0.194	<0.001	<0.0001	<0.001	0.003	<0.001	0.002	0.043	<0.00004	0.29	1.6	1.4	0.73
CDS-SW-12	ES1914072-009	7.91	16	60200	<0.05	0.007	0.002	<0.0001	<0.001	0.002	<0.001	0.001	0.008	<0.00004	<0.05	<1.0	<1.0	0.25

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

May 2019

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	ES1914072-001	0.2	2.26	0.14	0.11	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1914072-002	0.02	1.82	0.06	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1914072-003	0.07	0.41	0.02	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1914072-004	0.02	0.08	<0.05	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1914072-005	<0.01	0.24	<0.05	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1914072-006	0.01	0.19	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1914072-007	0.07	0.28	0.04	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1914072-008	0.05	0.17	0.06	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1914072-009	<0.01	0.17	<0.10	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken

Estuarine

Above trigger level

Freshwater

June 2019

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	18/06/19	8:35:00 AM	RP & CB	Rain event in past 3 days - 63mm. Raining at time of sampling.	7.15	232	16.89	214	183.1	543	N	WSW 4km/h, light rain at time of sampling, calm breeze, water clarity turbid, steady strem flow.
CDS-SW-02	18/06/19	11:20:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.77	55.1	15.92	251	110.9	4240	N	WSW 9km/h, sunny, calm breeze, tide flowing out, water visually turbid, no visible erosion / siltration.
CDS-SW-03	18/06/19	9:05:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.69	117	14.69	277	125.4	285	N	W11km/h, cloudy, stagnant water, visually turbid, no litter, no erosion/siltation observed, no odour.
CDS-SW-05	18/06/19	9:25:00 AM	RP & CB	Rain event in past 3 days - 63mm. Raining at time of sampling.	7.16	28.5	14.11	281	125.4	15500	N	W10km/h, light rainfall , no colour, no litter, no erosion/siltation observed, slow trickle flow.
CDS-SW-06	18/06/19	10:50:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.59	21.2	15.41	251	126.5	19400	N	WSW 9km/h. sunny, no colour, no litter, no erosion/siltation, tide running out, no construction activities nearby.
CDS-SW-07	18/06/19	10:05:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.26	31.6	14.53	271	136.4	15900	N	WSW 17km/h, cloudy, water clarity clear, no litter observed, no erosion/siltation, tide running out.
CDS-SW-08												No flow
CDS-SW-09	18/06/19	1:25:00 PM	RP & CB	Rain event in past 3 days - 63mm.	9.19	90	17.56	221	127.3	834	N	WSW 11km/h, cloudy, water clarity good, no litter observed, concrete lined swale, highly influenced by nearby residential properties.
CDS-SW-10	18/06/19	1:05:00 PM	RP & CB	Rain event in past 3 days - 63mm.	8.86	31.7	17.16	229	146.5	832	N	SW13km/h, overcast, good water clarity, lots of litter observed around monitoring location, no erosion/siltation observed, slow/ medium flow.
CDS-SW-11	18/06/19	11:50:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.78	35	14.85	264	128.9	267	N	WSW 11km/h, overcast, no colour, litter observed, no erosion/siltation, water flowing at a medium speed through weir.
CDS-SW-12	18/06/19	10:35:00 AM	RP & CB	Rain event in past 3 days - 63mm.	7.64	63.6	15.1	249	112.1	15800	N	W10km/h, overcast, discharge occuring from golf course stormwater outlet during sampling, construction workers upstream of sampling location on barge, no litter, tide going out.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

June 2019

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	ES1918800-001	7.81	92	500	0.1	0.041	0.002	<0.0001	<0.001	0.003	0.004	0.002	0.041	0.00045	0.05	4.2	1.1	0.4
CDS-SW-02	ES1918800-004	7.41	9	4140	0.09	0.018	0.002	<0.0001	0.001	<0.001	<0.001	<0.001	0.047	0.00011	0.05	1.6	0.7	0.55
CDS-SW-03	ES1918800-002	8.15	48	255	0.05	0.003	0.002	<0.0001	0.004	<0.001	<0.001	<0.001	0.005	0.00036	<0.05	2	0.6	0.14
CDS-SW-05	ES1918800-003	7.52	5	15000	<0.05	0.021	0.003	<0.0001	<0.001	<0.001	<0.001	0.002	0.034	0.00023	<0.05	1.6	0.7	0.35
CDS-SW-06	ES1918800-009	7.49	6	18400	0.12	0.018	0.003	<0.0001	<0.001	<0.001	<0.001	0.002	0.022	0.00013	<0.05	1.4	0.6	0.33
CDS-SW-07	ES1918800-010	7.45	5	14900	<0.05	0.018	0.008	<0.0001	<0.001	0.002	<0.001	0.001	0.026	<0.00004	<0.05	1.4	0.7	0.32
CDS-SW-08																		
CDS-SW-09	ES1918800-011	8.57	22	878	0.06	0.004	0.002	<0.0001	0.006	0.005	0.002	0.001	0.006	0.00004	<0.05	3.6	0.8	0.06
CDS-SW-10	ES1918800-006	7.93	12	905	<0.05	0.007	0.002	<0.0001	0.082	0.003	<0.001	0.001	0.009	0.00008	<0.05	3.2	0.6	0.14
CDS-SW-11	ES1918800-007	7.5	7	294	0.15	0.013	0.001	<0.0001	<0.001	0.001	<0.001	0.001	0.05	<0.00004	0.1	1.8	0.6	0.18
CDS-SW-12	ES1918800-008	7.48	24	15400	<0.05	0.016	0.003	<0.0001	<0.001	<0.001	<0.001	0.001	0.022	0.00005	<0.05	1.4	0.7	0.37

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

June 2019

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	ES1918800-001	0.05	3.08	0.26	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1918800-004	0.02	0.91	0.13	0.08	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1918800-002	0.05	1.31	0.12	0.06	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1918800-003	0.02	0.83	0.06	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1918800-009	0.02	0.83	0.05	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1918800-010	0.02	0.68	0.06	0.03	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09	ES1918800-011	0.03	2.73	0.07	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-10	ES1918800-006	0.02	2.53	0.04	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1918800-007	0.01	1.18	0.05	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1918800-008	0.02	0.64	0.06	0.02	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

July 2019

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	15/07/2019	10:25:00 AM	RP & CB	-	7.84	6.4	15.65	231	117.6	1570	N	WSW 33km/h, low flow, iron oxidation present on canal walls and base, algae also observed on base of canal.
CDS-SW-02	15/07/2019	10:05:00 AM	RP & CB	-	7.79	8.9	13.6	235	109.3	44500	N	WSW 32km/h, water turbid, no rubbish or erosion visible, fauna activity in the area.
CDS-SW-03	15/07/2019	10:56:00 AM	RP & CB	-	8.42	36.9	14.36	223	107.7	580	N	SW 37 km/h, stagnant/low flow, clear water.
CDS-SW-05	15/07/2019	9:40:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.68	5.7	13.24	243	118	47600	N	WSW 39 km/h, high tide running out, no wildlife activity, rubbish or erosion.
CDS-SW-06	15/07/2019	9:17:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.73	4.2	13.61	256	84.5	25600	N	WSW 33 km/h, high tide running out, lots of fauna activity near by, no rubbish or construction activity near by.
CDS-SW-07	15/07/2019	8:30:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.39	0.9	14.15	201	218.1	51700	N	WSW 33 km/h, high tide running out, windy, fauna activity around sampling area, no signs of erosion/rubbish around.
CDS-SW-08												No flow
CDS-SW-09												No flow
CDS-SW-10	15/07/2019	12:20:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.81	49.5	12.68	231	92.4	1120	N	SW 24 km/h, water visibly turbid - rubbish observed around creek banks, slow water flow, no fauna activity near by.
CDS-SW-11	15/07/2019	11:30:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.57	6.8	10.87	261	120.6	839	N	SW 43 km/h, water flowing through weir at steady flow, lots of leaf litter in creek, fauna activity around weir.
CDS-SW-12	15/07/2019	9:00:00 AM	RP & CB	Sydney water sewer main overflow into Wolli Creek east of Tallawalla Park in Kingsgrove. Advised by asset owner that impacts are potentially catchment wide.	7.75	3.9	13.77	231	99.8	50400	N	WSW 28 km/h, construction activity on bridge upstream of sampling location, fauna activity in nearby vacinity.

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

July 2019

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	ES1922036-001	7.55	8	706	0.13	0.029	<0.001	<0.0001	<0.001	0.004	<0.001	<0.001	0.015	<0.00004	<0.05	3.1	1	0.32
CDS-SW-02	ES1922036-004	7.79	7	34000	<0.05	0.014	0.004	<0.0001	<0.001	0.001	<0.001	<0.001	0.023	<0.00004	<0.05	<0.5	<0.5	<0.05
CDS-SW-03	ES1922036-002	8.23	18	533	<0.05	0.004	<0.001	<0.0001	0.037	0.003	<0.001	<0.001	<0.005	<0.00004	<0.05	2.3	1.2	0.53
CDS-SW-05	ES1922036-003	7.72	<5	36500	<0.05	0.01	0.002	<0.0001	<0.001	0.001	<0.001	<0.001	0.012	<0.00004	<0.05	<0.5	<0.5	0.08
CDS-SW-06	ES1922036-009	7.82	18	34600	<0.05	0.007	0.003	<0.0001	0.001	0.004	<0.001	<0.001	0.012	<0.00004	<0.05	<0.5	<0.5	<0.05
CDS-SW-07	ES1922036-010	7.94	5	36700	<0.05	0.002	0.004	<0.0001	<0.001	0.005	<0.001	<0.001	<0.005	<0.00004	<0.05	<0.5	<0.5	<0.05
CDS-SW-08																		
CDS-SW-09																		
CDS-SW-10	ES1922036-006	7.66	21	1190	0.22	0.223	<0.001	<0.0001	<0.001	0.022	<0.001	0.002	0.023	<0.00004	0.15	23.6	23.3	22
CDS-SW-11	ES1922036-007	7.44	9	890	0.37	0.092	<0.001	<0.0001	<0.001	0.022	<0.001	0.001	0.033	<0.00004	0.05	4	3	2.59
CDS-SW-12	ES1922036-008	7.75	<5	34600	<0.05	0.008	0.003	<0.0001	<0.001	0.002	<0.001	<0.001	0.012	<0.00004	<0.05	<0.5	<0.5	<0.05

Water monitoring not undertaken | Estuarine | Above trigger level

Freshwater

July 2019

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	ES1922036-001	0.19	1.91	0.07	0.04	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-02	ES1922036-004	<0.01	0.09	0.17	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-03	ES1922036-002	0.07	0.99	0.11	0.11	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-05	ES1922036-003	<0.01	0.14	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-06	ES1922036-009	<0.01	0.1	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-07	ES1922036-010	<0.01	0.08	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-08																
CDS-SW-09																
CDS-SW-10	ES1922036-006	0.08	0.2	1.89	1.18	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-11	ES1922036-007	0.08	0.94	0.07	0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-
CDS-SW-12	ES1922036-008	<0.01	0.1	<0.05	<0.01	<5	<20	<100	<100	<100	<1	<2	<2	<2	<5	-

Water monitoring not undertaken

Freshwater

Estuarine

Above trigger level

Appendix C: Australian Laboratory Services Certificate of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1832587**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 01-Nov-2018 12:00
Order number	: 4506808	Date Analysis Commenced	: 01-Nov-2018
C-O-C number	: ----	Issue Date	: 07-Nov-2018 17:55
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

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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	SPI-WTP	----	----	----	----
			Client sampling date / time	01-Nov-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1832587-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.43**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.8**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**176**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.18**	----	----	----	----
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	**0.019**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.043**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.56**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.35**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.91**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**8.4**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**9.3**	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1830505**	Page	: 1 of 4
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 15-Oct-2018 14:45
Order number	: 4506808	Date Analysis Commenced	: 15-Oct-2018
C-O-C number	: ----	Issue Date	: 22-Oct-2018 11:18
Sampler	: MIKAELA MALCOM		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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 on sample No 1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	WTP Oct	----	----	----	----
			Client sampling date / time	12-Oct-2018 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1830505-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.33**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**54**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**10.1**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**154**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.86**	----	----	----	----
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	**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.022**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.178**	----	----	----	----
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	**1.33**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.19**	----	----	----	----
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	**0.68**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**WTP Oct**	----	----	----	----
				Client sampling date / time	12-Oct-2018 13:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1830505-001**	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		<0.05	----	----	----	----
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	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1908725**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 21-Mar-2019 15:30
Order number	: 4506808	Date Analysis Commenced	: 21-Mar-2019
C-O-C number	: ----	Issue Date	: 25-Mar-2019 18:13
Sampler	: Roger Posgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	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.

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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	190321_ARN2	----	----	----	----
			Client sampling date / time	21-Mar-2019 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1908725-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.78**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**34**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**16.5**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**40.0**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.71**	----	----	----	----
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	**0.006**	----	----	----	----
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	**0.010**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.167**	----	----	----	----
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	**0.52**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**2.2**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.02	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1917497**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 07-Jun-2019 16:30
Order number	: 4506808	Date Analysis Commenced	: 07-Jun-2019
C-O-C number	: ----	Issue Date	: 14-Jun-2019 14:35
Sampler	: Roger Postgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	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	190604_ARN2	----	----	----	----
			Client sampling date / time	04-Jun-2019 11:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1917497-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.13**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.9**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**122**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.50**	----	----	----	----
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	**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.011**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.089**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.07**	----	----	----	----
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	**1.04**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**3.4**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1920492**	Page	: 1 of 3
Amendment	: **1**		
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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-Jul-2019 18:15
Order number	: 4506808	Date Analysis Commenced	: 02-Jul-2019
C-O-C number	: ----	Issue Date	: 10-Jul-2019 13:25
Sampler	: Roger Posgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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.

- It has been noted that Ammonia is greater than TKN for sample 1, however this difference is within the limits of experimental variation.
- Amendment (09/07/2019): This report has been amended and re-released to allow the reporting of additional analytical data and change sample ID.
- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	ARN2	----	----	----	----
			Client sampling date / time	02-Jul-2019 08:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1920492-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.55**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.8**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**173**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.04**	----	----	----	----
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	**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.005**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.029**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.686**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.09**	----	----	----	----
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	**3.97**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.56**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**3.8**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.19**	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1906723**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 05-Mar-2019 16:15
Order number	: 4506808	Date Analysis Commenced	: 05-Mar-2019
C-O-C number	: ----	Issue Date	: 11-Mar-2019 18:31
Sampler	: ROGER POSGATE		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	190304_BED	----	----	----	----
				Client sampling date / time	04-Mar-2019 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1906723-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.48**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		**2.0**	----	----	----	----
EA075: Redox Potential									
Redox Potential	----	0.1	mV		**155**	----	----	----	----
pH Redox	----	0.01	pH Unit		**7.12**	----	----	----	----
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		**0.002**	----	----	----	----
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		**0.020**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.158**	----	----	----	----
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		**0.79**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**1.1**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.02	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1916314**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 28-May-2019 16:00
Order number	: 4506808	Date Analysis Commenced	: 28-May-2019
C-O-C number	: ----	Issue Date	: 03-Jun-2019 16:37
Sampler	: Roger Posgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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 on sample No 1 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	190527_BED1	----	----	----	----
			Client sampling date / time	27-May-2019 10:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1916314-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.85**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.5**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**138**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.45**	----	----	----	----
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	**0.012**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.005**	----	----	----	----
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	**0.018**	----	----	----	----
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	**1.11**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.8**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.02	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1916705**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 31-May-2019 10:00
Order number	: 4506808	Date Analysis Commenced	: 31-May-2019
C-O-C number	: ----	Issue Date	: 07-Jun-2019 13:50
Sampler	: Roger Posgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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	190530_BED1	----	----	----	----
			Client sampling date / time	30-May-2019 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1916705-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.83**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.5**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**197**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.56**	----	----	----	----
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	**0.002**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
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	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.072**	----	----	----	----
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	**0.92**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.08**	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1917496**	Page	: 1 of 3
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 06-Jun-2019 16:30
Order number	: 4506808	Date Analysis Commenced	: 07-Jun-2019
C-O-C number	: ----	Issue Date	: 13-Jun-2019 15:50
Sampler	: Rodger Postgate		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	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	190606_BED1	----	----	----	----
			Client sampling date / time	06-Jun-2019 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1917496-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.82**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**0.5**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**112**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.36**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
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	**0.090**	----	----	----	----
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	**0.82**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.1**	----	----	----	----
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	: **ES1825956**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 03-Sep-2018 14:30
Order number	: 4506808	Date Analysis Commenced	: 04-Sep-2018
C-O-C number	: ----	Issue Date	: 07-Sep-2018 15:57
Sampler	: PS & PJS		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 9		
No. of samples analysed	: 9		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	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.

- EK061G/EK067G/EK062G:: LOR raised for TKN, Total P & TN on various samples due to sample matrix.
- EG035: Positive Hg result for ES1825956 #1 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)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	US
			Client sampling date / time	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00
Compound	CAS Number	LOR	Unit	ES1825956-001	ES1825956-002	ES1825956-003	ES1825956-004	ES1825956-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.00**	**8.48**	**7.92**	**7.87**	**8.06**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**609**	**287**	**51000**	**43900**	**52300**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**29**	**32**	**13**	**6**	**9**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**35.9**	**29.5**	**3.8**	**3.1**	**2.3**
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	**0.008**	**0.006**	<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	**0.012**	<0.005	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.010**	**0.006**	<0.010	**0.020**	<0.010
Iron	7439-89-6	0.05	mg/L	**0.09**	**0.06**	<0.10	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00011**	<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	**0.68**	**0.47**	**0.24**	**1.69**	**0.17**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.17**	**0.07**	**0.02**	**0.04**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.10**	**0.23**	**0.16**	**0.42**	**0.27**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.27**	**0.30**	**0.18**	**0.46**	**0.27**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.4**	**1.1**	<1.0	**2.6**	<1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.7**	**1.4**	<1.0	**3.1**	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	US
				Client sampling date / time	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00
Compound	CAS Number	LOR	Unit		ES1825956-001	ES1825956-002	ES1825956-003	ES1825956-004	ES1825956-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.24**	**0.15**	<0.10	**0.16**	**0.10**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.08**	**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	%		**112**	**107**	**118**	**114**	**118**
Toluene-D8	2037-26-5	2	%		**104**	**103**	**103**	**115**	**106**
4-Bromofluorobenzene	460-00-4	2	%		**102**	**102**	**101**	**109**	**103**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	DS	Turella	Bexley	AS	----
			Client sampling date / time	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	----
Compound	CAS Number	LOR	Unit	ES1825956-006	ES1825956-007	ES1825956-008	ES1825956-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.11**	**7.63**	**8.37**	**7.86**	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**54300**	**5190**	**3630**	**41600**	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	**18**	**46**	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**1.5**	**2.5**	**6.0**	**3.6**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.001	**0.001**	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0001	<0.0001	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.001	**0.024**	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	**0.002**	**0.004**	<0.010	----
Nickel	7440-02-0	0.001	mg/L	<0.010	**0.001**	**0.001**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	----
Zinc	7440-66-6	0.005	mg/L	<0.050	**0.026**	**0.005**	<0.050	----
Manganese	7439-96-5	0.001	mg/L	<0.010	**0.090**	**0.024**	**0.179**	----
Iron	7439-89-6	0.05	mg/L	<0.10	**0.06**	**0.06**	<0.10	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.05**	**0.31**	**0.70**	**0.69**	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	**0.05**	**0.34**	**0.06**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.09**	**0.77**	**0.46**	**0.31**	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.09**	**0.82**	**0.80**	**0.37**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<1.0	**0.5**	**1.4**	**1.2**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<1.0	**1.3**	**2.2**	**1.6**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	DS	Turella	Bexley	AS	----
				Client sampling date / time	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	31-Aug-2018 00:00	----
Compound	CAS Number	LOR	Unit		ES1825956-006	ES1825956-007	ES1825956-008	ES1825956-009	--------
					Result	Result	Result	Result	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.15**	**0.02**	**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	**0.02**	<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	**150**	**----**
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	**150**	**----**
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	**210**	**----**
>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	**210**	**----**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	**210**	**----**
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	%		**120**	**116**	**119**	**116**	**----**
Toluene-D8	2037-26-5	2	%		**116**	**104**	**103**	**103**	**----**
4-Bromofluorobenzene	460-00-4	2	%		**106**	**97.8**	**99.1**	**92.0**	**----**

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	: **ES1827821**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 19-Sep-2018 17:05
Order number	: 4506808	Date Analysis Commenced	: 19-Sep-2018
C-O-C number	: ----	Issue Date	: 25-Sep-2018 16:46
Sampler	: PS & PGS		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK061G/EK067G: LOR raised for TKN & Total P on sample No 4 & 5 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)
- EK71G: It has been noted that Reactive P is greater than Total P for sample No 4, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1827821-001	ES1827821-002	ES1827821-003	ES1827821-004	ES1827821-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.06**	**8.58**	**7.68**	**7.65**	**7.46**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**587**	**323**	**36600**	**36200**	**38100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**9**	**10**	<5	**9**	**22**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.5**	**5.2**	**2.5**	**4.2**	**2.6**
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**	**0.004**	<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	**0.011**	**0.006**	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.030**	**0.005**	**0.058**	**0.044**	**0.056**
Iron	7439-89-6	0.05	mg/L	**0.10**	<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	**0.37**	**0.22**	**0.22**	**0.33**	**0.23**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.18**	**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	**1.30**	**0.14**	**0.07**	**0.19**	**0.13**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.48**	**0.20**	**0.09**	**0.22**	**0.15**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	**0.6**	**0.3**	**0.9**	**0.3**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.6**	**0.8**	**0.4**	**1.1**	**0.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00	19-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1827821-001	ES1827821-002	ES1827821-003	ES1827821-004	ES1827821-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.19**	**0.09**	**0.03**	<0.02	<0.02
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.02**	**0.01**	**0.03**	**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	%		**132**	**130**	**134**	**132**	**114**
Toluene-D8	2037-26-5	2	%		**116**	**111**	**110**	**105**	**110**
4-Bromofluorobenzene	460-00-4	2	%		**106**	**103**	**103**	**99.1**	**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	: **ES1828145**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 21-Sep-2018 15:00
Order number	: 4506808	Date Analysis Commenced	: 21-Sep-2018
C-O-C number	: ----	Issue Date	: 27-Sep-2018 18:22
Sampler	: PS & PGS		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK067G:: LOR raised for Total P for sample No 5 due to sample matrix.
- EG020 : LOR's have been raised for some samples due to matrix interference. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turella	AS	DS	US
			Client sampling date / time	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	ES1828145-001	ES1828145-002	ES1828145-003	ES1828145-004	ES1828145-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.69**	**8.11**	**8.04**	**8.12**	**8.09**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2560**	**1480**	**45700**	**46200**	**46800**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	<5	**7**	<5	**8**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**5.1**	**4.1**	**2.6**	**2.8**	**2.6**
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	**0.023**	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.006**	**0.001**	<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	**0.020**	**0.016**	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.036**	**0.108**	**0.054**	**0.017**	**0.028**
Iron	7439-89-6	0.05	mg/L	**0.07**	**0.10**	<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	**0.44**	**0.02**	**0.25**	**0.14**	**0.18**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.28**	**0.04**	**0.02**	**0.02**	**0.02**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.49**	**0.23**	**0.07**	**0.17**	**0.12**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.77**	**0.27**	**0.09**	**0.19**	**0.14**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	**0.6**	**0.7**	**0.4**	**0.2**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.6**	**0.9**	**0.8**	**0.6**	**0.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turella	AS	DS	US
				Client sampling date / time	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00	21-Sep-2018 00:00
Compound	CAS Number	LOR	Unit		ES1828145-001	ES1828145-002	ES1828145-003	ES1828145-004	ES1828145-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.04**	**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	<0.01	**0.02**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	**5**	**6**	<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**	**97.1**	**104**	**87.2**	**109**
Toluene-D8	2037-26-5	2	%		**118**	**102**	**110**	**86.6**	**118**
4-Bromofluorobenzene	460-00-4	2	%		**116**	**102**	**108**	**90.5**	**119**

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	: **ES1829641**	Page	: 1 of 9
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 08-Oct-2018 09:00
Order number	: 4506808	Date Analysis Commenced	: 08-Oct-2018
C-O-C number	: ----	Issue Date	: 15-Oct-2018 15:31
Sampler	: PS & PGS		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 12		
No. of samples analysed	: 12		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Raymond Commodore	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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00
Compound	CAS Number	LOR	Unit	ES1829641-001	ES1829641-002	ES1829641-003	ES1829641-004	ES1829641-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.13	7.64	7.22	6.65	7.14
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	216	302	817	1700	828
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	16	84	36	50	42
EA045: Turbidity								
Turbidity	----	0.1	NTU	12.0	112	26.5	5.0	33.6
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.002	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	0.014	0.001	<0.001	0.001
Copper	7440-50-8	0.001	mg/L	0.007	0.010	0.005	0.008	0.004
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	0.002	0.003	0.002
Zinc	7440-66-6	0.005	mg/L	0.068	0.034	0.034	0.096	0.033
Manganese	7439-96-5	0.001	mg/L	0.009	0.006	0.012	0.020	0.012
Iron	7439-89-6	0.05	mg/L	0.09	0.10	0.17	0.09	0.18
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	0.26	0.06
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.23	0.11	0.69	0.26	0.64
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.04	0.03	0.02	0.03
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.86	1.24	1.50	0.35	1.51
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.89	1.28	1.53	0.37	1.54
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	0.9	1.9	1.1	1.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.6	2.2	3.4	1.5	3.4

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		ES1829641-001	ES1829641-002	ES1829641-003	ES1829641-004	ES1829641-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.10**	**0.18**	**0.25**	**0.16**	**0.25**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.07**	**0.04**	**0.12**	<0.01	**0.12**
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	%		**110**	**100**	**110**	**103**	**107**
Toluene-D8	2037-26-5	2	%		**115**	**108**	**109**	**114**	**110**
4-Bromofluorobenzene	460-00-4	2	%		**105**	**102**	**102**	**104**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turella	Kooreela	Kooemba	AS
			Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00
Compound	CAS Number	LOR	Unit	ES1829641-006	ES1829641-007	ES1829641-008	ES1829641-009	ES1829641-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.29	7.06	7.69	7.88	7.37
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	364	281	530	659	3440
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	19	16	21	12	21
EA045: Turbidity								
Turbidity	----	0.1	NTU	25.4	16.3	23.6	21.5	13.9
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<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	<0.001	0.001	0.002	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.006	0.006	0.006	0.002
Nickel	7440-02-0	0.001	mg/L	0.001	0.001	<0.001	0.001	0.002
Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.001	0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.031	0.051	0.032	0.028	0.023
Manganese	7439-96-5	0.001	mg/L	0.009	0.012	0.008	0.018	0.094
Iron	7439-89-6	0.05	mg/L	0.15	0.21	0.10	0.23	<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	0.06	<0.05	<0.05	0.08
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.50	0.04	0.05	0.59
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.04	0.02	0.06	0.09
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	1.66	1.99	3.02	2.25	0.79
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	1.68	2.03	3.04	2.31	0.88
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	1.8	0.8	1.0	1.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.5	3.8	3.8	3.3	2.3

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turella	Kooreela	Kooemba	AS
				Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00	05-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		ES1829641-006	ES1829641-007	ES1829641-008	ES1829641-009	ES1829641-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	**0.16**	**0.08**	**0.07**	**0.03**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.08**	**0.03**	**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	%		**97.6**	**108**	**105**	**104**	**113**
Toluene-D8	2037-26-5	2	%		**107**	**110**	**116**	**112**	**117**
4-Bromofluorobenzene	460-00-4	2	%		**102**	**103**	**104**	**104**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	US	DS	----	----	----
			Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1829641-011	ES1829641-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.15**	**7.14**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**779**	**4420**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**45**	**33**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**32.3**	**25.7**	----	----	----
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	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.003**	----	----	----
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	**0.022**	**0.029**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.012**	**0.015**	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.15**	**0.15**	----	----	----
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	**0.06**	<0.05	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.36**	**0.88**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	**0.04**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.27**	**1.18**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**1.30**	**1.22**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.5**	**2.2**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.8**	**3.4**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	US	DS	----	----	----
				Client sampling date / time	05-Oct-2018 00:00	05-Oct-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1829641-011	ES1829641-012	--------	--------	--------
					Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.21**	**0.31**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.08**	**0.09**	----	----	----
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	%		**102**	**104**	----	----	----
Toluene-D8	2037-26-5	2	%		**111**	**114**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**102**	**105**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1833679**	Page	: 1 of 7
Amendment	: **1**		
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 31 Burrows Rd 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	: 12-Nov-2018 10:30
Order number	: 4506808	Date Analysis Commenced	: 12-Nov-2018
C-O-C number	: ----	Issue Date	: 23-Nov-2018 09:39
Sampler	: PS & PGS		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK061G: LOR raised for TKN on various samples due to sample matrix.
- EK067G: LOR raised for Total Phosphorus on sample 8 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)
- EG020: It is recognised that dissolved Iron concentration is less than ferrous Iron for some samples. However, the difference is within experimental variation of the methods.
- Amendment (21/11/2018): 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	SC	EC	CR	AC	DUP
			Client sampling date / time	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	ES1833679-001	ES1833679-002	ES1833679-003	ES1833679-004	ES1833679-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.76**	**8.24**	**7.50**	**7.59**	**7.07**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**565**	**390**	**45700**	**23900**	**261**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	**30**	**7**	**14**	**12**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.6**	**60.9**	**4.1**	**5.5**	**6.2**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.003**	<0.010	**0.002**	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.007**	**0.006**	<0.010	**0.004**	**0.006**
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.002**	<0.010	**0.001**	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	**0.001**	<0.010	<0.001	**0.002**
Zinc	7440-66-6	0.005	mg/L	**0.031**	**0.027**	<0.050	**0.049**	**0.041**
Manganese	7439-96-5	0.001	mg/L	**0.016**	**0.010**	**0.022**	**0.044**	**0.030**
Iron	7439-89-6	0.05	mg/L	**0.22**	**0.08**	<0.10	<0.05	**0.41**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.07**	<0.05	<0.05	<0.05	**0.47**
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.23**	**0.49**	**0.13**	**0.55**	**0.18**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	**0.06**	<0.01	**0.03**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.97**	**0.58**	**0.06**	**0.30**	**0.40**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.00**	**0.64**	**0.06**	**0.33**	**0.40**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**0.5**	<0.5	**2.3**	<0.2
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.4**	**1.1**	<0.5	**2.6**	**0.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1833679-001	ES1833679-002	ES1833679-003	ES1833679-004	ES1833679-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	**0.10**	**0.07**	**0.06**	**0.09**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.07**	<0.01	**0.03**	**0.04**
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	%		**111**	**95.3**	**101**	**99.6**	**96.3**
Toluene-D8	2037-26-5	2	%		**104**	**105**	**102**	**107**	**108**
4-Bromofluorobenzene	460-00-4	2	%		**106**	**101**	**100**	**101**	**98.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turrella	AS	US	DS
			Client sampling date / time	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	ES1833679-006	ES1833679-007	ES1833679-008	ES1833679-009	ES1833679-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.78**	**7.08**	**7.27**	**7.67**	**7.75**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**2260**	**255**	**24900**	**37900**	**44500**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**34**	**13**	**12**	**11**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.5**	**3.7**	**4.4**	**4.4**	**1.6**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	**0.008**	<0.001	<0.001	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.006**	**0.004**	**0.002**	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.001	**0.002**	<0.010	<0.010
Lead	7439-92-1	0.001	mg/L	<0.001	**0.002**	<0.001	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	**0.014**	**0.039**	**0.011**	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.018**	**0.031**	**0.576**	**0.036**	**0.024**
Iron	7439-89-6	0.05	mg/L	**0.09**	**0.48**	<0.05	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.06**	**0.48**	<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**	**0.10**	**2.07**	**0.25**	**0.20**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.13**	<0.01	**0.19**	**0.01**	**0.01**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.52**	**0.38**	**0.84**	**0.06**	**0.08**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.65**	**0.38**	**1.03**	**0.07**	**0.09**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.5**	<0.2	**2.1**	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.2**	**0.4**	**3.1**	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	AS	US	DS
				Client sampling date / time	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1833679-006	ES1833679-007	ES1833679-008	ES1833679-009	ES1833679-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	**0.09**	<0.05	**0.12**	**0.45**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.04**	<0.01	**0.03**	**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	**240**	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	**200**	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	**440**	<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	**380**	<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	**380**	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	**380**	<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	%		**96.0**	**98.7**	**93.1**	**98.1**	**92.9**
Toluene-D8	2037-26-5	2	%		**108**	**108**	**103**	**106**	**110**
4-Bromofluorobenzene	460-00-4	2	%		**99.3**	**100**	**94.3**	**99.4**	**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	: **ES1837047**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 10-Dec-2018 12:30
Order number	: 4506808	Date Analysis Commenced	: 10-Dec-2018
C-O-C number	: ----	Issue Date	: 17-Dec-2018 17:59
Sampler	: PS, RP		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK061G/EK067G/EK062G: LOR raised for TKN, Total P & TN on various samples due to sample matrix.
- EG020 : LOR's have been raised for some samples due to matrix interference. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00
Compound	CAS Number	LOR	Unit	ES1837047-001	ES1837047-002	ES1837047-003	ES1837047-004	ES1837047-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.40**	**9.32**	**7.77**	**7.70**	**7.69**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**612**	**488**	**45700**	**37400**	**44100**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**19**	**20**	**15**	**10**	**16**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**8.0**	**6.4**	**1.5**	**2.8**	**2.8**
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	**0.008**	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.005**	**0.010**	<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	**0.001**	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	**0.016**	**0.009**	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.018**	**0.005**	**0.019**	**0.028**	**0.016**
Iron	7439-89-6	0.05	mg/L	**0.14**	**0.08**	<0.10	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00049**	**0.00006**	**0.00040**	**0.00059**	**0.00008**
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.07**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.27**	**0.09**	**0.15**	**0.12**	**0.14**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.14**	**0.04**	<0.01	**0.01**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.92**	**0.18**	**0.11**	**0.13**	**0.04**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.06**	**0.22**	**0.11**	**0.14**	**0.04**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.9**	**0.3**	**0.7**	**0.7**	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.0**	**0.5**	**0.8**	**0.8**	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00
Compound	CAS Number	LOR	Unit		ES1837047-001	ES1837047-002	ES1837047-003	ES1837047-004	ES1837047-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.15**	**0.09**	**0.06**	**0.07**	**0.07**
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	<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	%		**88.2**	**93.2**	**88.8**	**89.6**	**93.5**
Toluene-D8	2037-26-5	2	%		**108**	**104**	**108**	**108**	**106**
4-Bromofluorobenzene	460-00-4	2	%		**91.4**	**91.5**	**90.4**	**89.9**	**90.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BEXLEY	TURRELLA	AS	US	DS
			Client sampling date / time	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00
Compound	CAS Number	LOR	Unit	ES1837047-006	ES1837047-007	ES1837047-008	ES1837047-009	ES1837047-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.58	7.12	7.51	7.84	7.97
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2770	1350	28800	42900	45100
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	11	16	<5	<5	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	2.0	5.3	1.7	3.3	2.4
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	0.010	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	0.017	0.002	<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	<0.001	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	0.009	0.009	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	0.019	0.203	0.345	0.017	<0.010
Iron	7439-89-6	0.05	mg/L	0.08	0.35	<0.10	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	0.00006	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	0.07	0.32	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.19	1.19	0.98	0.09	0.12
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.15	0.02	0.09	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.21	0.11	0.08	0.05	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.36	0.13	0.17	0.05	0.02
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.9	1.1	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.3	2.0	1.3	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BEXLEY	TURRELLA	AS	US	DS
				Client sampling date / time	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00	07-Dec-2018 00:00
Compound	CAS Number	LOR	Unit		ES1837047-006	ES1837047-007	ES1837047-008	ES1837047-009	ES1837047-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	**0.21**	<0.05	**0.07**	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.01**	<0.01	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<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	%		**91.9**	**84.5**	**91.7**	**88.2**	**90.5**
Toluene-D8	2037-26-5	2	%		**106**	**110**	**105**	**108**	**107**
4-Bromofluorobenzene	460-00-4	2	%		**92.3**	**88.8**	**90.1**	**88.6**	**89.3**

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1902084**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 201 Coward St MASCOT NSW 2020	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	: 22-Jan-2019 13:00
Order number	: 4506808	Date Analysis Commenced	: 22-Jan-2019
C-O-C number	: ----	Issue Date	: 29-Jan-2019 20:52
Sampler	: ----		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EG035: Positive Hg result for ES1902084 #10 has been confirmed by reanalysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	21-Jan-2019 11:30	21-Jan-2019 12:05	21-Jan-2019 12:25	21-Jan-2019 11:00	21-Jan-2019 00:00
Compound	CAS Number	LOR	Unit	ES1902084-001	ES1902084-002	ES1902084-003	ES1902084-004	ES1902084-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.86	6.28	7.67	7.88	7.25
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	891	1120	48200	35700	5370
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	16	22	20	25
EA045: Turbidity								
Turbidity	----	0.1	NTU	7.7	4.2	6.8	5.0	21.8
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	0.005	<0.010	<0.010	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.005	<0.010	<0.010	<0.001
Nickel	7440-02-0	0.001	mg/L	0.001	0.001	<0.010	<0.010	0.002
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	0.033	0.011	<0.050	<0.050	0.008
Manganese	7439-96-5	0.001	mg/L	0.010	0.006	0.015	0.030	0.354
Iron	7439-89-6	0.05	mg/L	0.10	<0.05	<0.10	<0.10	2.50
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	0.00010	0.00017	<0.00004	0.00004	0.00010
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	3.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.51	0.25	0.08	1.15
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.14	0.06	<0.01	0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.46	0.42	0.09	0.23	0.08
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.60	0.48	0.09	0.24	0.08
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	1.0	0.6	0.5	1.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.4	1.5	0.7	0.7	1.8

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	21-Jan-2019 11:30	21-Jan-2019 12:05	21-Jan-2019 12:25	21-Jan-2019 11:00	21-Jan-2019 00:00
Compound	CAS Number	LOR	Unit		ES1902084-001	ES1902084-002	ES1902084-003	ES1902084-004	ES1902084-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.15**	**0.12**	**0.05**	**0.03**	**0.13**
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	<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	%		**103**	**104**	**109**	**109**	**106**
Toluene-D8	2037-26-5	2	%		**103**	**105**	**105**	**107**	**109**
4-Bromofluorobenzene	460-00-4	2	%		**97.0**	**101**	**101**	**97.5**	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turrella	AS	US	DS
			Client sampling date / time	21-Jan-2019 14:40	21-Jan-2019 13:40	21-Jan-2019 10:30	21-Jan-2019 10:40	21-Jan-2019 10:10
Compound	CAS Number	LOR	Unit	ES1902084-006	ES1902084-007	ES1902084-008	ES1902084-009	ES1902084-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.18**	**7.25**	**7.95**	**8.05**	**7.90**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**5260**	**5270**	**52300**	**52100**	**51800**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**13**	**24**	**8**	**9**	**10**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.6**	**20.5**	**4.0**	**2.3**	**1.2**
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	**0.003**	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.013**	<0.001	<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	**0.003**	<0.001	<0.010	<0.010	<0.010
Zinc	7440-66-6	0.005	mg/L	**0.028**	<0.005	<0.050	<0.050	<0.050
Manganese	7439-96-5	0.001	mg/L	**0.059**	**0.348**	<0.010	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L	**0.09**	**2.80**	<0.10	<0.10	<0.10
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	**0.00006**	**0.00004**	**0.00108**
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	**0.06**	**3.46**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.22**	**1.05**	**0.15**	**0.26**	**0.31**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.12**	**0.02**	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.46**	**0.04**	**0.04**	**0.01**	**0.02**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.58**	**0.06**	**0.04**	**0.01**	**0.02**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**1.8**	**0.4**	**0.3**	**0.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.6**	**1.9**	**0.4**	**0.3**	**0.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	AS	US	DS
				Client sampling date / time	21-Jan-2019 14:40	21-Jan-2019 13:40	21-Jan-2019 10:30	21-Jan-2019 10:40	21-Jan-2019 10:10
Compound	CAS Number	LOR	Unit		ES1902084-006	ES1902084-007	ES1902084-008	ES1902084-009	ES1902084-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.02**	**0.15**	**0.04**	**0.04**	**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	<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	%		**108**	**104**	**103**	**108**	**108**
Toluene-D8	2037-26-5	2	%		**112**	**105**	**96.2**	**104**	**106**
4-Bromofluorobenzene	460-00-4	2	%		**105**	**99.9**	**93.3**	**99.1**	**101**

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1904007**	Page	: 1 of 9
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 08-Feb-2019 12:40
Order number	: 4506808	Date Analysis Commenced	: 08-Feb-2019
C-O-C number	: ----	Issue Date	: 15-Feb-2019 11:57
Sampler	: PS, RP		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- Ek061G/EK067G/EK062G: LOR raised for TKN,Total P & TN 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)
- EK055G: LOR raised for Ammonia on various samples due to sample matrix.
- It has been noted that Ammonia is greater than TKN for various samples, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC	EC	CR	AC	DUP
			Client sampling date / time	07-Feb-2019 14:20	07-Feb-2019 15:10	07-Feb-2019 14:40	07-Feb-2019 13:00	07-Feb-2019 00:00
Compound	CAS Number	LOR	Unit	ES1904007-001	ES1904007-002	ES1904007-003	ES1904007-004	ES1904007-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.21**	**9.02**	**8.07**	**8.06**	**8.05**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**703**	**561**	**41900**	**41400**	**41900**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**5**	**25**	**11**	**12**	**10**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.3**	**20.0**	**5.4**	**5.6**	**5.2**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	**0.002**	<0.010	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.004**	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.006**	**0.007**	<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	**0.020**	**0.008**	<0.050	<0.050	<0.050
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	**0.008**	**0.004**	**0.022**	**0.016**	**0.022**
Iron	7439-89-6	0.05	mg/L	**0.24**	**0.14**	**0.36**	**0.11**	**0.37**
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	**0.12**	**0.22**	<0.10	**0.13**	<0.10
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.07**	**0.04**	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.78**	**0.28**	**0.07**	**0.06**	**0.05**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.85**	**0.32**	**0.07**	**0.06**	**0.05**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.2**	<0.5	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	07-Feb-2019 14:20	07-Feb-2019 15:10	07-Feb-2019 14:40	07-Feb-2019 13:00	07-Feb-2019 00:00
Compound	CAS Number	LOR	Unit		ES1904007-001	ES1904007-002	ES1904007-003	ES1904007-004	ES1904007-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	----	0.1	mg/L		3.4	0.5	<0.5	<0.5	<0.5
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.06	0.11	0.10	0.10
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.06	0.06	0.02	0.02	0.02
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	%		98.7	102	117	99.6	102

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC	EC	CR	AC	DUP
				Client sampling date / time	07-Feb-2019 14:20	07-Feb-2019 15:10	07-Feb-2019 14:40	07-Feb-2019 13:00	07-Feb-2019 00:00
Compound	CAS Number	LOR	Unit		ES1904007-001	ES1904007-002	ES1904007-003	ES1904007-004	ES1904007-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**101**	**101**	**99.2**	**99.0**	**102**
4-Bromofluorobenzene	460-00-4	2	%		**88.1**	**90.6**	**94.4**	**86.1**	**88.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bexley	Turrella	AS	US	DS
			Client sampling date / time	07-Feb-2019 10:30	07-Feb-2019 11:15	07-Feb-2019 11:40	07-Feb-2019 11:50	07-Feb-2019 12:30
Compound	CAS Number	LOR	Unit	ES1904007-006	ES1904007-007	ES1904007-008	ES1904007-009	ES1904007-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.07**	**7.45**	**8.01**	**7.96**	**8.21**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**17300**	**3530**	**46700**	**47300**	**49900**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	**10**	**8**	**12**	**8**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.9**	**7.2**	**2.8**	**3.4**	**1.2**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.002**	<0.010	<0.010	<0.010
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.002**	<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	**0.008**	**0.033**	<0.050	<0.050	<0.050
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	**0.390**	**0.240**	**0.015**	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L	**0.10**	**1.20**	**0.22**	**0.24**	**0.13**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00039**	**0.00006**	**0.00006**	**0.00005**	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.18**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.77**	**0.56**	<0.10	<0.10	<0.10
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.09**	**0.03**	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.21**	**0.11**	**0.04**	**0.08**	**0.06**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.30**	**0.14**	**0.04**	**0.08**	**0.06**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**0.5**	<0.5	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	AS	US	DS
				Client sampling date / time	07-Feb-2019 10:30	07-Feb-2019 11:15	07-Feb-2019 11:40	07-Feb-2019 11:50	07-Feb-2019 12:30
Compound	CAS Number	LOR	Unit		ES1904007-006	ES1904007-007	ES1904007-008	ES1904007-009	ES1904007-010
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	----	0.1	mg/L		**1.3**	**0.6**	<0.5	<0.5	<0.5
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	**0.06**	<0.05	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	**0.01**	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<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	%		**97.7**	**108**	**102**	**101**	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Bexley	Turrella	AS	US	DS
				Client sampling date / time	07-Feb-2019 10:30	07-Feb-2019 11:15	07-Feb-2019 11:40	07-Feb-2019 11:50	07-Feb-2019 12:30
Compound	CAS Number	LOR	Unit		ES1904007-006	ES1904007-007	ES1904007-008	ES1904007-009	ES1904007-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**100**	**100**	**101**	**101**	**105**
4-Bromofluorobenzene	460-00-4	2	%		**87.3**	**91.3**	**89.7**	**88.1**	**91.5**

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	: **ES1907654**	Page	: 1 of 9
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 13-Mar-2019 16:00
Order number	: 4506808	Date Analysis Commenced	: 13-Mar-2019
C-O-C number	: ----	Issue Date	: 19-Mar-2019 17:13
Sampler	: RP / CB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK061G/EK067G/EK062G:: : LOR raised for TKN & Total P & TN on various samples due to sample matrix.
- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EK055G: It has been noted that Ammonia is greater than TKN on sample No 6 however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC 190312	EC 190312	CR 190312	AC 190312	DUP
			Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
Compound	CAS Number	LOR	Unit	ES1907654-001	ES1907654-002	ES1907654-003	ES1907654-004	ES1907654-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.68**	**8.54**	**7.75**	**7.52**	**7.65**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**770**	**533**	**52100**	**48200**	**53400**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**6**	**6**	**10**	**10**	**14**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**2.0**	**1.8**	**3.2**	**3.0**	**2.7**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	<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	**0.005**	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L	**0.005**	**0.006**	<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	**0.027**	**0.010**	<0.050	<0.050	<0.050
EG020T: Total Metals by ICP-MS								
Manganese	7439-96-5	0.001	mg/L	**0.053**	**0.002**	<0.010	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L	**0.51**	**0.15**	<0.50	<0.50	<0.50
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.05**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.29**	**1.08**	**0.05**	**0.04**	**0.13**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.13**	**0.04**	<0.01	**0.01**	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.92**	**0.44**	**0.04**	**0.11**	**0.13**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.05**	**0.48**	**0.04**	**0.12**	**0.13**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.2**	**1.7**	<1.0	<0.5	<1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC 190312	EC 190312	CR 190312	AC 190312	DUP
				Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
Compound	CAS Number	LOR	Unit		ES1907654-001	ES1907654-002	ES1907654-003	ES1907654-004	ES1907654-005
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ Total Nitrogen as N	----	0.1	mg/L		**3.2**	**2.2**	<1.0	<0.5	<1.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.15**	**0.46**	<0.10	<0.05	<0.10
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.09**	**0.12**	<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**	**114**	**96.7**	**112**	**116**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	SC 190312	EC 190312	CR 190312	AC 190312	DUP
				Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
Compound	CAS Number	LOR	Unit		ES1907654-001	ES1907654-002	ES1907654-003	ES1907654-004	ES1907654-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**99.1**	**96.1**	**86.5**	**97.7**	**96.2**
4-Bromofluorobenzene	460-00-4	2	%		**102**	**102**	**90.1**	**103**	**105**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	BEX 190312	TUR 190312	AS 190312	US 190312	DS 190312
				Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
					ES1907654-006	ES1907654-007	ES1907654-008	ES1907654-009	ES1907654-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.17**	**7.10**	**7.49**	**7.68**	**7.70**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**14600**	**3210**	**50800**	**51700**	**53400**
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**5**	**10**	**6**	**9**	**12**
EA045: Turbidity									
Turbidity	----	0.1	NTU		**3.0**	**6.1**	**3.0**	**3.2**	**2.3**
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		**0.002**	<0.001	<0.010	<0.010	<0.010
Copper	7440-50-8	0.001	mg/L		**0.002**	**0.002**	<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		**0.017**	**0.026**	<0.050	<0.050	<0.050
EG020T: Total Metals by ICP-MS									
Manganese	7439-96-5	0.001	mg/L		**0.149**	**0.172**	**0.015**	<0.010	<0.010
Iron	7439-89-6	0.05	mg/L		**0.15**	**0.98**	<0.50	<0.50	<0.50
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	**0.23**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.74**	**0.46**	**0.14**	**0.08**	**0.12**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**0.16**	**0.04**	**0.01**	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.32**	**0.15**	**0.07**	**0.03**	**0.13**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.48**	**0.19**	**0.08**	**0.03**	**0.13**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.7**	**0.7**	<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	BEX 190312	TUR 190312	AS 190312	US 190312	DS 190312
				Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
Compound	CAS Number	LOR	Unit		ES1907654-006	ES1907654-007	ES1907654-008	ES1907654-009	ES1907654-010
					Result	Result	Result	Result	Result
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser - Continued									
^ **Total Nitrogen as N**	----	0.1	mg/L		**1.2**	**0.9**	<1.0	<1.0	<1.0
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	**0.04**	<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	<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	%		**106**	**111**	**111**	**111**	**112**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**BEX 190312**	**TUR 190312**	**AS 190312**	**US 190312**	**DS 190312**
				Client sampling date / time	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45	12-Mar-2019 14:45
Compound	*CAS Number*	*LOR*	*Unit*		**ES1907654-006**	**ES1907654-007**	**ES1907654-008**	**ES1907654-009**	**ES1907654-010**
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**95.9**	**93.3**	**98.4**	**98.2**	**97.2**
4-Bromofluorobenzene	460-00-4	2	%		**101**	**101**	**103**	**98.6**	**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	: **ES1911894**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 16-Apr-2019 16:30
Order number	: 4506808	Date Analysis Commenced	: 17-Apr-2019
C-O-C number	: ----	Issue Date	: 26-Apr-2019 19:50
Sampler	: RP / CB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 7		
No. of samples analysed	: 7		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	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.

- EK061G:/EK067G/EK062G: LOR raised for TKN,Total P & TN rious samples due to sample matrix.
- EG020: Metals LOR for particular sample(s) raised due to high TDS content.
- EK055G: LOR raised for Ammonia on sample 2 due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CDS - SW - 02-AC	CDS - SW - 05-CR	CDS - SW - 11-TUR	CDS - DUP	CDS - SW - 10-BEX
			Client sampling date / time	16-Apr-2019 09:55	16-Apr-2019 10:35	16-Apr-2019 11:35	16-Apr-2019 00:00	16-Apr-2019 12:45
Compound	CAS Number	LOR	Unit	ES1911894-001	ES1911894-002	ES1911894-003	ES1911894-004	ES1911894-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.44	7.80	7.91	7.85	8.08
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	35700	40900	1620	1620	11400
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	6	5	<5	<5	<5
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.7	3.8	3.0	3.0	1.4
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.001	<0.001	<0.001
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	<0.001	<0.001	0.002
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.001	0.001	0.003
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	0.001	0.001	0.001
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	0.016	0.019	0.008
Manganese	7439-96-5	0.001	mg/L	0.023	<0.010	0.101	0.097	0.185
Iron	7439-89-6	0.05	mg/L	<0.50	<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	0.07	0.06	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.25	<0.05	0.32	0.27	0.51
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.03	<0.01	0.06	0.06	0.14
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.30	0.04	0.44	0.46	0.56
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.33	0.04	0.50	0.52	0.70
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	<0.5	1.0	1.0	1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.9	<0.5	1.5	1.5	1.7

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CDS - SW - 02-AC	CDS - SW - 05-CR	CDS - SW - 11-TUR	CDS - DUP	CDS - SW - 10-BEX
				Client sampling date / time	16-Apr-2019 09:55	16-Apr-2019 10:35	16-Apr-2019 11:35	16-Apr-2019 00:00	16-Apr-2019 12:45
Compound	CAS Number	LOR	Unit		ES1911894-001	ES1911894-002	ES1911894-003	ES1911894-004	ES1911894-005
					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	<0.01	<0.01	**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	<0.01	**0.03**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	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	%		**128**	**124**	**107**	**111**	**119**
Toluene-D8	2037-26-5	2	%		**111**	**108**	**92.5**	**95.5**	**101**
4-Bromofluorobenzene	460-00-4	2	%		**104**	**103**	**87.1**	**91.0**	**93.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CDS - SW - 03-EC	CDS - SW - 01-SC	----	----	----
			Client sampling date / time	16-Apr-2019 13:20	16-Apr-2019 14:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1911894-006	ES1911894-007	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.90**	**8.21**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**371**	**532**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**144**	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**4.8**	**5.9**	----	----	----
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	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.014**	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.007**	**0.005**	----	----	----
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	<0.005	**0.020**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.004**	----	----	----
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	----	----	----
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	**0.10**	**0.26**	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.06**	**0.24**	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.48**	**1.95**	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.54**	**2.19**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**1.0**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**1.1**	**3.2**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CDS - SW - 03-EC	CDS - SW - 01-SC	----	----	----
			Client sampling date / time	16-Apr-2019 13:20	16-Apr-2019 14:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1911894-006	ES1911894-007	--------	--------	--------
				Result	Result	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	**0.67**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.01**	**0.54**	----	----	----
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	**8**	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	**3**	----	----	----
^ **Total Xylenes**	----	2	µg/L	<2	**11**	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	**11**	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**105**	**104**	----	----	----
Toluene-D8	2037-26-5	2	%	**90.4**	**91.4**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**89.7**	**90.1**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1912061**	Page	: 1 of 5
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 201 Coward St MASCOT NSW 2020	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	: 17-Apr-2019 16:20
Order number	: 4506808	Date Analysis Commenced	: 17-Apr-2019
C-O-C number	: ----	Issue Date	: 29-Apr-2019 11:36
Sampler	: RP / CB		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	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.

- EK061G/EK067G/EK062G:: LOR raised for TKN, Total P & TN on various samples due to sample matrix.
- EG020: Metals LOR raised due to high TDS content.
- EK055G: It has been noted that Ammonia is greater than TKN on sample No 3, however this difference is within the limits of experimental variation.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	CDS - SW - 06 - US	CDS - SW - 07 - DS	CDS - SW - 12 -AS	----	----
			Client sampling date / time	17-Apr-2019 00:00	17-Apr-2019 00:00	17-Apr-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1912061-001	ES1912061-002	ES1912061-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.74**	**7.86**	**7.68**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**48500**	**49800**	**33100**	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	**5**	<5	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.3**	**1.8**	**1.7**	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	<0.0010	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	<0.010	----	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	<0.050	----	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	**0.055**	----	----
Iron	7439-89-6	0.05	mg/L	<0.50	<0.50	<0.50	----	----
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	**0.14**	**0.11**	**2.23**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	**0.17**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.14**	**0.08**	**0.32**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.14**	**0.08**	**0.49**	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	**2.2**	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<0.5	<0.5	**2.7**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CDS - SW - 06 - US	CDS - SW - 07 - DS	CDS - SW - 12 -AS	----	----
				Client sampling date / time	17-Apr-2019 00:00	17-Apr-2019 00:00	17-Apr-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1912061-001	ES1912061-002	ES1912061-003	--------	--------
					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	----	----
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	%		**126**	**125**	**105**	----	----
Toluene-D8	2037-26-5	2	%		**102**	**111**	**108**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**110**	**107**	**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	: **ES1914072**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 09-May-2019 10:05
Order number	: 4506808	Date Analysis Commenced	: 09-May-2019
C-O-C number	: ----	Issue Date	: 16-May-2019 14:58
Sampler	: RP/CB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	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.

- 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	01-SC	02-AC	03-EC	05-CR	06-US
			Client sampling date / time	08-May-2019 13:45	08-May-2019 13:10	08-May-2019 10:35	08-May-2019 11:00	08-May-2019 11:35
Compound	CAS Number	LOR	Unit	ES1914072-001	ES1914072-002	ES1914072-003	ES1914072-004	ES1914072-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.61	7.54	8.47	7.89	7.69
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	701	45000	270	46100	47700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	12	20	21	5
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.0	7.7	4.2	4.0	2.7
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	<0.001	0.002	0.002
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	<0.001	0.004	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.007	0.003	0.006	0.002	0.002
Nickel	7440-02-0	0.001	mg/L	0.002	<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	0.029	0.022	0.008	0.012	0.026
Manganese	7439-96-5	0.001	mg/L	0.020	0.019	0.004	0.014	0.010
Iron	7439-89-6	0.05	mg/L	0.12	<0.05	<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	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.58	0.30	0.89	0.29	0.40
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.20	0.02	0.07	0.02	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	2.26	1.82	0.41	0.08	0.24
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.46	1.84	0.48	0.10	0.24
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	0.9	1.2	<0.5	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	3.9	2.7	1.7	<0.5	0.9

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	01-SC	02-AC	03-EC	05-CR	06-US
				Client sampling date / time	08-May-2019 13:45	08-May-2019 13:10	08-May-2019 10:35	08-May-2019 11:00	08-May-2019 11:35
Compound	CAS Number	LOR	Unit		ES1914072-001	ES1914072-002	ES1914072-003	ES1914072-004	ES1914072-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.14**	**0.06**	**0.02**	<0.05	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.11**	<0.01	**0.01**	**0.01**	**0.01**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<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**	**112**	**109**	**113**	**119**
Toluene-D8	2037-26-5	2	%		**122**	**114**	**110**	**110**	**116**
4-Bromofluorobenzene	460-00-4	2	%		**118**	**112**	**109**	**110**	**116**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	07-DS	10-BEXLEY	11-TURRELLA	12-AS	DUP
			Client sampling date / time	08-May-2019 12:45	08-May-2019 09:00	08-May-2019 09:55	08-May-2019 11:25	08-May-2019 00:00
Compound	CAS Number	LOR	Unit	ES1914072-006	ES1914072-007	ES1914072-008	ES1914072-009	ES1914072-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.94	8.08	7.53	7.91	7.54
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	50100	5080	1840	50200	1850
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	59	8	16	6
EA045: Turbidity								
Turbidity	----	0.1	NTU	2.4	2.7	5.6	2.4	6.4
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	0.002	<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	0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.003	0.005	0.003	0.002	0.004
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.002	0.001	0.002
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	0.009	0.013	0.043	0.008	0.057
Manganese	7439-96-5	0.001	mg/L	0.006	0.047	0.194	0.007	0.200
Iron	7439-89-6	0.05	mg/L	<0.05	0.15	0.48	<0.05	0.50
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	0.09	0.29	<0.05	0.30
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.31	0.41	0.73	0.25	0.83
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.07	0.05	<0.01	0.05
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.19	0.28	0.17	0.17	0.35
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.20	0.35	0.22	0.17	0.40
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<1.0	1.1	1.4	<1.0	1.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	<1.0	1.4	1.6	<1.0	2.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	07-DS	10-BEXLEY	11-TURRELLA	12-AS	DUP
				Client sampling date / time	08-May-2019 12:45	08-May-2019 09:00	08-May-2019 09:55	08-May-2019 11:25	08-May-2019 00:00
Compound	CAS Number	LOR	Unit		ES1914072-006	ES1914072-007	ES1914072-008	ES1914072-009	ES1914072-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.10	**0.04**	**0.06**	<0.10	**0.08**
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	**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**	**109**	**112**	**118**	**112**
Toluene-D8	2037-26-5	2	%		**112**	**113**	**115**	**117**	**117**
4-Bromofluorobenzene	460-00-4	2	%		**112**	**112**	**114**	**115**	**115**

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	: **ES1918800**	Page	: 1 of 9
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	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	: 18-Jun-2019 17:30
Order number	: 4506808	Date Analysis Commenced	: 19-Jun-2019
C-O-C number	: ----	Issue Date	: 26-Jun-2019 19:01
Sampler	: RP/CB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 11		
No. of samples analysed	: 11		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC 190818	EC 190818	CR 190818	AC 190818	DUP
			Client sampling date / time	18-Jun-2019 08:35	18-Jun-2019 09:05	18-Jun-2019 09:25	18-Jun-2019 11:20	18-Jun-2019 00:00
Compound	CAS Number	LOR	Unit	ES1918800-001	ES1918800-002	ES1918800-003	ES1918800-004	ES1918800-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.81**	**8.15**	**7.52**	**7.41**	**7.36**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**500**	**255**	**15000**	**4140**	**14700**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**92**	**48**	**5**	**9**	**12**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**123**	**72.3**	**11.8**	**29.9**	**14.1**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.002**	**0.003**	**0.002**	**0.004**
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	**0.004**	<0.001	**0.001**	<0.001
Copper	7440-50-8	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.001	**0.002**	<0.001	**0.001**
Lead	7439-92-1	0.001	mg/L	**0.004**	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.041**	**0.005**	**0.034**	**0.047**	**0.026**
Manganese	7439-96-5	0.001	mg/L	**0.041**	**0.003**	**0.021**	**0.018**	**0.019**
Iron	7439-89-6	0.05	mg/L	**0.10**	**0.05**	<0.05	**0.09**	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00045**	**0.00036**	**0.00023**	**0.00011**	**0.00013**
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	**0.40**	**0.14**	**0.35**	**0.55**	**0.35**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.05**	**0.05**	**0.02**	**0.02**	**0.02**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**3.08**	**1.31**	**0.83**	**0.91**	**1.11**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.13**	**1.36**	**0.85**	**0.93**	**1.13**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.1**	**0.6**	**0.7**	**0.7**	**0.8**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.2**	**2.0**	**1.6**	**1.6**	**1.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC 190818	EC 190818	CR 190818	AC 190818	DUP
				Client sampling date / time	18-Jun-2019 08:35	18-Jun-2019 09:05	18-Jun-2019 09:25	18-Jun-2019 11:20	18-Jun-2019 00:00
Compound	CAS Number	LOR	Unit		ES1918800-001	ES1918800-002	ES1918800-003	ES1918800-004	ES1918800-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.26**	**0.12**	**0.06**	**0.13**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.08**	**0.06**	**0.04**	**0.08**	**0.03**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**111**	**90.2**	**129**	**121**	**116**
Toluene-D8	2037-26-5	2	%		**116**	**98.1**	**121**	**118**	**116**
4-Bromofluorobenzene	460-00-4	2	%		**119**	**97.4**	**119**	**119**	**117**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BEX 190818	TUR 190818	AS 190818	US 190818	DS 190818
			Client sampling date / time	18-Jun-2019 13:05	18-Jun-2019 11:50	18-Jun-2019 10:35	18-Jun-2019 10:50	18-Jun-2019 10:05
Compound	CAS Number	LOR	Unit	ES1918800-006	ES1918800-007	ES1918800-008	ES1918800-009	ES1918800-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.93**	**7.50**	**7.48**	**7.49**	**7.45**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**905**	**294**	**15400**	**18400**	**14900**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**12**	**7**	**24**	**6**	**5**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**22.2**	**18.9**	**22.8**	**10.7**	**13.9**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.001**	**0.003**	**0.003**	**0.008**
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	**0.082**	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.003**	**0.001**	<0.001	<0.001	**0.002**
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.001**	**0.001**	**0.002**	**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	**0.009**	**0.050**	**0.022**	**0.022**	**0.026**
Manganese	7439-96-5	0.001	mg/L	**0.007**	**0.013**	**0.016**	**0.018**	**0.018**
Iron	7439-89-6	0.05	mg/L	<0.05	**0.15**	<0.05	**0.12**	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	**0.00008**	<0.00004	**0.00005**	**0.00013**	<0.00004
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**0.10**	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.14**	**0.18**	**0.37**	**0.33**	**0.32**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.02**	**0.01**	**0.02**	**0.02**	**0.02**
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**2.53**	**1.18**	**0.64**	**0.83**	**0.68**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.55**	**1.19**	**0.66**	**0.85**	**0.70**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.6**	**0.7**	**0.6**	**0.7**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.2**	**1.8**	**1.4**	**1.4**	**1.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BEX 190818	TUR 190818	AS 190818	US 190818	DS 190818
				Client sampling date / time	18-Jun-2019 13:05	18-Jun-2019 11:50	18-Jun-2019 10:35	18-Jun-2019 10:50	18-Jun-2019 10:05
Compound	CAS Number	LOR	Unit		ES1918800-006	ES1918800-007	ES1918800-008	ES1918800-009	ES1918800-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.04**	**0.05**	**0.06**	**0.05**	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	**0.02**	**0.02**	**0.04**	**0.03**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	----	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**	**109**	**108**	**116**	**110**
Toluene-D8	2037-26-5	2	%		**120**	**109**	**103**	**117**	**106**
4-Bromofluorobenzene	460-00-4	2	%		**118**	**115**	**109**	**117**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KOR 190818	----	----	----	----
			Client sampling date / time	18-Jun-2019 13:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1918800-011	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.57**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**878**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**22**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**56.8**	----	----	----	----
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	**0.006**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.005**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.002**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.004**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.06**	----	----	----	----
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	**0.06**	----	----	----	----
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	**2.73**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.76**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.8**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.6**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	KOR 190818	----	----	----	----
			Client sampling date / time	18-Jun-2019 13:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1918800-011	--------	--------	--------	--------
				Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.07**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	**0.02**	----	----	----	----
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	%	**120**	----	----	----	----
Toluene-D8	2037-26-5	2	%	**120**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**122**	----	----	----	----

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	: **ES1922036**	Page	: 1 of 7
Client	: **CPB DRAGADOS SAMSUNG JV**	Laboratory	: Environmental Division Sydney
Contact	: CRAIG GIBSON	Contact	: Customer Services ES
Address	: 201 Coward St MASCOT NSW 2020	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	: 15-Jul-2019 18:35
Order number	: 4506808	Date Analysis Commenced	: 15-Jul-2019
C-O-C number	: ----	Issue Date	: 23-Jul-2019 17:21
Sampler	: RP / CB		
Site	: ----		
Quote number	: SY/286/16 V4		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	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.

- EK061G/EK067G/EK062G : LOR raised for TKN & Total P & TN on various samples due to sample matrix.
- EK055G: LOR raised for Ammonia on various samples due to sample matrix.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SC 190715	EC 190715	CR 190715	AC 190715	DUP
			Client sampling date / time	15-Jul-2019 10:25	15-Jul-2019 10:56	15-Jul-2019 09:40	15-Jul-2019 10:05	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1922036-001	ES1922036-002	ES1922036-003	ES1922036-004	ES1922036-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.55**	**8.23**	**7.72**	**7.79**	**7.92**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**706**	**533**	**36500**	**34000**	**39600**
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**8**	**18**	<5	**7**	**6**
EA045: Turbidity								
Turbidity	----	0.1	NTU	**3.1**	**16.2**	**1.9**	**4.1**	**1.0**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	**0.002**	**0.004**	**0.004**
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	**0.037**	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.003**	**0.001**	**0.001**	**0.003**
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	**0.015**	<0.005	**0.012**	**0.023**	**0.008**
Manganese	7439-96-5	0.001	mg/L	**0.029**	**0.004**	**0.010**	**0.014**	**0.002**
Iron	7439-89-6	0.05	mg/L	**0.13**	<0.05	<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	<0.05	<0.05	<0.05
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.32**	**0.53**	**0.08**	<0.05	<0.05
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.19**	**0.07**	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.91**	**0.99**	**0.14**	**0.09**	**0.08**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**2.10**	**1.06**	**0.14**	**0.09**	**0.08**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**1.2**	<0.5	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.1**	**2.3**	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SC 190715	EC 190715	CR 190715	AC 190715	DUP
				Client sampling date / time	15-Jul-2019 10:25	15-Jul-2019 10:56	15-Jul-2019 09:40	15-Jul-2019 10:05	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1922036-001	ES1922036-002	ES1922036-003	ES1922036-004	ES1922036-005
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.07**	**0.11**	<0.05	**0.17**	<0.05
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.04**	**0.11**	<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	%		**120**	**124**	**123**	**112**	**126**
Toluene-D8	2037-26-5	2	%		**130**	**127**	**130**	**129**	**128**
4-Bromofluorobenzene	460-00-4	2	%		**114**	**116**	**116**	**112**	**116**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BEX 190715	TUR 190715	AS 190715	US 190715	DS 190715
			Client sampling date / time	15-Jul-2019 12:20	15-Jul-2019 11:30	15-Jul-2019 09:00	15-Jul-2019 09:17	15-Jul-2019 08:30
Compound	CAS Number	LOR	Unit	ES1922036-006	ES1922036-007	ES1922036-008	ES1922036-009	ES1922036-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.66	7.44	7.75	7.82	7.94
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1190	890	34600	34600	36700
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	21	9	<5	18	5
EA045: Turbidity								
Turbidity	----	0.1	NTU	8.9	7.2	1.3	1.5	0.7
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.003	0.003	0.004
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	<0.001	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.022	0.002	0.002	0.004	0.005
Nickel	7440-02-0	0.001	mg/L	0.002	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	0.023	0.033	0.012	0.012	<0.005
Manganese	7439-96-5	0.001	mg/L	0.223	0.092	0.008	0.007	0.002
Iron	7439-89-6	0.05	mg/L	0.22	0.37	<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	0.15	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	22.0	2.59	<0.05	<0.05	<0.05
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.08	0.08	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.20	0.94	0.10	0.10	0.08
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.28	1.02	0.10	0.10	0.08
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	23.3	3.0	<0.5	<0.5	<0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	23.6	4.0	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BEX 190715	TUR 190715	AS 190715	US 190715	DS 190715
				Client sampling date / time	15-Jul-2019 12:20	15-Jul-2019 11:30	15-Jul-2019 09:00	15-Jul-2019 09:17	15-Jul-2019 08:30
Compound	CAS Number	LOR	Unit		ES1922036-006	ES1922036-007	ES1922036-008	ES1922036-009	ES1922036-010
					Result	Result	Result	Result	Result
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**1.89**	**0.07**	<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		**1.18**	**0.01**	<0.01	<0.01	<0.01
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<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	%		**122**	**122**	**122**	**115**	**117**
Toluene-D8	2037-26-5	2	%		**131**	**128**	**128**	**129**	**127**
4-Bromofluorobenzene	460-00-4	2	%		**114**	**117**	**114**	**110**	**107**

Surrogate Control Limits

Sub-Matrix: **WATER**

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